A complete and stabilized Universe seen like free space

The rational interpretation of matter as oscillations of energy in a shared quantity, existing as dynamic space

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Warning: Translation errors are possible and will be corrected

Greek prologue, March 21, 2021

Serious answers with the credibility of direct observation of nature, logical explanations by physical procedures and conclusions in an understandable language (from general concepts)

I understand that people have to think about problems in their daily lives. Many people do not have enough time and patience to think about the mysteries of nature and what might happen in the Universe. Many others have in their mind some current events and political developments. But we live in such a world where the most incredible things happen. People have different interests, different goals and priorities in their lives, they live with different experiences and with extreme contradictions in their ideology and property. Well, given so much variety in people's interests and endeavors, we hope that casual readers and those who are curious about this page will show their understanding of our own focus on cosmological issues and such a theoretical research.

Few interested who give high priority to the study of the laws of nature and the search for a principle or purpose of nature are always waiting with great interest to hear something new. I will ask them (the few who are interested here on the Greek FB) to think mature and without impressions. The author and researcher of these Philosophy and Cosmology pages has always had a tremendous imagination and enough time available to attract the interest of many readers with fascinating theories and imaginary worlds. After all, everyone can republish endlessly and have some readers with easy information from the Internet. The 'Philosophy and Cosmology' page on FB is not a magazine and does not offer anything to its administrator. It is a small "showcase" of the website cosmonomy.eu and the administrator make some posts which are short and can be read more easily.

After completing the translation of a theory extended to a large number of pages and work of long -term effort, I am in a good mood to publish important thoughts on physics and cosmology in many separate posts. I warn those who

have been impressed by theories that are spreading around the world and by the imagination of many popular books, that the thoughts where will follow will be expressed incredibly simplified and for this reason they will probably be more easily disputed and some specialists will be annoyed! That's why I wrote earlier, that imagination, time and information were not lacking, if I wanted to impress some readers. But this research was the purpose of my life and the demand for sure answers was greater than the demand of a scientist! The answers were sought with the requirement that they can be understood by good school students, and not just proven by top researchers through the application of advanced mathematics.

This research endeavor from its earliest moments began with common observations in the nature and in rational thinking with common vocabulary, as anyone and anywhere in the universe could think. Language may be different. Clarifications and efforts to better express oneself in the same language may be needed. But concepts are universal, such as are mathematical or physical phenomena. Therefore, the answers to questions that have been assessed as extremely difficult may seem extremely simple, because the concepts of imaginary things will lack, as well as the concepts that everyone has in mind, without looking out into the visible world. But the simplicity of thoughts in a common vocabulary and without the mysterious phenomena, as presented by many authors, should not be underestimated. When reliability is allied with simplicity, then this is a major success in itself. Those who ask serious and convincing answers to questions that have remained unanswered and in the first world publication, stay waiting here on this FB page and inform your friends. Serious answers with their logical sequence, without the interference of thoughts written or said by others and of course without fantastic things and history.

Image: DVD-cover-2021re-en (The external cover of the edition)

The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 1 of Greek publication)

Few researchers may have wondered about the difficulty of knowing what nature is and how it works. We are accustomed to the fact that the physical world is larger than we can explore and more complex than we can comprehend. Normally, we should be surprised that nature is so great and so detailed in its processes. By human reason, it would be more understandable to we come into the world with more knowledge of nature and better supplies for research, instead of life starting with infinite ignorance. Whether the complexity of nature has anything to do with the appearance of life is another question that researchers have probably not wondered. We wonder why it was not easier to understand nature, at least for researchers. If nature is a set of countless separate bodies and nothing more, then we will wonder how many different forms with properties that were missing from the constituent parts are achieved. If the more complex things were just a different union of the same parts, then it would probably be easier to explain the simplest things and those that are closest to us. But as it turns out, even things that are part of our body are more complex and less known than we expected. Nothing proves to be as simple and easy to know as we research it more carefully. The subtlety in the ingredients of nature showed beyond any imagination how much more difficult it is to know even the simplest thing. The difficulty of explaining how nature works is part of this theoretical problem. Not only can we not easily explain how nature works and what its limits are, but we also have extreme difficulty and inability to understand, which also need to be explained! (36)

Remarkable efforts by outstanding scientists and the collaboration of many teams and research centers so far have failed to provide convincing explanations of nature as a whole with regulated processes. The explanation for their difficulty and failure is thus: Understanding nature and explaining how it works are not research issues exclusively for physicists and astronomers. The answers to many

questions of cosmology can not be given only with knowledge of physics and astronomy. For this reason, some questions have remained unanswered, and these should have been answered first, before we think about some distant or less obvious things. On the contrary, more difficult questions have been answered without being so important and necessary for the research with selfless intentions. Modern researchers explain the rare effects observed in a laboratory and achieve hard measurements and calculations, but they do not explain all these that are usual and we observe directly in nature and which are more revealing.

Image: separate-sciences-incircles-en-.jpg (is below)

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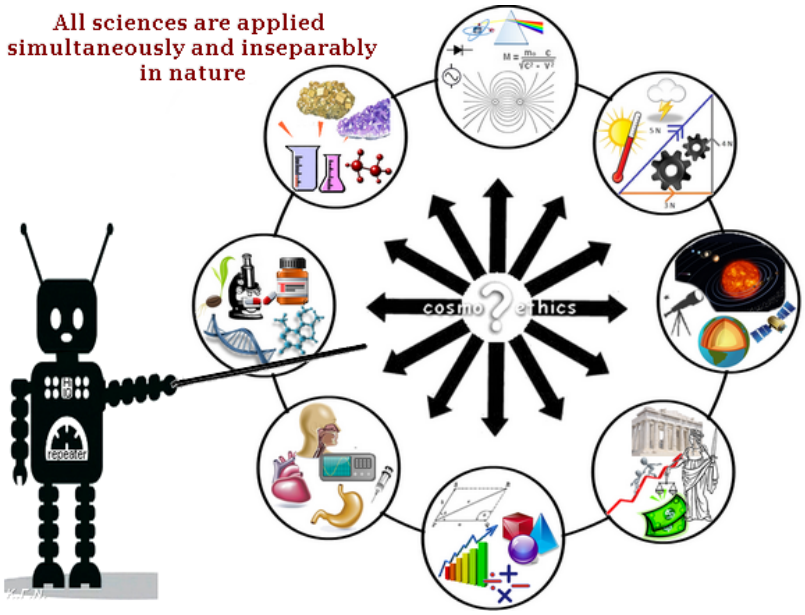

The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Rules of Logic (Part 2)

Some will wonder what other science is involved. It is also suspected that cosmological research includes additional theological issues. The necessary knowledge for cosmological research inevitably includes some issues of the logic of thoughts and the rules of reasoning and expression. This finding will only be better understood when the most comprehensive answers to cosmological questions are given. For now, try to understand how thoughts about the world inevitably contain some first concepts and how concepts relate to certain rules in order to be comprehensible thoughts.

Everyone introduces certain characteristics of things into words: they determine their quantity, assess whether things are one or more, if they are big or small, if they move or immovable, if they are connected to another and how far apart they are, if things have structure and function, if a result is produced, if other things are mediated for their action, in what order results follow, etc. The same thing can be presented with a different name, with a different utility and for a different result. "Mother" is to the child, "grandmother" to the grandson, she is a "daughter" to her parents, "wife and husband" to the man, "human" to the animal kingdom, "mama" is a different word. Lucifer and Hesperus are the same planet (Venus).

Cosmology begins with rational thought and observation of mental processes. (71) We do not try to learn all the possible forms of things, to measure all the celestial bodies and we do not need all the knowledge to make a complex construction. We primarily seek laws, fundamental phenomena and some mathematical relations that regulate the structure of the world and matter and their boundaries. And look again, astronomers observe with the latest technology the same structural elements located at distances where we will never approach. And think, that

the structural elements are essential and important to all things, and therefore what we learn about matter of our own body is knowledge of same matter of many other bodies where lie in depths of the Universe. (69) * (That is why the word "cosmonomy" is more appropriate for a science of the nature as a whole).

Knowledge about nature as a whole is not knowledge of any particular thing. This means that knowledge about nature as a whole is neither expressed in narrow terms nor by names of specific things. (85)

The first concepts and observations, on which cosmology is founded as a science and which direct the research refer to essential attributes of things and prerequisites of their existence. (85)

Knowledge of the necessary phenomena of nature and its laws is generalized and abstract knowledge. But this rational and abstract thinking does not preclude knowledge from commencing observations on separate things. For cosmological issues we can start from general principles to individual things, from general and fundamental notions to specific and occasional things. Deductive reasoning, which is utilized by philosophers, and not inductive reasoning, which is utilized in scientific research (85)

In the case of study of the universe (the nature as a whole) what we first need is an explanation of its structure and not the sufficient knowledge of each astronomical body which is included in it. The answers to the questions about the meaning of life and the beginning of the cosmos are not the most difficult. It does not require the sufficient knowledge of any individual thing, as are knowledge of the characteristics of an insect or of a galaxy, the exhaustive knowledge of a part of the world or the most complicated calculations in order to we give these answers in summary. It needs observation and thought about the laws of the nature, certain common qualities of things and certain measurements on physical sizes. (85)

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Image: cosmonomy-table (see below)

Description: Essential and common attributes of things as defined by the earliest attempt to understand the world as a whole (with philosophical thoughts)

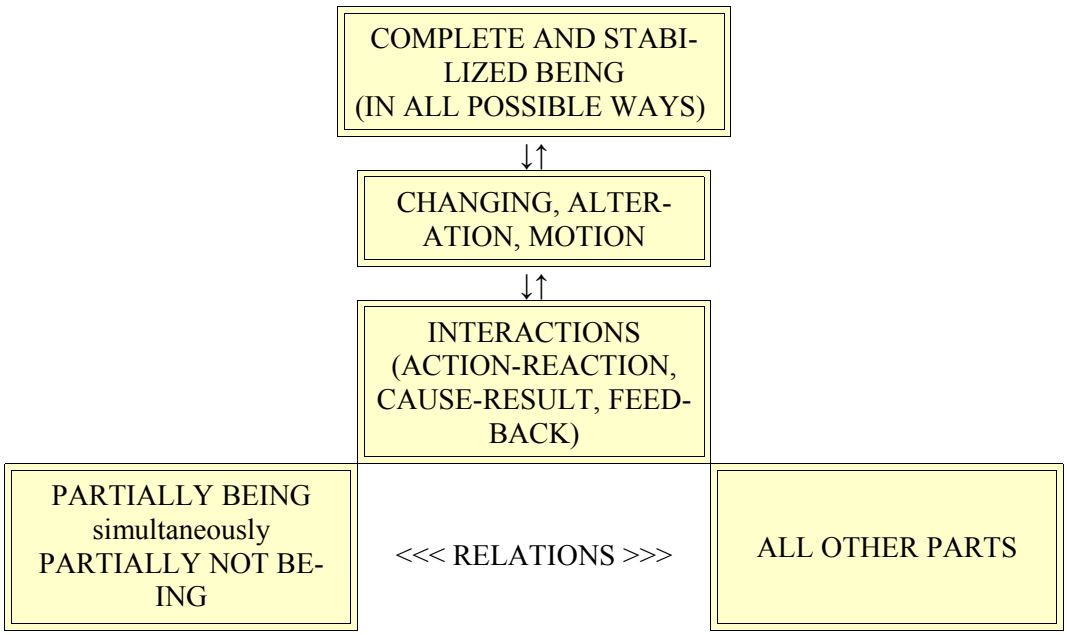
* A relevant excerpt from the introduction to the "cosmomy" website:

Specific cases are subject to or regulated by general principles, which the philosophers first recognized. All fields of research focus on something and introduce the same concepts as are union and separation, beginning and end, time evolution and time interval, the rate of change, the concept of repetition and frequency of repetition, the concept of relationship and interaction, action and reaction, concept of cause and result, similarity and diversity, quantity and quality, part and whole and mathematical concepts, such as addition and subtraction, multiplication and division, equality and inequality, analogy or proportion and function and so on. These ordinary concepts are inevitably introduced by the thought of the researcher and are revealed to any research, whether it is research of human psychology or a research of physical phenomena.

The common features and properties (attributes) of all things on a simplified chart. The Theory of a full and stabilized Universe has been unfolded by this first and logical concept for the totality of things:

PARTIALLY BEING PARTIALLY NOT BEING (It has limits)	+	ALL OTHER PARTS AND THEIR RELATIONS (past-present-future)	=	COMPLETE TOTAL BEING (universe)

COMPLETE BEING → STABILIZED (TOTAL) BEING → IN MAXIMUM TIME
PARTIAL/INCOMPLETE BEING → FLUCTUANT BEING → IN LESS INTERVALS
SMALL AMOUNTS OF BEING → STRUCTURAL ELEMENTS → MINIMUM MOMENTS



<<< THE FUNDAMENTAL PHENOMENA >>>

MODES OF INTERACTIONS	DIRECT - INDIRECT	SYNCHRONIZED MOVE AND RATE
	FAST - SLOW	
	RHYTHMIC - IRREGULAR	MOMENTARY AND STABLE RELATIONS
	SYNCHRONIZED - ASYNCHRONIZED	
	DIRECTED – INVERSE	WEAKER AND STRONGER INTERACTION
	PERPETUAL - MOMENTARY	
	CONTINUAL - RECURRENT	
	BIPARTITE - MULTIPARTY	COMMON MODES / SHARED ELEMENTS
	WITH RESISTANCE - UNHINDERED	

The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Common characteristics and logical processes in nature (Part 3)

The issues of cosmology are not exclusively in the field of physics. Undoubtedly include questions about the logic of concepts and rules of thought, some questions about the expression of thoughts and choices of thoughts and observations for research. From the apt observations on nature and its own experiments we derive unexpected information about (common) physical phenomena involved in all individual things. The first and simplest concepts that establish cosmology are the concept of “whole” and “part”.

Since the description of the set of things and the general explanations refer to common elements and common phenomena, it makes sense to use some abstract concepts and expressions such as: time and length, action and result, change, motion and rhythm, whole and part and many other concepts, which are necessary to refer briefly and collectively to all related things. The encounter of these general concepts with concepts that describe phenomena in physics or other sciences is not accidental. If we want to find a common reality and not an infinite number of things, we must explore the common and permanent features of the universe.

The common and unique reality is as it is in reference to its total self and 2) at the same time it is not in reference to its total self and at the same time, the common reality is missing ... and exist as incomplete, piecemeal and as a part. The double presence of one and the same reality (or dual process, let's say) is a fundamental feature of reality. The reality which is common to all at the same time is not common, it exists and it does not exist. The reality is complete as a whole, however it is not complete as a part. The reality is complete and with all the effects on the whole of itself, and it does not exist as a whole and with all the results for its parts. The common reality to the different parts is not with all the

same results and therefore it is not exactly the same reality (in relation to the different parts). (91) Physical phenomena are created with the presence of nature as a whole and not only or exclusively from its structural elements.[1]

As we will see, when we enter time in the concept of the Whole for the world and define the Universe as complete world and stabilized within the limits of a maximum period of time, then the whole world is connected with the maximum period of time.[2] If the whole world is not stabilized then it is not a complete Whole and (by the rules of logic) remains as "part" in time. Thus the concept of the Whole is mathematically related to all the physical phenomena that we observe in parts of the Whole. With this quantitative connection (time and whole of nature) the limit of a minimum time for nature is provided. Among other things, this means that times of natural processes are associated with a universal time interval. Times of the microscopical world are also mathematically related. All physical sizes that depend on time (with its minimum and maximum limits) can be entered into calculations, such as rate of change, speed and length! The concept of the Whole together with time for the interpretation of nature introduces numbers and mathematics into nature.

We will not think about things that had been before and which had been the cause of the things that followed. We will not look for the cause of the cause and the Creator of the Creator. If we want an optimistic prospect of research, then

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1 structural elements or building blocks, if you prefer

2 I have recorded in a footnote the impact of Hegel's logic on my earlier thought and my attempt to correct the complete contradiction (antiphasis) between "being" and "non-being" in his philosophy: I noticed then (1990) that the contrast of "being" to the "non-being" was not complete and overall, but came from the contrast of the "total being" to the "partially being". A few years later I formulated this relationship between "full being" and "partially being" in terms of physics: the complete and stabilized world (the full being) coexists with its structural elements (the shortest moments of the total being) and the full being seems as "space". The definition of a complete and stabilized universe is not inappropriate, irrational and in conflict with experience, as it is will confirmed!

there will be only one solution: Consider that the Universe is stabilized within a maximum time. That the Universe is always the same, over a maximum period of time. From this point of view, all fundamental physical phenomena are rationally deduced without laboratory research, as we will see. (23-24)

If cosmological research does not start so rationally and with the detection of some research prerequisites, then research will be random and a collection of observations starting from deficient definitions of phenomena, which leave the phenomena as separate and completely different (71)

The very existence of laws that apply to an incredibly large part of the world needs an explanation. Do not expect the laws of nature to begin by a few rocks or a few astronomical bodies!

Image:

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The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 4)

Widespread and most frequent phenomena

Some thoughts about the cosmos start with a turning of thought into itself and not from observing the sky! This was an advantage of philosophy (66)

When we talk about the totality of things and try to give an overall explanation, we do not need to refer to separate and complex things, which are next to us and nowhere else. That is, it will not help us much and it will not be the fastest way, if we talk about the plants, the specifications of cars, the geophysical map of the Earth, the city we live, every star which is added on the map of the astronomical space and the specific relationships, which are described in the scientific books in all over the world. The evolution of human knowledge of the things around us has revealed some phenomena and elements, which are more prevalent and are encountered more often in nature. These are contained in a larger number of things and at longer periods, such as for example, in the composition of chemical substances as well as the electromagnetic fields. The discovery of similarities and common elements in all things is not surprising for the philosophers and for the theoretical thinking. For instance, the existence of the structural elements of nature is not a random phenomenon either in nature or in rational thought. This (the similarities and common elements) has been expected instead since ancient times for many researchers, theorists and thinkers. This is why, we have found since the earlier times many attempts for describing the universe including the unique and most famed examples of ancient Greek philosophy. (66)

The principle of generalization (with incomplete inductive cogitation)

Some notions can emanate from a minimal number of perceptions (or observations), but these notions correspond to a much bigger number of observations

(to things that we haven't seen). For example, when we say, that humans have two feet, this is a truth not only for those whom we have perceived - this is our real experience – but it is a truth also for innumerable other humans in present, for many that are absent and for a lot of people that we have not seen. Then, if I conclude that a man who has only one leg cannot run faster, this will be true for almost every human being. This is knowledge beyond personal observation and experience because things bear similarities and analogies with one another. I can also conclude rationally that a man with one leg can run faster than the one who has two legs but does not rum at all (for example a paraplegic). But this is not the rule. (67) "We started talking about gravity on the occasion of the fall of an apple and look how far we have come!" as Jayant Narlikar wrote simply observing and without any explanation (in his book "The lightness of Gravity", 1999)

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The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 5)

“In order not to expand this thought (for rational research) further, read an example to think that the way from the general trait to the individual one does not necessarily start from the imagination, but by observing experience. Suppose an alien craft landed near a village and its passengers saw some people going and coming. Immediately, they could make the hasty conclusion: They were on a planet where such creatures live in a standing position, with two legs, two hands, two eyes, two ears ... Before each research and other land trips their conclusion would be correct! From their first observations, they would be able to think that they would meet other similar people who would not be the same as those they saw but they would look like them (they would have some basic traits). Later, from observation and experience, they would confirm that their hasty conclusion would have been correct, although they might have imagined something more (wrongly)...” (85)

In particular, the question regarding whether the senses show the things and world just as they are is an inseparable issue from the research of nature. Rational thoughts are initiated with regard to this issue by a few abstract concepts, which result to general views of nature as a single wholeness of things with common laws regardless of the individual differences and changes that appear due to the senses. That is, rational thinking reveals more quickly that nature has similarities and analogies, common features, common phenomena, specific laws, universal forms and conditions for balance. This is although nature as perceived by the senses appears to be relative and different to each biological body and different when the same biological body moves. There are different biological organs in function and number and how nature looks depends on the organs with which the biological body is equipped. Therefore, do not depreciate and deride rational thought. The relativity in the appearance of the world by the senses is one of first

revelations. (67)

<·> In physics, the research of phenomena and their description can be initiated by random observations. This often happens without sufficient knowledge of the interdependence of phenomena. The research does not focus exclusively on the phenomena that are fundamental or necessary for the existence of all other things and for their total. We have begun by removing the unprecedented, the occasional, the rare, the instantaneous and the specific things with all their details, in order to distinguish and begin to describe the phenomena, which are fundamental and necessary for everything else and so that the things can have their possibilities, in the special moments, places and circumstances. (531)

It is the well-known method (of earlier philosophers) where many phenomena were interpreted by primal things or attributes or all phenomena were reduced to a unique existence (monistic interpretation, monism). It has the advantage of causative thoughts and quick exploration, because it avoids many traps of our experience. The experience an inexhaustible variety of things is displayed and the world is appeared as being divided with extreme differences and inequalities and its unity as coincidental. (31) Some thoughts about the cosmos start with a turning of thought into itself and not from observing the sky! This was an advantage of philosophy (66)

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The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 6)

We will insist on a few more thoughts with the most general meanings. When we think of phenomena as described in terms of physics then you will see that these physical phenomena are contained in a few more general concepts of everyday language. We will talk about physical forces, such as gravity, electromagnetism and nuclear power. But you will see that a number of physical phenomena, even elementary particles, are interpreted by a few general concepts such as:

The complete Set (or Whole).

The part.

The balanced amount.

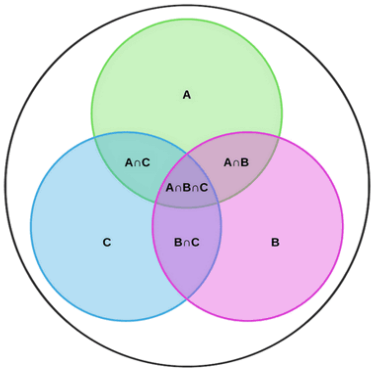
The disturbance of balance (creates wave effects)

and restoring balance.

The principle of operation of nature is interpreted with these more general concepts. If in science they have failed to interpret the connection of the fundamental forces, their failure is due to the separate and empirical description of natural phenomena and forces, in terms that hide their closest connection. And yet, as you will see later, fundamental physical forces are interpreted by the few general concepts we have just mentioned. The cosmological interpretation presented here simplified and abbreviated is the most powerful, since it can not be simpler anywhere in the universe. On the contrary, any interpretation of fundamental physical forces with the introduction of new and unknown phenomena is trapped in a chain that has no end. Every new and unknown phenomenon will need an explanation and this path (of explaining with the discovery of new phenomena) never ends.

Image: intersections-fuctions (or circular-function-plus-)

Υπερσύνολο, σύνολο, υποσύνολο, μέρος



The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 7)

<·> It is necessary to understand how the answers we will learn in the terms of physics come from rules of logic, with logical conclusions from the most general concepts, such as the concepts as we said with a minimum number of words:

The complete Set (or Whole).

The part.

The balanced amount.

The disturbance of balance (creates wave effects)

and restoring balance.

Please be patient and in future posts we will see above phenomena in terms of physics and with calculations. But the explanation of physical phenomena is already within above more general concepts. Here are some excerpts from the treatise:

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The separation of nature as a whole and as a part is the first thought for an unexceptionable interpretation of nature. From this logical thought we concluded the theoretical separation of nature by two other concepts, which were this time the notions of space and matter. Because we have discovered that space "represents" as an amount of energy the wholeness of nature while matter is short moments of beginning in the overall presence of nature. (p115)

The presence of matter is directly related to the presence of the entire Universe. (Matter imposes the permanent and direct relation of things with the

wholeness of the Universe and not only with the environment and the external conditions). (p105)

The complete Universe exists as a free space for matter. We should not imagine the Complete Universe as if it were a solid body and an obstacle to movement. We do not observe it via the resistance of the bodies, as we would expect, but we detect it as absent and we call it "empty" space. Could fishes realize that water is an obstacle to their movement? They can move with the resistance of water. The amount of water is their "empty space". And the birds would not fly without the resistance of the invisible air. In other words, the free space proves mathematically that the Universe is complete and simultaneous and proves also the principle of the conservation of the total amount of energy! (p103)

The total mass of the Universe cannot be presented as a single body. p390

The complete Universe appears absent as a free space, while the world of material bodies is created and maintained by the tiny connecting parts, which we call matter. Free space and structural elements are the general traits of the existence of all things. (p29)

The “empty” space was identified with a quantity of energy, by the simultaneous presence of the cosmos as a whole. The matter was identified with rapid changes in this global amount of energy, which remains in balance. One of the first theoretical results with the minimum number of thoughts was that the energy conservation principle coincides with the principle for a stabilized and always overall same cosmos. (p29 - 30)

A universal quantity of energy appears as free space, while the structural elements of this quantity are maintained as its fluctuations. (p32)

The total quantity of energy is the same for all things and all the structural elements take shape by the same fluctuations of energy of the one and same dynamic space. (p42)

The structural elements is this same Universe at the beginning of its creation as it is realized in the minimal (shortest) time moments. The beginning of the Uni-

verse is not out of the Universe! (p93)

Each of the atoms of matter has one, the same and common nucleus: the space. And all actions from distance amongst bodies (intangible forces) are generated by wave fluctuation of free space. This is unification and simplification of research! (p96)

We find that in nature there is an extremely delicate and fast process by which particles and fields mediate and achieve:

· Attenuate the forces (created by changing a large amount of energy).

· The forces (which are wave motions extremely fast) are adjusted and adapted so as stable structures be formed. The structural elements are natural switches and attenuators of extremely high rates. (p381)

The mass localized as particles,

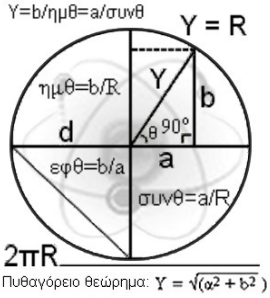
the electromagnetic field,

the gravitational field

and the nuclear attraction

are common phenomena from the variance of the same amount of energy and all things regardless of their form are transformations of these general physical phenomena. The mistake in modern research, which hindered the interpretation of nature, was this: They left the mass and particles as segregated from the fundamental physical forces, as self-ruling, self-inclusive, individual and external phenomena and not as repeated moments in the change of a quantity of energy. (p420)

Image: waves-of-atom-txt



The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 8)

It is necessary to understand how the answers we will learn with the terminology of physics come out through rules of logic with logical conclusions from the most general concepts. I did not intend to continue the publications with rational thoughts and generalizations (theory). But these are the simplest thoughts that all people can follow. Questions are always raised and never stop. Physicists would like to start directly with the terminology that only they understand and with equations that prove ... But before we insert our measurements into equations, we need to choose the equations and adapt the equations to our interpretation of physical phenomena. Then we will see what results the equations give, if the results agree with measurements, if they agree with the results of some other calculations and finally if the interpretation is correct. If we do not have an interpretation of physical phenomena, then we will play with equations and solve hypothetical problems for school or for entertainment or in our work in a construction company.

Nature as a whole does not work only with processes that are occasional from place to place and from day to day. It has laws and procedures that are universal, that is, for the whole of nature (and therefore with duration in time). The principle of operation of the radio, car, airplane, computer and other human constructions is usually extremely simple as an idea and the same for a host of other more advanced constructions. Advanced constructions can have different materials, infinite deviations in shapes, they can incorporate new technologies and functions. Many constructions can be combined with each other and presented as a single construction, such as the mobile phone. But the end result we ask for and their work is determined by a few simple functions that are necessary. A project ... is achieved with such corresponding functions and has some preconditions. Thus, nature has unimaginable deviations and transformations, from place to place and

from a fraction of a second to a fraction of a second, and its results need the most complex calculations. But all these variations and unimaginable combinations - which portray nature as the god of mathematics - can occur because nature as a whole has permanent properties and fixed conditions that are for all its parts. What follows from the action of its parts in time and space can happen because nature as a whole is balanced and has fixed features. As long as nature as a whole is in balance, nothing will happen without its laws! The balance and completeness of the super-Total is the first law for there to be laws, as we shall see.

Image: stamp-source2-target-airplain

Description: A picture of the Wright brothers' first airplanes. One of the leading physicist (William Thompson, known as Lord Kelvin) had said: "Flying machines heavier than air are impossible". In the picture below you can also see stamps of certainty...

The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. (Part 9)

It is necessary to understand how the answers we will learn with the terminology of physics come out through rules of logic with logical conclusions from the most general concepts. We started with a few broad concepts such as whole, parts, equilibrium, change and return to equilibrium. See how much we can think without analyzing any particular thing in nature. We will fall into the recognizable issues of physics without realizing it.

We have talked of the separation of nature as a whole and as a part. This is an indisputable first thought. The concept of the Total of nature (Universe) can be supplemented with the concept of time (total in time). Every thing can be thought of as a set of many parts. The concept of the whole for all the possible things in the world leads to strange thoughts. When the Universe is defined as the Total of every possible thing, then the Universe loses most of the properties as we observe them and as we are accustomed to seeing things as separate.

The definition of the Universe as a wholeness of all things along with what has been in the past and what will be in the future was supplemented by the following logical thought:

"At a maximum total time", "always the same Universe within the limits of a total time". (100)

the Universe is complete within a maximum period. (109) That is why philosophical theory was once called "Theory of Finished Time", ie for a Universe that is complete in full Time.

The past and the future -of the individual parts- constitute the wider “now” of 100% complete Universe. The Universe in the entirety of time is complete before the relative moment at which its parts begin to exist. But on the contrary, the complete Universe is -like a free space- almost entirely absent with regard to its

parts! (120,121)

The cosmological theory of Finished Time or the Completed Universe is based on a first thought that contains the concept of cyclical time and period. (121) The original logical thinking introduces a quantitative relation, such as the maximum time period. (31)

It is stressed that it took many years in these useful rational thoughts about "circular" and "finished" time to appreciate that my mind had gone to the field of modern physics. I was talking about a stabilized Universe within a maximum period of time and for many years I did not realized that I had insert a mathematical relation in my philosophy: the maximum time period. Which oddly it reminded me of the "age of the universe". (28) (...) The maximum time period - as I was writing with rules of logic that can easily be disputed - is divided into smaller times. (29) (...) Where will we observe in nature the minimum time moments? There, where time is shorter or quicker and in the minimal parts of things; it was obvious to me. If we took away almost the whole cosmos in our thinking, there would be something less, the minimal. The Universe has a constant beginning and is maintained at its minimum moments. But the complete Universe does not miss in its minimal moments! And where is it? Since we do not see a complete or simultaneous universe! Indeed we do not see a complete and simultaneous universe, but we see a free and isotropic space ... Free space is a phenomenon literally hidden and intangible, but this presupposes a complete and simultaneous Universe. The material world was interpreted by dynamic relations and rhythmic processes at extreme high speeds, while the free space was identified with simultaneous and balanced energy. (29)

Soon, many other phenomena were correlated to a stabilized Universe. The principle of conservation of energy was one of the most important inferences. This principle is drawn as a conclusion when we begin with the definition of a Universe that is ultimately always the same within a maximum period of time. On the contrary, the principle of conservation of energy is sacrificed and remains as a metaphysical phenomenon within every theory about an inexplicable creation of

the cosmos. (29)

But this definition of the Universe as a complete and stabilized Total within a maximum period of time is contrary to common experience and raises many questions that hinder the understanding of the theory. All the previous years, I have been trying to introduce readers to cosmological theory by this definition, that is, how cosmological theory began three decades ago. But questions and common experience hindered the understanding of this truth. If this view is correct, it should probably be stated at the end of the cosmological theory and not as its beginning, many readers would answer. So just keep in mind that **the whole Universe exists as a shared quantity that seems like free space**. The questions that arise are reasonable but as you will see, the interpretation of all physical phenomena is extracted as changes that occur with the simultaneous participation of the complete Total.

You will see it in terms of physics and with simple calculations.

Image: freeze-browser-

Description: An image of the desktop (screenshot) when the software "frozen" as a window was carried with the mouse in various directions. All the positions in which the window moved were kept on the screen with the "freeze" of the software. The window at each fraction of time was in another position. The window in its entirety time is displayed in all positions together, i.e. simultaneously... We always perceive the world in short fractions of full time ...

The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Everything changes, but how... they change (Part 10)

The view of a complete Whole that remains the same (if we consider that it changes in every possible way within the limits of a maximum period of time) needed to be reinforced by observations in the common experience. That is why from the first thoughts, phenomena were sought that change coexists with stability or balance! It was not difficult to find examples. One of the first examples was the delicate balance of a moving bicycle and a spinning wheel. Many recurring physical phenomena were quickly observed. Stationary waves were one of the most remarkable cases that showed movement and together stagnation and even with descriptions and analyzes in physics. We started philosophically with broad concepts such as a complete Total, a maximum time interval and a total quantity and we fall with the speed of rational thought on the recognizable issues of physics.

The phenomenon of balance is not explained by the phrase "everything is changing". (25)

The water flows into the river and is renewed, as Heraclitus said, but we refer again to water, to a property of the liquid elements, to a strip of land within which the water flows in a steady path. This is the other half of the truth and it needs an explanation. The river does not disappear in front of our eyes, nor does it become a river of lava. We see signs of continuity, consistency, smoothness and balance. Despite many differences, humans are born from humans, planets and stars are repeated in space, the same chemical matter is farther away in space, and many phenomena are repeated. The phenomena of periodicity in nature and circular processes were signs that should not remain unexplained. (24,25)

Thus, movement and change were not necessarily subversive, destructive,

without continuity, without return and chaotic, with the meaning of disorder (as implied by those who had their reasons to display a nature without anything stable). Even the duration in existence of a thing or of nature, which seems like a simple phenomenon, it is not a result of accidental changes. (24,25)

the general finding that all things change, cannot explain the phenomena of balance, stability and continuity and the phenomena of syncing many actions and movements. (27)

the very existence of laws, the fact that the same laws apply to an incredibly large part of the cosmos (needs an explanation) (28)

Change is not always like the sparks of fire. The change in structure of matter maintains the atoms. The change in the biological body preserves the body. The change in the Earth's orbit maintains Earth and life. Forget the blind repetition of the one-sided observation that everything is changing. Everything changes, but how... they change, with what pace they change and how they are balanced and synchronized, we would ask if we were more careful. (77)

Until recently, everyone has been talking about the eternal change of things and about the perpetual move. But no one can explain the stability, the similarity, the creativity, the continuity and the repeatability that the cosmos displays, albeit intermittently and temporarily. Nobody has informed the people, that when a change and movement is realized in recurring manner (eg circular, alternating), and especially, when it is realized in the highest speeds or in short distances, then the change coexists with balance, is stable and the unlikely effect of synchronization in multiple motions can be achieved. And this happens in the foundations of nature, into the structure of matter! That is, rhythm, fluctuation, period with incredible speed in short distances: Everyone can understand this phenomenon, the diversity of rhythmic phenomena, study and understand the physical world better. The cosmos as whole and its laws can be explained by these general phenomena of motion. Not by the "flavors" and "colors" of some particles, which are everywhere in all material bodies of cosmos in an inexplicable man-

ner... As if they were cells that reproduce (56,57)

"It is said that many of the stars we see have ceased to exist and that their light is now reaching us, crossing very long distances. In contrast, space seems like something non-existent, but it is not a perfect lack of reality ... The free space shows us from the senses what the Universe is fixed by, not showing us the relatively non-common features in our perceptions: it seems immovable, indivisible, eternal, common to all, irrelevant, unmodified, as a thing in itself." (T of S)

We will not think about what was the Universe at an earlier moment or in an earlier phase and thus infinitely without end. We will not think about things that had been before and which had been the cause of the things that followed. We will not look for the cause of the cause and the Creator of the Creator. If we want an optimistic prospect of research, then there will be only one solution: Consider that the Universe is stabilized within a maximum time. That the Universe is always the same, over a maximum period of time. From this point of view, all fundamental physical phenomena are rationally deduced without laboratory research, as we will see. (23,24)

We will not search for how the cosmos was in the past and thus without end. Only if we assume that the entire cosmos is always the same and stabilized, only then the search for the first cause has prospect to come to an end. Coincidentally, then the cosmos as a whole (super-total) is revealed as permanent precondition to all that can be happen among its parts. The stability of the whole nature becomes a global law so that laws exist! The stability of the Common Total enforces and adjusts its parts so that the overall stability will never be canceled. (22)

A bicycle, a spinning wheel, the wings of insects and birds, planets, molecular compositions, integers, and even our reproductive act have one thing in common: they achieve balance, smooth continuity, and stability through repetition. The observation of periodic phenomena and the importance of repetition in na-

ture brought the wave phenomena to the center of my attention after years. This was the passage from rational and general thought deep into physics, so that the original idea of a Complete and Stabilized Universe within a Maximum Period of Time would be proved.

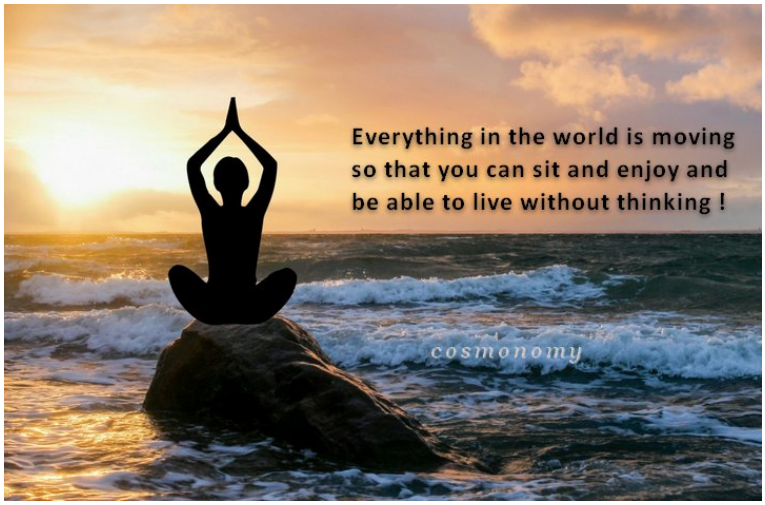
COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA

How the natural laws and forces are applied. The fundamental concepts and relations for a rational Cosmology (Cosmonomy)

ISBN 978-618-85170-1-1, ISBN 978-618-85170-2-8, ©2021

Image: 6x7 (GIF) Shifting waves (red and blue) and standing wave (black)

Below you see another image



11. A summary and the forced passage of logical thoughts about the complete Whole into the knowledge of physics

The definition of the Universe as the totality of all things together with what was in our past and what will happen to us in future was supplemented by the following logical thinking:

"at a maximum total time", "always the same Universe within the limits of a total time". (18, 100)

the Universe is complete within a maximum period. (109, 132, 154)

> The Universe in the entirety of time is complete before the relative moment at which its parts begin to exist. But on the contrary, the complete Universe is – like a free space - almost entirely absent with regard to its parts! (121) This is the shortest explanation of nature in the shortest possible number of words.

As we have said, the definition of the Universe as a complete and stabilized Whole within a maximum period of time is contrary to common experience and raises many questions that hinder the understanding of the rest of the interpretation of physical phenomena. It will be proved at the end of cosmological theory.

However, the closest relationship between the principle of conservation of energy and the stability of the Universe was immediately appreciated by this definition. Then, the phenomena of repetition, periodicity, equilibrium, synchronization, symmetry were evaluated as revealing for a complete Universe in equilibrium and as phenomena connected with the initial assumption.

The thought of a maximum period of time (of a complete Universe) led rationally to the thought of shorter periods of time in the Universe and of the existence

of minimum intervals in nature.

The structural elements (matter) were valued as minimal parts of things and nature and useful with the participation of the Complete Whole of nature.

Therefore, the idea of the existence of minimum time intervals in nature has led rationally to the idea of the relation of the structural elements of nature to the shortest time intervals and of the direct connection of the structural elements with the universal space (which is a phenomenon related to the complete Universe).

The closer relationship of physical space with the complete Universe and its presence as a shared amount of energy immediately came to mind with this definition of the Universe as a complete and stabilized Whole within a maximum period. The shortest moments of the complete Whole are related to the structural elements and rational thinking easily goes into energy oscillations of this shared quantity. All of these thoughts had a matching / logical connection and one thought explained the other. The general notion of "change" has become more rationally enlightening in the sense of rhythm, fluctuation (and oscillation) and period. The writing of all these thoughts and conclusions showed with optimism that the research could continue rationally in this direction with ally the physics and above all, without the introduction of inexplicable properties and things.

Cosmological theory could start directly with the brief thought that the complete Universe exists as a shared quantity where seems like free space. (The thought I said in a previous post to keep in mind). The identification of physical space with a shared quantity and the relation of matter to fluctuations of this shared quantity had been seen through rational thoughts. In general, many high-velocity natural phenomena and remote forces could still be explained. Light and more generally e / m phenomena and the gravitational field were immediately assessed as phenomena by a wave process. Because the forces are transmitted with some movement, when the bodies do not touch each other. The microscopic processes were the most revealing for a shared amount of energy that seems ab-

sent as space.

(The sequel holds surprises for everyone!)

Image: full-universe-c6bb-res-tr.gif

Description: A divided movement in a simple design. Movement in time, positions at different angles of observation and some positions at a few times of a period.

Summary and the forced passage of logical thoughts about the complete Whole into the knowledge of physics. (Part 2/12. The lack of help and cooperation)

I had to show physical space as a shared quantity and matter as energy oscillations with formulas and calculations and I was completely unprepared. My poor relationship with mathematics discouraged me from using the information of physics for many years. But keep in mind that one of my goals was to give a logical explanation of the function of nature as a whole and how physical phenomena are produced and maintained, in a language that we can all understand. I had valued rational thinking with the most general concepts like a compass and not unjustly. Many conclusions - such as those presented here briefly - had been drawn by simply applying the rules of logic through the most general and universal concepts and not by studying the books of physics. General and universal concepts such as:

Total and part, complete Total in full time, balance of the complete Whole, conservation of energy, change in parts, things that exist in parts of time, Total that exists as a common quantity, changes of the universal quantity, restoring the balance from the changes, wave motion, rhythms and rapid oscillations due to the restoration of balance, shared quantity that participates as space, things that are inextricably linked to the whole Total, minimum quantities in minimum time intervals, minimum quantities, matter and particles, structure of matter and rhythmic changes, forces at a distance and wave motion, fields and radiation, etc.

These few and common concepts matched each other and endless conclusions were drawn with the rules of logic, without falling into absurdities. The signs from the meeting of the concepts were encouraging and the expectations were high, even without the calculations. The explanation for the principle of nature by the most general phenomena is the most simplified and at the same time I had avoided the introduction of unknown properties and imaginary things, which

would also need an explanation. Many people still do not understand that when we introduce properties and separate things to explain how nature works (eg new particles or a property such as attraction or a geometric shape), then we fall into the trap of an incomplete explanation. We will be asked to explain where the unknown properties begin and how the fundamental things have their characteristics. This path of thought has no end.

The explanation of physical processes and fundamental forces with nature as a complete and common Whole is the only explanation that can satisfy rational thought. No one can seriously ask us to explain why the Whole of nature is present and where its characteristics come from and why nature exists as a Whole. It is enough to show and prove how the Whole of nature is really present, complete (in a maximum period of time) and shared. But I had realized that no one would be convinced of a complete and stabilized Universe. It was even more unlikely that anyone would agree that the complete Universe is simultaneously presented as a shared amount of energy where we detect as free space. So I was forced to assert these rational thoughts using the information of physics and if possible with calculations, since no one else had these reasonings and such an interpretation of nature in his mind.

The rational thoughts and interpretations by physical processes were not attractive and convincing also to those who think about things with imagination and anthropocentrism. Rational thinking and explanations by physical processes were not appealing to those who expect unknown worlds with completely different laws, and think of things as mixed with intangible and magical actions, with souls, spirits and angels, with the will of God according to their religion and generally with thoughts from books by ancient philosophers. These readers are displeased and prefer to extract excerpts from thoughts of ancient philosophers, as I have often found. No one could or did not want to understand this cosmological interpretation. I was forced to develop the interpretation of 'a complete Universe within a maximum of time that seems like space' in terms of physics and to motivate some physicists to think in this direction of rational research. What processes and

what physical phenomena must be investigated in order for this rational interpretation to be confirmed by calculations and from experience they had begun to emerge.

(Image: geometry-pixabay-)

Description: A professor stands in front of a large table showing geometric shapes, curves, charts and mathematical formulas

The Forced Transition of Reasonable Thoughts for the Universal Whole into the Knowledge of Physics (Part 3/13. An Unexpected Acquaintance!)

I had rationally concluded the existence of limits on time, length and amount of energy from the definition of a Total World within a Maximum Time Period. The persistent effort to utilize traditional physics began after a random but important event in my life. In 2008 I met an author who wanted to improve his website. He argued that increasing mass to infinity for a body moving at the speed of light was wrong. It was not the first time I heard this disagreement and I was also one of those who suspected (by common sense) that there can be no infinite increase in mass in a separate body in nature. But this amateur physicist had set a maximum mass limit for motion in proportion to the maximum speed of light. He claimed that in this way he corrected certain equations of physics. I learned from the work of this unknown author that in physics there is a quantity of mass or corresponding energy (E = hf) that comes from three constants of nature: c, h and G. Until then I did not know the combination of these physical constants √(hc / G). With his simple equations it was possible to calculate sizes for a minimum and a maximum variation. That is, I saw in the work of this amateur physicist that limits are calculated in physical processes (eg mass change) with mathematics of secondary education. It was a great opportunity for me to understand his equations for my own endeavor.

The amateur physicist had not inferred the limits of change from rational thought. He calculated the limits (time, length, mass, force, energy) from his own observation, that the maximum speed of light corresponds to a maximum amount of mass that was mass (Mplanck = h c / G at the square root) as it comes out of three constants of physics. That is, he said that for the maximum speed c of light the mass is ~ 5.45 x10^-6gr and not infinite. Therefore, smaller masses [Mplanck / M = c / V] corresponded at lower speeds than light. One of my many questions was how bodies have greater mass if this mass of one millionth of a

gram was a maximum. I did not receive a serious answer.

Smaller amounts of mass corresponded to lower velocities and he calculated them: M = Mplanck V / c and V = c M / Mplanck. The most stimulating in his simple equations was the observation that the velocity corresponding to smaller amounts of mass coincides with the velocity of an equation giving the velocity of rotation of a body in a gravitational field, i.e. the velocity $V_g = \sqrt{(G M / R)}$. With the difference that instead of the radius R of a planet, he put the wavelength corresponding to the equivalent energy of particles and in physics it is called Compton length, ie: $V_g = \sqrt{(G M / \lambda_m)}$ where $\lambda_m = h / M c$. The velocity V = c M / Mplanck corresponding to smaller masses of Mplanck was the velocity of the equation $V_g = \sqrt{(G M / \lambda m)}$, ie $V_m = M c / Mplanck = \sqrt{(G M / \lambda_m)}$. How was a velocity, calculated by the simple method of three corresponding to a quantity of mass, were the same as the velocity calculated by the constant of gravity G (if the particle is estimated as energy having a wavelength)?

In general, that man * explained the increase in mass exclusively for moving particles and the particles are also the result of a velocity.

This was followed by my own persistent and chronic research on these physical constants and their mathematical relation (hc / G to the square root) which gives a marginal amount of mass (Mplanck ~ 10^-6gr). From this persistent investigation I realized clearly (in terms of physics) that the structural elements are fluctuations on a shared amount of energy and that mass is the result of a periodic decrease in the maximum velocity occurring on the shared quantity. I clearly realized that this close relationship between matter and space needed the phenomena of wave physics to prove itself. I clearly realized that it was necessary to calculate the particles not only as a quantity of rest mass (in grams), but also as amounts of energy equivalent (hf / c^2) as Einstein had correlated, in order to look for properties that particles have as quantities of energy transported and re-

turned in a shared quantity. That is, by calculating the particles as amounts of equivalent energy (hf), information about them could be extracted as if they were waves, at different rates and with characteristics of wavelength, period and some velocity. All calculations had to be based on the maximum amount of energy (the equivalent energy of the three Mplanck constants of nature · c^2) and on reference to a minimum quantity of energy according to Planck's action constant h.

The transition to physics was not just a collection of information. Paths for solutions to many problems that remained unsolved were revealed. These solutions came to my mind and were sought after in an attempt to understand the simple equations of the amateur physicist, because I had already prepared and thought about the structural elements as energy oscillations on a shared quantity. Thus the structure of matter and its particles manifested themselves clearly to me as a result of dynamic processes and in addition these processes manifested themselves as rhythmic and periodic because a shared quantity returns to equilibrium at the highest speed. The introduction of rate and oscillation into the interpretation of natural processes is one of the most important moments of this investigation, because it seemed that stagnation can coexist with movement in the foundations of nature. In physics there were all the formulas to start calculations and to observe any relationships in the results of calculations. Almost 100 years of deception have been confirmed and a great failure that will be written in the history of physics!

* Footnote: (The amateur physicist had no interpretation of the structure of matter and had simply exploited the mathematical correlation of the maximum speed of light with the maximum amount of mass as it came out of the three constants c, h and G. He did not understand my own rational thoughts about matter as oscillations of the space and was reluctant to collaborate. I will write more about my acquaintance with this amateur physicist someday in the future).

(Image: karamihas-equations-b.png)

The forced passage of rational thoughts about the universal Whole into physics. (Part 4/14. Equilibrium and wave motion. Research with the correct interpretation...)

Complete Universe, Universal Space and Shared Amount

Cosmological theory begun with the definition "for a complete Universe in all possible ways within a maximum period of time" and interprets the free space as a shared amount of energy. That is, the Universe as complete and stabilized appears with the image of a world space and the world space is the result of total balance. If the world space is something that displays total energy in equilibrium then we can describe world space as a total quantity. Then the close relationship of matter with the world space is immediately revealed. Movements in a total quantity that is in equilibrium are revealed as wave movements, such as movements in a calm sea.

Shared Amount, Energy Oscillations and Wave Motions

We have thought from the beginning that the structural elements (matter) are initially parts of the Universal Whole and therefore the motion within the structural elements is motion in a total quantity that remains in equilibrium. But if the structural elements are movements that occur on a total and balanced quantity (which looks like a global space) then this means that the structural elements are oscillations and fluctuations of this balanced quantity. So the theory of a complete Universe within a maximum period of time could begin with the interpretation of the direct relation of the structural elements to the universal space. The motion of the structural elements is rationally revealed as a wave motion. In physics, wave motion involves a variety of phenomena and by definition has a contrast with the motion of bodies in empty space. The wave motion begins with the resistance of a balanced quantity that is disturbed and the balance is restored, while the bodies in space move with the lack of resistance. These last conclusions - which you are

now reading briefly and which invite Physics to prove them - came out at least a decade late.

We have thought that motion and balance are not contradictory and we have found many examples where these two phenomena coexist. By interpreting the structural elements as oscillations of the highest speeds on a shared quantity, a global process was observed (since space is a global phenomenon). The opposite case has been observed, how movements are created that restore balance when something is already in balance and disturbed without being destroyed, and these movements are called "waves", "fluctuations" and "fluctuations". When restoration to equilibrium occurs at the highest speeds, then motion and equilibrium coexist and some phenomena are repeated extremely quickly and then they appear motionless and some forms are maintained by movements and forces (dynamically).

The importance of the initial Definition of the Universe

In order to formulate the idea that "the complete universe exists as a shared amount of energy that appears to be free space", it was first necessary to define the universe as a "complete whole in all possible ways within a maximum period of time". The identification of total time with the complete whole itself and the identification of space also with a quantity (or something) that exists at the same time in all possible ways follows as a conclusion only from this definition of the complete Universe. How free space is a total quantity and whether it is identified with a complete Universe is not apparent before this definition of the complete Universe. Still, without this definition of a complete Whole (Universe) in all possible ways within a maximum period of time, one could conclude that time does not count for a complete and stabilized Whole. So one could say that the Universe is timeless. But this definition of a complete Universe in all possible ways within a maximum period of time leads to the conclusion that time is a fundamental property of all parts of the complete Universe, which is obviously related to their mo-

tion and distance. And then, when we think on structural elements as energy fluctuations then time acquires an exceptional significance because it is linked to the concept of rhythm, recurrence, period and frequency. Which means that we go deep into physics and can start calculations for the relation of wave motions in the structural elements with the behavior of particles and with the interaction of space as a shared quantity.

The Complete Universe, the Free Space and Structural Elements

This thought of structural elements as fluctuations of a global quantity is the most apt to interpret a number of phenomena in terms of physics and to test interpretation by calculations. But this thought was not the beginning of the development of this cosmological theory. If the explanation (in the sense of a Universe that is complete within a maximum of time) is hidden, then the view of structural elements as fluctuations of a global quantity is an unfounded view. That is, it does not appear to be a conclusion that structural elements are fluctuations of a global quantity. But since these rational thoughts are not understood or accepted by many readers, then hold straight the thought that "the whole Universe exists as a shared amount of energy that seems like free space." This is the right view and you will understand it by interpreting the connection that matter (structural elements) has with physical space. This interpretation includes the fundamental natural phenomena (which are rate of change, length, velocity, mass, energy, force, and angle).

Related image: (anim-crop)

Description: The image shows a grid of moving elliptical lines and two black holes that also move like particles. The moving grid of lines connecting the moving holes represents the forces applied between the holes and the application of the distant force by waves

15. Some QUOTES which summarize ...

A shared quantity of energy appears as free space, while the structural elements of this quantity are maintained as its fluctuations. (32)

The complete Universe appears absent as a free space, while the world of material bodies is created and maintained by the tiny connecting parts, which we call matter. Free space and structural elements are the general traits of the existence of all things. But this time, the ancient notions of an empty space and matter did not remain as separate phenomena without detailed description for their permanent connection in the thought of a modern philosopher and electronic technician who has a good relationship with physics. The “empty” space was identified with a quantity of energy, by the simultaneous presence of the cosmos as a whole. The matter was identified with rapid changes in this global amount of energy, which remains in balance. One of the first theoretical results with the minimum number of thoughts was that the energy conservation principle coincides with the principle for a stabilized and always overall same cosmos. (29-30)

The alternations, the oscillations, the fluctuations and generally the periodic motions can be repeated at frequencies beyond imagination. In wave phenomena the fastest paces are reached in shorter distances and lengths. The periodic moves in shorter distances can appear either as monotonous repetitions or as stationary situations and amazing combinations. Motions in periodical phenomena are not necessarily an imbalance. In contrast to this, the repetitions and the rhythms exist as precondition and requirement for balance and synchronization. The interpretation of the structure of the cosmos and matter by small balls and " remote controlled " laws can not explain thousands of phenomena that spring from microscopic dimensions. But most importantly, it cannot be explained why

many same particles move ceaselessly, how they are formed, where their properties (such as charge, spin, distance forces, etc.) they come from and how they all together manage to form stable things and not an infinite dust with random forms... (57)

One of the previous posts ended with this view: "The balance and completeness of the Whole (of nature, the super-Total) is the first law so that there are laws, as we will see". The balance and completeness of the Whole (of nature) is a logical thought that has been formulated in terms of scientific research as a "principle of conservation of energy". When we think that the Universe as complete and stabilized is identified with a shared amount that appears as physical space, then the shared amount is revealed to be the total energy that is kept constant for a total of a maximum of time. This deduction immediately reveals the application of the laws in each region of the universe and explains the similarities and processes that are repeated the same. In the mind of the physicist, "energy remaining a constant quantity within a maximum time" has the meaning of power (E/T) and thus simply "the principle of conservation of energy" is revealed as "the principle of conservation of power". Energy through time is a changing quantity...

The physical laws, which regulate the existence and the structure of material elements are not insubstantial messages that come from their outside, from far away. These laws begin from the common " contact " that the all structural elements have with the one and the same space, the one and common complete reality, the same " communal " quantity of energy and finally from their common (invisible) substance, of which the structural elements exist as such rapid fluctuations. (62)

The total quantity of energy is fixed for the all things and all the structural elements take shape by the same fluctuations of energy in one and the same dy-

namic space. (62)

Related image: teacher_4_laughing-3

Description: A professor up on the teaching chair shows holding a rod and pointing to the blackboard. Thin rays come out of the professor's head and in the picture are ironically called "wisdomions"

COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA

How the natural laws and forces are applied. The fundamental concepts and relations for a rational Cosmology (Cosmonomy)

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16. Some clarifications on concept of "shared amount of energy"

Space as something empty and clean (with three dimensions) is already the object of geometry as an ideal and homogeneous quantity. Euclid's original geometry already gave some quantitative relations between points, lines and simple shapes. We know that a space of more dimensions in theory has given new axioms and theorems and it is described by newer geometries (as the geometries of Riemann and Lobachevsky). In these sciences, space is described as ideal and they do not study whether it is a physical phenomenon or whether it has its own structure. From the research of the 20th century we have been informed that physical space is not just a human idea and it has its own properties and an invisible synergy to energy transfer phenomena and presence of particles. A leap to think that physical space is something essential and dynamically connected to matter has already taken place from the Theory of General Relativity. Well-known physicists have already referred to free space as a reservoir or ocean of energy. The description of space-time as a rubber surface is an image to understand the space as closely related to matter, but this simile hides the physical phenomena, which are not immediately visible.

From the previous reminders we understand that space is already something we explore as quantity. But any theory has not yet been established that goes further and interprets physical space as a physical phenomenon, which is connected to matter and bodies by a known connection process and to certain physical phenomena. From my own theoretical research and according to the cosmological theory of a complete Universe in maximum Time, physical space is also something which has properties and an inseparable relationship with matter in extremely tiny dimensions. The main feature of space as a quantity is that behaves with waves, that is, it disturbs and produces forces, waves and fluctuations of energy. If I describe the physical space as a quantity of energy, by the term of "energy" I do not mean that its essence is merely such a quantity. I use the term

of energy because indeed and according to calculations, the physical space can be described and interpreted as a quantity of energy, as modern physics requires. But for my own mind it is not obvious and completely understandable what exactly is physical space as a substance and if it is purely a physical phenomenon.

I have to describe physical space in terms of physics (as energy, perturbation, wave behavior, wave contribution, etc.) because this is how we can first interpret it, before we even think about the most difficult issues regarding the properties of space. If I started writing about the space in phrasal terms that are not acceptable in physics and if I interpreted it by phenomena of my imagination, then I would certainly uproot the credibility of interpreting space according to the requirements of science and the ridicule would were easy. Already the logical phrase "shared amount of energy" to describe space as a natural phenomenon is not recognized by the trained mind of a physicist and of course raises questions. But

I am not responsible for the fact that nature includes such a phenomenon, which is invisible, intangible and does not appear from the senses as a separate thing, among other things.

The physical space is something that exists from extremely small dimensions to the farthest distances and is something by which structural elements (matter) are maintained as repetitive waves at microscopical lengths and at almost the speed of light. And let us not forget that along with this connection of matter to the shared amount of energy, many other widespread phenomena coexist, such as the gravitational field of bodies. The gravitational force which according to the GTR is a deformation of space-time also has quantitative characteristics and is described mathematically. An average energy density of space is examined and a constant is introduced to balance gravitational attraction in many modern cosmological theories. So, it is not at all strange to think of physical space as a natural quantity which is dynamically connected to matter and has the characteristic of energy.

(An image related to space-time, fountain-gif)

Description: An animation shows a fountain. Below is a description as wtitten in the treatise: “In a fountain the water is recycled and the amount of splashing water returns at a rate. How much water returns to the tank and in how much time depends on the diameter of the tube and the spurt pressure. The jet of water is constantly flowing, and the original amount of water in the tank is maintained. By changing the pressure at which water is thrown, the amount of water poured in the unit of time will also change. It would also change the recycling time, at which the total amount of water returns. If water is launched from many tubes in sync pumping from a same (shared) amount of water, then the rate change in one tube affects the pressure and rhythm of the other pipes that the water gushes from. If only one pipe pumped quickly all the water to splash it in just a moment, then it would not leave the time and the sufficient amount of water that would be needed to allow the water to be launched from the other pipes”. (p414)

17. Review and some QUOTES summarize...

Unfortunately, when we seek answers about the beginning and limits of the universe and the processes that sustain the physical world, we cannot avoid mathematics altogether. Some formulas of physics summarize how some phenomena are connected and change. Here we will not solve a mathematical problem. Rather, the cosmological interpretation presented was developed with the requirement that it be understandable in the familiar concepts of our language and with the simplest mathematical analogies (as you can see I avoid even using the word "equations"). But teachers and researchers need information in their own language to be able to understand how a new interpretation of nature relates to physical phenomena and to be able to use their own calculations to confirm the correctness of the new interpretation or to improve it. Readers who do not remember much of school physics can skip the formulas even though they are the simplest. The following considerations give simplified solutions with rational thought or are quickly drawn as conclusions and should be kept to everyone's attention.

A shared quantity of energy appears as free space, while the structural elements of this quantity are maintained as its fluctuations. The knowledge of the structure of matter has been overestimated, while the role of the whole for the presence of matter has been underestimated. The research on microscopic dimensions is a research on the limits of the Universe, because microscopic motions are realized in the total energy and this energy appears as a free space of large dimensions. That is to say, the cosmos as a full and stable wholeness is required for the existence of matter (and particularly mass) and thus matter is created, composed and maintained by wave phenomena of a shared quantity. Wave and rhythmic phenomena like wildfire at fast speeds approaching the speed of light, at the fastest rates of nature and (coincidentally) in the most microscopic lengths. Thus, a lot of these wave phenomena are detected via sensors in labora-

tories or generate results, that are called "particles" and their attributes. Each of the atoms of matter has one, the same and common nucleus: the space. And all actions from distance amongst bodies (forces) are generated by wave fluctuation of the free space. This is unification and simplification of research! (96)

Related image: full-universe-csmnm-2-en

Description: We see a dark disc with a few bright spots. Low in the picture is the note: The whole Universe in all possible ways - with everything that has been done and will be done - is present for a maximum period of time. Do you expect to see things separately (and at distances)? You see the whole universe as a "free" space. You see things separately in fractions of time...

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18. Review and first revealing calculations

Popular researchers and many others have admitted that they have failed to explain the structure of the universe and matter. They have failed and stuck to certain questions despite their innumerable studies, their excellent mathematical abilities, their inexhaustible observations of space, and despite the cooperation of the entire scientific community. **Their extreme difficulty was not due to the complexity of nature's processes**. Their extreme difficulty was due to their obsession with looking at nature as a whole of only external bodies and particles and searching in the completely opposite direction. The following thoughts give simplistic solutions with rational thinking or have come to conclusions quickly and we must keep them in mind:

A shared quantity of energy appears as free space, while the structural elements of this quantity are maintained as its fluctuations. (p32)

The total quantity of energy is the same for all things and all the structural elements take shape by the same fluctuations of energy of the one and same dynamic space. (p42)

Each of the atoms of matter has one, the same and common nucleus: the space. And all actions from distance amongst bodies (intangible forces) are generated by wave fluctuation of free space. This is unification and simplification of research! (p96)

The interpretation of the structure of the cosmos and matter by small balls and " remote controlled " laws can not explain thousands of phenomena that spring from microscopic dimensions. But most importantly, it cannot be explained why

many same particles move ceaselessly, how they are formed, where their properties (such as charge, spin, distance forces, etc.) they come from and how they all together manage to form stable things and not an infinite dust with random forms... (p57)

The physical laws, which regulate the existence and the structure of material elements are not insubstantial messages that come from their outside, from far away. These laws begin from the common " contact " that the all structural elements have with the one and the same space, the one and common complete reality, the shared quantity of energy and finally by their common (invisible) substance, of which the structural elements exist as such rapid fluctuations. (p62)

From the simplest calculations we find that the fundamental particles in the structure of matter (nucleons and electrons) are quantities of energy h·n with a fine deviation of an average value close to e-29 kg·c^2. The deviation from this average energy value is a number of only two and three digits before the decimal point. If the free space has such an energy density around the average value of e-29kg·c^2 then it seems that the fundamental particles are the work of a wave process (where energy fluctuations occur around the mean value).

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Image: black-hole-cluster-rec- or black-hole-...

19. The adventure of physics until it is discovered that the structure of the atom is purely a work of wave phenomena and not a union of particles

Almost 100 years of cosmological research with science fiction and a deceptive view about the total creation of the cosmos have passed; a failed and puerile view like the geocentric view, which ignored the logic of concepts, discouraged research, left many unanswered questions and in addition did not respect the laws of physics – especially the fundamental principle of energy conservation. And all these obstacles have prevailed for many decades up today, because some researchers in the early 20th century tried to philosophize according to their own axiom: That nature is a plurality of individual bodies, which are moving according to the laws of mechanics and thus we need to explain all phenomena mechanistically: According to mechanical motions and to the forces of separated bodies, even life itself. Mechanical motion, that is, pull or push an obstacle forward, turning the body so that it does not fall on the other, if it collides, then its course will change or body will be broken... For physicists the main difficulty was the large number of material bodies, the technical difficulties of measurement and the complex calculations.

In the Newton era, the role of electromagnetism in nature was unknown. Since then, few researchers have slowly realized a different reality consisted of waves. At the beginning of the 20th century, many physicists and technicians were fascinated by the phenomena of electromagnetism and their imagination was stimulated (Nikola Tesla is representative example). But for almost all the researchers, the whole world was the world of separate bodies and the external forces which are applied amongst them. This common view of separate bodies and movement in the sense of mechanical application has so far been the insurmountable obstacle against the development of cosmology.

It is indicative of how physicists had hypothesized the structure of matter, hav-

ing become accustomed to the image of complex bodies and repeating what they had learned. One of the first descriptions of the atom of matter has been called "raisin bread model". This description was supported by an excellent (and Nobel Prize Winner) physicist, Joseph Tomson, who discovered the electron somewhere in 1904. This was an improved description compared to the previous attempt by the philosopher and pioneer researcher John Dalton. The description of Dalton (somewhere in 1805) was approaching the ancient view of Democritus and the electric charge was ignored in its own description. Dalton reinstated the rational theory of Demokritos through laboratory observations on chemical reactions and through the behavior of gases. But he added some laws and prerequisites to explain the stability of chemical elements and some proportions in reactions and their chemical compounds, according to the measurements which he achieved with the scientific instruments of his time.

picture: particles-frame-1b-en

Description: Some particles in reddish color appear as trapped inside tangent circles that look like their borders and traces of their orbit. A little face in the bottom right corner with a palm under its mouth wonders: Light moves freely and quickly like a god without "infinite inertia". What keeps us in here and people have called us "particles"?

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20. A "shared amount of energy" where (electromagnetically) seems as “free space” and was ignored to research because it was observed as a lack of reality

A phenomenon is connected permanently with the presence of each material thing and because of our experience, we had not thought it as energetic and real.

Research is facilitated by an easy finding that could have been formulated and highlighted at least 100 years ago. We all realize that an immeasurable deviation in a value or an amount continuing for a long time, then the deviation will increase noticeably. We all realize that the insignificant increase of one cent in the value of a product will accumulate and will become a significant amount of money if we calculate the sum for a large number of pieces of this product. For thousands of pieces one cent will be multiplied and become thousands of cents. How important is a minimum deviation and how much it is multiplied is well known by mathematicians, product manufacturers and economists. As for nature research, everyone thinks and observes that things are formed by particles, which are not immobile. Everyone observes and repeats how everything in nature moves and consists of tiny quantities. Therefore, the following question arises: How is nature preserved and how does the cosmos exist with its laws, as we observe it in unbelievably long distances, in many large dimensions of things and despite the vast amount of particles? The most insignificant deviation in matter formation, the lesser deviation in the velocities and radius with which the structural elements are formed, each deviation in the charge of the electron or proton, etc. would be subversive and destructive for nature in the large dimensions. After the increase of distance the consequences would also be subversive and nature would appear totally different and with other laws – if it did not collapse. The most insignificant deviation and an error in the properties of particles multiplied several million times over as time passes or after the formation of astronomical bodies would be devastating and nature could not continue to function according to the same laws.

If such an insignificant divergence does not happen and if the quantities of structural elements are formed from the beginning just as much as needed in order to allow nature and the cosmos to have its laws, **this astounding precision will reveal that all these quantities of matter are regulated by something that is common, shared and exists everywhere**. **Finally, the question is more aptly worded as follows: What is it that exists everywhere and is linked to the quantities of matter to all its extent and with all these movements?** It can not be something that exists on a planet or in a galaxy or exclusively here in my home. Well, what can this be according to the experience and the knowledge that we have as humans, which is not only in our imagination and which we can investigate? The first and only observation of the unmistakable answer to this question cannot be anything but "space". Only this phenomenon appears undoubtedly to be everywhere in the world and is connected microscopically with the structural elements.

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Picture: newatlas-Depositphotos

Description: An imaginary image of the intergalactic volume within a radius of billions of light years for understanding the world from an external perspective, as a set of distributed matter in astronomical concentrations

21. A great failure will go down in the history of physics.

You have the opportunity to be the first to know what the obstacles to cosmological research were. Read the previous posts carefully to get a complete view and for better understanding. Those who are still trying to explain the physical world starting with particles have turned to the wrong side of research. Teachers repeat in tutorials and educational institutions what they have learned and are paid, researchers make new discoveries and are satisfied, technicians and designers are also paid. But they do not answer the first questions about physical processes and, unfortunately, they are misleading this particular research, from which everyone would like to know the answers.

Here we have explained how a common quantity that appears as empty space is that very same complete Total of nature with its total energy in equilibrium (because the total amount of energy is not concentrated in matter and astronomical bodies). See the next post for the law for the existence of particles from the fluctuation of a shared quantity of energy. It is such a simple law of nature that even good elementary school students can understand it. This certainly won't appeal to those who had high expectations of their math skills.

Image: stay-informed-4

(Here on the Philosophy and Cosmology Facebook page we do not present the history of how some important discoveries happened in science and how cosmology happened to develop. Here we walk the route from which we are rationally led to the solutions and answers sought. A great failure will be written in the history of physics. Readers learn what the correct path of thought is and how certain serendipitous discoveries could have preceded many years earlier and are deduced from common observations and from logical considerations that had to precede)

22. The particles as quantities with mass and corresponding energy and in correspondence to a velocity. The attempt to utilize the equations

Many natural phenomena, which remain the same or are repeated in space, are explained by the interpretation of structural elements as energy oscillations to a shared quantity that is balanced and appears as space. While the properties of particles (how they come from) with the description of particles as separate are not explained. Research is misleading and the interpretation of nature is impossible, with many impasses of thought.

So when I saw the first calculations for particles with mass corresponding to a certain velocity (Mplanck / M = c / V) then I realized that the generation of particles could be sought by calculations for changes from the perturbation of the shared energy (which appears as a global space) and in high-speed motions that occur in fields (rather than particles). According to the Mplanck / M = c / V equation, the particles were the result of reduced velocity compared to the maximum mass (M = hc / G under square root). But many questions followed. The first questions I asked the man who correlated the mass of physical constants [√(hc / G)] with the maximum speed of light (c) had no answer. He did not seem interested in answering the questions I was asking him. At first I had some difficulty understanding some of the symbols he used in his simple equations and I quickly added my own signs. Here I could recount my personal relationship with the unknown author and his life, as some might like with more interest. But such a narrative does not fit here in the presentation of cosmological theory. I limit myself to saying that this man immediately stopped talking about his theoretical findings when he saw that I was trying to understand his published equations. But he did not stop provoking me whenever he said that he keeps important equations hidden, which he will never publish if one does not pay a lot of money. He was not interested in my own (rational) thoughts and my effort continued without his help.

One of the first (and naive) questions was where such a particle of maximum mass [√(hc / G)] of the order 10^-6 gr can be found. His own short answer was that it is a theoretical mass that exists ideally as a law in nature. The next questions in my mind were about the amount of matter in nature and in astronomical bodies and so how is this multiple amount of matter explained? How did astronomical bodies get more mass? Were there many Mplanck particles of maximum mass? How does matter have the same structure everywhere that includes the same moving particles? The maximum velocity corresponding to a particle of maximum mass (M = hc / G under square root) was the velocity of which motion? The velocity corresponding to particles of smaller mass was the velocity of which motion? These were some of the first questions in logical thinking that went unanswered.

The introduction of the limits to increase in mass and correspondence to a velocity (Mplanck / M = c / V) was a mathematical description without interpretation.

But the introduction of the limits seemed logical and the simple equations gave results consistent with the measurements for the structure of matter because the maximum mass of the order of 10^-6gr came from the three-four most important constants of nature (c, G, h, π, where M = hc / G in a square root I remind). This theoretical mass (of the order of 10^-6 gr) derived from the constants of some fundamental phenomena of nature was known, without any explanation. From the daily publications and physics books, no one seemed to research and exploit it. The correspondence in the increase of mass to a velocity up to the limit of [√(hc / G)] was the simplest thought and "transferred" the limit of the maximum speed c to all other physical phenomena. The limit was transferred from velocity to mass and from mass to energy, force, rate of change and all physical quantities.

The previous questions about particles immediately disappeared from my own

mind with the interpretation of particles as oscillations in a shared amount of energy. My own questions were about how a shared amount of energy that exists as a global space can give large quantities of particles and bodies of total mass and groups of astronomical bodies. We do not observe particles of such a large mass (10^-6gr) in the structure of matter (since this is a mass limit in nature, as was the speed c). Nor do the atoms of matter have such a large mass. How is this explained? Why do atoms of matter repeat with a combination of separate particles and the mass not increase for a single particle? How is a minimal number of particles detected in the structure of matter, since theoretically innumerable particles can exist (corresponding to any value of a velocity)? Why does matter have a structure with smaller mass particles and where does nuclear force come from? To give these answers rationally I had to investigate the coincidence of a velocity corresponding to a certain mass (according to the relation Mplanck / M = c / V). This velocity (V = c M / Mplanck) paradoxically was the velocity from the equation for the orbit of astronomical bodies in the gravitational field √(GM / λ). (The man who made this observation according to the Mplanck / M = c / V correspondence called it "gravitational velocity"). So I started to analyze the physical constants c, G, h, π, and investigate the proportions they have locked and how these proportions are related to the upper and lower limits of changing physical sizes and possibly to some other constants.

Picture: karamihas-queries-b (Description of the Mplanck / M = c / V)

The particles as quantities with mass and corresponding energy and in correspondence to a velocity. The attempt to utilize the equations (2/23, 2008-2012)

A velocity corresponded to a certain amount of mass and this velocity could be paradoxically calculated from the equation for the orbital rotation of astronomical bodies √(GM / λ).

[V = c M / Mplanck = √(GM/λ)]

But instead of the radius R of the body at the denominator, the calculations gave correct results with the energy wavelength corresponding to the mass of the particles (according to the equation E = Mc^2). The constant of gravity G has been calculated from measurements within the Earth's gravitational field and the orbit of astronomical bodies in our solar system and in years when the structure of matter was unknown. The force of gravitational traction is the weakest (10^36 times the e / m) and is considered negligible in particle calculations compared to other forces. If we say that a strangle has a gravitational field and that two strangles are attracted to each other we will laugh. So when the gravity constant G is introduced into a simple equation that gives calculations for elementary particles (which are invisible and many trillions of times smaller than a grain of dust) we would not expect results that are related to other sizes or characteristics of the microcosm. Surprisingly, one has noticed that in the denominator of the relation √(GM / R) that gives a centripetal velocity for astronomical bodies, the wavelength λ corresponding to a particle can be inserted instead of a radius length, when we convert the particle into electromagnetic energy. This is a simplistic thought that only a child would dare to do or someone who does not know physics. And of course when we calculate a velocity according to the relation √(GM / λ) adapted for particles, then we find an extremely low velocity value, which would be unnoticed.

However, this extremely low velocity in the calculations together with the familiar constants h and c which are related to electromagnetism give a result of high accuracy and reveal the involvement of the constant G in the microscopic processes.

It was a great challenge for me to explain what the role of the G constant can be in microscopic processes, determined by forces far more powerful than gravity and at speeds that reach the speed of light. What relation e.g. may have a velocity of the order √(GM / λ) = 10^-15 m / sec as corresponding to an electron with the speed of light which is of the order of 10^8 m / sec? Many more questions arose and coincidences showed that the gravity constant G was always involved along with the h and c constants in the tiniest dimensions of nature. And it was understandable to me that the constant G in microscopic processes did not express a gravitational force or a gravitational field as we have learned from the observation of astronomical bodies. The constant G in the microscopic processes showed a change in the electromagnetic energy which we calculate with the constants h and c and from this extremely fine change (electromagnetic fluctuations) the inertia and forces for the creation of particles were beginning.

Picture: chains-hcG-skipping-rope

Description: A rhythmic gym sketch and a graph with the following note: “When the rhythm is lost, then the result is destroyed. Especially when the pace is the fastest and when the synchronization of many movements are achieved. The heart works in rhythm, the atom of matter within also works in rhythm". Further down, chains are shown ending in a padlock and down in the corner are shown the keys. Above the padlock are marked the letters of the physical constants h,c and on the padlock around the keyhole is the letter G

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (3/24, 2008-2012)

[V = c M / Mplanck = √(GM/λ)]

An interpretation was definitely needed. What was the velocity that corresponded to a particle? Speed in what motion and where? Were there particles moving and their mass increasing with increasing speed? And a particle that would have the mass of the three physical constants [√(hc/G)] where it was? What was the motion of ... this relatively "heavy" particle and in correspondence with the speed of light? The fixed structure of matter could not be explained by these thoughts and questions about moving particles and velocities. We would expect a chaos from all the different particles that move randomly without forming any fixed body or any organized set of bodies. The questions also showed that this correspondence of mass and velocity (with the mass limit M = √(hc/G) is only theoretical and not obviously useful for research.

By interpreting the structural elements as energy oscillations on a shared quantity (which is balanced but seems like space) I had realized that the previous questions were misleading. That I had to think about quantities of energy and oscillations and not about particles moving like tiny spheres. That the mass of the particles was the result of a process of slowing down by the maximum of light with an amount that was not present as a particle but somewhat differently. The image of physical space was the only phenomenon that matched and was considered to be the result of a universe that was complete in a maximum period of time. I understood that in this way I was creating other questions about the space itself, about the shared amount of energy and their invisible movements. But I was sure that the difficult problems that are solved are more and this was their only and simplest solution. Because space was a certain phenomenon with which all the particles of the world are connected. This connection would solve the most

difficult problem, which was

the similarity of the structural elements within the universe and how the structure of matter is so dynamic and kinetic without dissolving like fire or dust.

My four-year search focused on answering this question, how do particles with lower mass correspond to a lower velocity (Mplanck / M = c / V) and what does this velocity V have to do with the velocity of the relation (√GM / λ). I had realized that this was not a velocity of a mechanical motion or motion of a particle as in calculations for orbits of planets, but it was a velocity of a wave motion of space itself which begins at a maximum speed and somehow slows down. The investigation of these relations between velocity and mass and with the physical constants (which gave a maximum mass limit [√(hc / G)]) immediately revealed the mediation of space as a shared amount of energy with fluctuations, as will be explained in more detail subsequently.

The calculation of the mass of particles in equivalent energy according to the relation E = mc^2 enabled the theoretical possibility to investigate the particles as quantities of e/m energy. From the particles as quantities of energy a corresponding wavelength and a frequency of this quantitie of energy could be calculated according to the relations λ = h / M·c and n = Mc^2 / h. Thus these calculations could reveal some relationships that the particles have with the energy of e / m waves and their velocity, but also possible relationships that particles have with each other. Logically, the calculations began using the measurements we have for the basic particles we detect in the structure of matter. But it was obvious even before any calculation that the mass of particles was due to some reduction in the maximum speed of light and

this was a significant difference between particles and e / m waves.

Energy in the form of e / m waves up to light have lower inertia (hf / c^2) and

incidentally a transmission at the highest speed. The particles which have greater inertia according to the relation M = hf / c^2 = E / c^2 did not have the behavior of e / m waves. Moreover now with the equation Mplanck / M = c / V particles had a mass associated with a reduced velocity compared to the maximum mass (Mmax = hc / G under square root). It was so obvious and logical that particle mass is associated with a reduction from a maximum speed, and it is unbelievable that we read daily about unknown worlds and strange phenomena, instead of everyone discussing these apparent relations of energy to mass and velocity. Even someone who does not know physics can observe the contrast that mass has with electromagnetic energy in terms of the property of velocity:

E = h f = M c^2 | M = h f / c^2 = E / c^2

Look at what changes in formulas without knowing physics. In the energy of e / m waves the limiting speed c is on the numerator and multiplies. The speed c in the relation of mass is at the denominator and divides. A quantity of energy with the movement of light is in the first formulas, while in the other formulas are particles that have increased inertia and are located in space. Does anyone remember books writing these thoughts and directing research in that direction and so simply that even good high school students could help? (I have never encountered these logical thoughts anywhere).

Image: coulomb-gravitat-forces

Description: The law of the force of electric charges and the gravitational force. Images of charged particles q1 and q2 that are close to each other and bodies of masses m1 and m2

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (4/25, 2008-2012)

[Mplanck / M = c / V]

[V = c M / Mpl = √(G M/λ)] → [M = V·Mpl /c]

[c = √(G Mpl/λpl)]

It is recalled that cosmological theory begun from the definition "for a complete Universe in all possible ways within a maximum period of time" and interprets free space as a shared amount of energy. Space was identified with a quantity of energy due to the simultaneous presence of the nature as a whole. Matter has been identified with rapid changes on this global amount of energy, which remains in equilibrium. The total amount of energy is the same for all things and all the structural elements are formed with the same energy fluctuations of one and the same dynamic space.

The latest posts contain more Physics and simple equations that for many readers will be indifferent. You will see with these relations and calculations of physics that the basic thought for the interpretation of nature is not just a general thought and formulated only by rules of logic. It reveals what are the physical phenomena by which the structural elements are maintained as energy oscillations in a shared quantity and are explained in detail. We see by simple equations that the calculations are consistent and phenomena we describe agree with the measurements of the physical forces and fundamental properties of matter, as modern research has succeeded. From these first calculations of the relation of particles to mass, to energy, to the speed of light and at a reduced speed, a shared amount of energy is revealed. The physical constants c, G, h appear to be interdependent and reveal the strongest force along with the weakest force in nature. We have begun to describe the process by which a large amount of energy is represented by fluctuations and how particles are associated with these fluctuations as detached quantities of energy. Readers who have difficulty with physics

will read important conclusions and answers that no one has given them. They will understand better later in the posts. I ask for their patience and understanding. Modern researchers think only in language of physics and derive certainty through calculations. I tried as much as I could to use the valuable knowledge of physics and to prepare the solution of the most difficult problems, since the professors failed or were misled for various reasons and in research centers they have many other and time consuming tasks.

From the known physics we have the equation M = m / √1-(v^2 / c^2) which gives increased mass m for higher velocities v and infinite mass when the velocity v = c. It was logical from the first thoughts to look for the velocity V = c M / Mplanck from this well-known equation. That is, it was interesting to look for the relation of the velocity v of this Lorentz-Einstein equation to the velocity v of the unheard equation V = c M / Mplanck = √(GM / λ) according to the limit of the maximum mass Mplanck = √(hc / G). The equation M = m / √1-(v^2 / c^2) give a maximum mass Mplanck = √(hc / G) when we put in the numerator a rest mass m of a particle and the velocity v (in factor γ, as they call it) to approach the maximum speed c.

The velocity v must be so close to the maximum speed c that from the calculation √1-(v^2 / c^2) we find an extremely small quantity approaching zero for a minimum mass m on the numerator. The calculation is extremely difficult and can not be performed with common calculators.

The denominator √1-(v^2 / c^2) must multiply the mass m of the numerator so many times that it does not exceed the limit √(hc / G) = 5.45624x10^-8 kg.

<·> When we see the equation M = m / √1-(v^2 / c^2) with a limit on the increase in mass up to the limit √(hc / G) then the velocity v will never reach exactly

the maximum c. The velocity v will approach the maximum c only for the lowest mass values m, such as for photons and particles. That is, the denominator 1-(v^2 / c^2) should be close to zero.

Theoretically, the denominator would be the number (0) with 41 zeros after the decimal point for a particle of minimum mass / inertia m = h ·1Hz / c^2 ≈ 10 ^-50 kg. Then the velocity v in the fraction v^2 / c^2 will be almost c but with an extremely small difference so that the ratio of the two velocities v^2 / c^2 will approach the unit and subtraction 1-(v^2 / c^2) will give the number close to zero (with many zeros).

Conversely if the mass m on the numerator is almost the maximum mass of our (any) limit, then the denominator 1-(v^2 / c^2) should be 1. That is, the velocity v in the fraction v^2 / c^2 must be close to zero. The velocity v in the fraction v^2 / c^2 for the mass limit Mplanck = √(hc / G) will be almost 0 with an extremely small difference of many zeros from absolute zero. The subtraction 1- (v^2 / c^2) will give the number extremely close to the unit with a difference of 0 followed by 41 zeros after the decimal point.

Image: 47Vg-re-animation-

Description: An animation shows waves that rotate like a stream of water and in the centre where it is illuminated there is a dark hole. The following note is written: particles not only move but are also the results of wave and synchronized motions

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (5/26, 2008-2012)

After investigating the equation M = m / √1-(v^2 / c^2) with limit on the increase in mass, we find that:

· The equation √1-(v^2/c^2) = mo /M = Vm / c.

That is, the relation √1-(v^2/c^2) gives a result such as the ratio of the velocities between the maximum c and the velocity from the equation V = c M / Mplanck = √(GM/λ).

· The velocity from the equations V = c M / Mplanck = √(GM/λ) is related to a decrease in velocity and to the creation of particles from energy hf. This decrease is initially shown by the relation √(c^2-V^2)/c = √1-(v^2/c^2). Minimal values of inertia correspond to minimum values of reduction from maximum speed c, while maximum values of inertia correspond to maximum values of reduction. The maximum reduction from the maximum speed c corresponds to the maximum mass Mmax=√(hc/G).

· The gravity constant G in the relation √(GM / λ_m) does not determine the force or acceleration of the gravitational field between particles, as a physicist would hastily think. The constant G in the microscopic changes adjusts the ratio at which the maximum speed c decreases. Exactly by what process, this is the question we are trying to give the full answer. For the explanation it is necessary to take into account a shared amount of energy by which the e / m phenomena and particles are created due to its disturbance.

· The constant of gravity G is presented by microscopic processes and therefore the gravitational force is the result of a change of another force in the atomic dimensions.

· The velocity v = c M / Mplanck = √(GM/λ) also derives from the relation of the energy to the minimum wavelength of the maximum amount of energy corre-

sponding to the maximum mass √(hc/G) that is:

v = c M / Mplanck = √(GM/λ) = f·Λplanck. A minimum length Λplanck is always involved in the change of the shared energy, as the upper limit is imposed in the increase of the speed and the inertia with the engagement of the constant G.

In conclusion:

After investigating the equation M = m/√1-(v^2/c^2) with a limit on the increase in mass we find that √1-(v^2/c^2)=√(c^2-V^2)/c.

The equations M = m_o /√1 - (V^2 / c^2) = m_o c/√(c^2 – V^2) are equivalent. But we find from the second equation that when the velocity from the subtraction √(c^2-V^2) is equal to the velocity V = c M / Mplanck = √(GM/λ) then the mass m_o on the numerator must be is as much (ie M=V·Mpl/c) as corresponds to the velocity V = c M / Mplanck = √(GM/λ) so that the result gives the maximum mass Mpl and not more increased.

<·> If the result of the equations M = m_o /√1 - (V^2 / c^2) = m_o c/√(c^2 - V^2) is always the maximum mass √(hc/G) then the velocity V can not be any and is a function of the mass m on the numerator and vice versa. The presence of light and the minimum mass of photons agree with this interpretation of the equation.

<·>The particles according to the equation Mplanck / M = c / V are related to a reduced velocity compared to the maximum mass Mmax = √(hc/G) and theoretically innumerable particles can correspond to any value of a velocity. However, very few particles are detected in the structure of matter. This observation reinforces the explanation that in nature particles are created by a specific process from an amount of hf energy that does not exist in particles. With this interpretation of particles (as a result of a wave process on a shared quantity) the velocity v of the equation v = c M / Mplanck = √(GM/λ) is not a velocity of external motion like that of particles. The velocity v of the equation v = c M / Mplanck = √(GM/λ) is a velocity subtracted from the maximum c. The inertia (M = V · Mpl / c) and corresponding particles are represented by this reduction in velocity v = c M / Mplanck

= √(GM /λ) from the maximum c. If so, then which physical phenomenon has the maximum value of the speed c?

The equations give a quantity of mass for each quantity of energy E = hf => E/c^2=M. But extremely few particles are retained in the structure of matter. This observation also requires us to think on mass of particles as a result that includes other physical phenomena besides the quantity of energy E = hf. That is why one of the first thoughts of this research was to distinguish the mass hf / c^2 where is not found in particles under the name of "inertia".

Picture: table-reduced-speed. An indicative table with the amounts of reduction from the maximum speed c to the selected frequencies is following. If h·1Hz = Emin → Emin /c^2 = Mmin. As it seems, the decrease of maximum speed is extremely little (imperceptible) for the whole known electro-magnetic spectrum, even for the elemental particle such as an electron. The equivalent inertia E/c^2 = M = V·Mpl /c

Frequency in Hz	Reduction m/s of the speed c [V=M·c/M_{pl}]	Equivalent inertia in kg [M=V·M_{pl} /c]
1 Hz	4.0508×10^{-35}	7.37248×10^{-50}
3×10^{9} (Telecom.)	1.215241×10^{-25}	2.21175×10^{-41}
7.5×10^{14} Violet	3.038103×10^{-20}	5.52936×10^{-36}
1.2356×10^{20} Electron	5.0052×10^{-15}	9.1094×10^{-31}
f_o : 2.7204×10^{21} =√7.40082×10^{42}	1.1019×10^{-13}	2.0053×10^{-29}
2.272×10^{23} Neutron	9.20337×10^{-12}	1.6750×10^{-27}
2.4686465×10^{34}	1 m/s	1.820×10^{-16}

(Page 248 of the book)

If the visible light has a speed almost equal to c and it is minimally reduced according to our calculations, then what physical phenomenon has exactly the maximum speed c?

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (6/27, 2008-2012)

The previous five posts are an artistic representation in the language of physics from the collection "Simplicity of nature, because its variety comes from small inaccuracies". Physical phenomena are described according to a rational interpretation of their creation and are fundamental. In the description of phenomena simple formulas and symbols are attached for the magnitudes, quantities and phenomena that change. Researchers are informed by formulas and calculations for their own more careful understanding and to advance cosmological theory further and for any corrections that may be needed. The posts are not just for physicists and researchers. These are for all readers and everyone will find important answers that understand. Good Basic Education students can also understand the descriptions with the formulas and make calculations out of curiosity and educational interest.

The rational interpretation "for a complete Universe in all possible ways within a maximum period of time" that exists at the same time as a shared amount of energy and is presented as free space is extremely simple as no one expected. The space was interpreted by a balanced amount of energy, by the simultaneous presence of the world as a whole. Matter is interpreted by rapid changes in this universal amount of energy, which remains in equilibrium. If this beautiful theory had been published by an American or British University, many popular cosmology books would have been written now and all physicists in my small country would have emerged as investors entitled to a share of this conquest. They will soon realize what they lost through their hands!

[$V = c\,M / M_{planck} = \sqrt{(GM/\lambda)}$]

<·> An extremely low velocity -V together with the familiar constants h and c which are obviously related to electromagnetism give in the calculations high ac-

curacy results and reveal the involvement of the constant G in the microscopic processes, as we said. The velocity V = c M / Mplanck = √(GM/λ) comes out because we have a quantity of mass / inertia from the relation of the four most important constants of nature [c, G, h, π, remind M = √(hc/G)]. The inertia M = √(hc/G) = 5.45624 ×10^-8 kg corresponds to the limit speed c = 2.997925 × 10 ^8 m/s. Lower inertia values correspond to lower velocity values. This means the equation Mplanck / M = c / V and its application to nature has been investigated.

· See below with an example that the speed from the formula √(GM/λ) is not useless.

· See that the wavelength λ at the denominator of the relation √(GM/R) is not randomly and incorrectly entered.

· See with an example how much research has been simplified and that these few equations with physical constants give right results:

Picture: poem-of-equations-3

Description: Colours in a whirlpool shape along with a curved pentagram with musical notes. It is written above, "Nature's simplicity", because its variety comes from extremely small inaccuracies!

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (7/28, 2008-2012)

We can calculate the energy of particles E = M·c^2 (according to Einstein's equation) through Newton's formula (F=GMM/R^2) which referred to astronomical bodies:

E = G Mpl Mpl / λ_e = G 29.7705 ×10^-16 / 2.4263 ×10^-12 = 19.8644 ×10^-26 / 2.4263 ×10^-12 = 8.18711 ×10^-14J

That is: M_e·c^2 = G Mpl Mpl / λ_e = h·f_e

The equation: G·Mpl^2 = h·c

If we enter in the denominator of the formula of gravitational force the corresponding energy of an electron E_e = h·f_e then the result is normally a length, the length Compton λ_e = h /c·M_e :

λ_e = G Mpl Mpl / h f_e = 2.4263 ×10^-12 m (That is = c / f_e = λ_e as well as h/c·M_e).

* Where Mpl = 5.45624 ×10^-8 kg, M_e = 9.10938 ×10^-31 kg and λ_e = 2.4263 ×10^-12 m. We use units of the International System.

The calculations are consistent, but the aim was not to calculate what was already known in physics. From the correlations with the physical constants c, G, h and with the limit mass M =√(h·c/G)] simple equations were obtained which connect the upper limit of speed with the maximum inertia and with limits of certain other physical phenomena (such as energy E, frequency f, wavelength λ, rate of change ± a). Changing one size gives a proportional or inversely proportional change to the other sizes. Research on the relation between mass and e / m energy after this correlation has been simplified. Because we know well what phenomena the physical constants c, G, h are associated with. The equations that came out

are not just equations of numbers like in mathematics.

<·> Now we have equations that give the result with the constant of gravity G and equations that give the same result with the constant h of the electromagnetic phenomena, without the constant G. We achieved this with the equation Mplanck / M = c / V and according to the limit of maximum inertia M =√(hc/G). The newer relations M·c^2 = h·f according to this correspondence between velocity and inertia give the same result as the relation G M_{pl} M_{pl} / λ (as you can see above in the simplified example with the electron).

So these simple equations are as revealing as an X-ray or as an analysis of the insignificant variations that researchers study in primordial background radiation. Because, with these simple equations we can see:

What exactly changes in physical phenomena when they are described with the constant of gravity and what changes when we calculate the same result with the constant h of electromagnetism.

So if we look at numbers what changes in physical phenomena when they are described with the constant G of gravity and what changes with the constant h of electromagnetism for the same mathematical result, then great secrets of nature are revealed. The relations of physical forces begin from microscopic dimensions and confirm the explanation for space as a balanced amount of energy (due to the simultaneous presence of the universe as a whole) and for matter as rapid changes of this universal amount of energy, which is constantly returning to equilibrium.

Picture: min-max-limits (the following table with a background of bright curved lines)

THE RELATION TO THE UPPER LIMIT (max)

$$\frac{M_{max}}{M} = \frac{E_{max}}{E} = \frac{V_{max}}{V} = \frac{f_{max}}{f} = \frac{a_{max}}{a} = \frac{\lambda}{\lambda_{min}} = \frac{F_{max}}{F} = f_{up}\uparrow$$

$$f \times f_{up}\uparrow = f_0^2$$

THE RELATION TO THE LOWER LIMIT (min)

$$\frac{M}{M_{min}} = \frac{E}{E_{min}} = \frac{V}{V_{min}} = \frac{f}{f_{min}} = \frac{a}{a_{min}} = \frac{\lambda_{max}}{\lambda} = \frac{F}{F_{min}} = f_{down}\downarrow$$

The number fup↑ (or ratio d), which occurs as a frequency by the ratio of the sizes with the maximum (upper) limit, determines how much the minor amount can be increased in order not to surpass the maximum.

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (8/29, 2008-2012)

<·> The inertia Mpl =√(h·c/G) = 5.45624 ×10^-8 kg corresponds to the limit speed c = 2.997925 ×10^8 m/s. Lower speed values correspond to lower inertia values. This is written shorter by the equation Mpl / M = c / V. From the investigation of the equation with the best known particles it appeared that the inertia (M=V·Mpl/c) can occur in corresponding particles with decreasing velocity v = c M / Mplanck = √(GM/λ) from the maximum c.

<·> The reduction of the limit speed c was one of the first consequences that appeared in the investigation and this was only the beginning of the investigation in terms of physics. From the equation

M = mo /√1 - (V^2 / c^2) = mo c/√(c^2 - V^2) according to the maximum mass limit √(hc/G)

the relation between inertia and an extremely subtle reduction from maximum speed became apparent. The reduction in the maximum speed for the energy of an electron (corresponding to an h·f quantity of a corresponding frequency of 10^20Hz) is only 5.0052×10^-15 m/s. The reduction in maximum speed even for electromagnetic waves of higher frequency than light >10e14Hz is so subtle that we are unable to measure it. Simple calculations with these simple equations according to upper and lower limits on the changes reveal the connection of physical phenomena with extremely subtle deviations of magnitudes, which researchers have not yet understood. The formulas of physics as used here and the proportions as summarized in the equations are for the level of knowledge of High School students. It is worth trying a little to learn them and do the calculations yourself because without knowing physics you will be surprised to see one of the reasons that modern researchers are unable to provide solutions and connect the theory of gravity with quantum phenomena.

Think that the electron is at the foundation of nature and that the structural elements (matter) combine and create with the mediation of electrons. So according to the equation Mpl / M = c / V and the limit of maximum inertia Mpl =√(hc/G) = 5.45624 ×10^-8 kg a velocity -V is subtracted from the maximum c and for an electron corresponds to the velocity that is only 5.0052×10^-15 m/s. That is, the number in another wording is 0.000000000000000500513337 m/s. Want to see the result of the difference in this calculation?

(2.997924e8)−(5.00513337e-15) = 299792399.99999999999999499486663

That is a reduction of 0.000000000000000500513337 m/s from the maximum speed (~ of light as we say) again gives almost the speed of light. If we think about it upside down, a subtraction from the maximum speed that almost zero gives such a small speed difference, which corresponds to the inertia of an electron:

299792400-299792399.99999999999999499486663 = 0.000000000000000500513337

> The decimal digits missing from the speed of light to have the measurement exactly (many trillion times more than the measurement now limited to 10 digits) are those digits that change at the speed at which tiny energy changes occur which are related to an electron.

This means that we do not know the exact limit of the maximum speed.

The speed of light from the measurement we know is satisfactory for the calculations of phenomena that take place in sizes larger than the atom of matter and for the electromagnetic spectrum as we know it and use it in technology. But the limit of maximum speed in nature is extremely high accuracy and a number of natural phenomena are associated with extremely small deviations of speed at the maximum limit, which we ignore. This means that physicists who use all the mathematical tools to give solutions have failed not because of some mathemati-

cal difficulty, but because the measurements they use are inaccurate compared to the ones they need. They can not calculate the extremely subtle deviations and do not see deviations. They make calculations that do not take out the deviation or take it out with an extremely large deviation and incorrectly. In short, measuring the speed of light is as little accurate as if we lived in the stone age and thought of building a processor of today's electronic technology.

Below we see the result that nature needs to not exceed the maximum inertia limit Mpl =√(h·c/G) = 5.45624 ×10^-8 kg when the maximum speed is subtracted and remains almost zero or how much can change the minimum inertia (of one photon) so as not to exceed the maximum limit.

Picture: limitup (A book excerpt in picture)

<·> So that the equation $M = m_o / \sqrt{1 - (V^2 / c^2)}$

does not give an infinite increase of mass but the maximum quantity of M_{pl}, the speed V must not be precisely equal to c. For result of maximum mass M_{pl} if the $m_o = M_{min} = 0.737248 \times 10^{-50}$ kg the speed V must be almost equal to an approximation that easily reveals how much the detail is important in nature. A minimum mass M_{min} has ratio 7.40082×10^{42} to the mass M_{pl}. That is, if the minimum mass M_{min} is multiplied by this number then it will not exceed the maximum amount. The denominator $\sqrt{1 - (V^2 / c^2)}$ must not be zero, but must be $1 / 7.40082 \times 10^{42}$

$M_{min} / M_{pl} = 0.13512 \times 10^{-42}$:

The denominator: $\sqrt{1 - (V^2 / c^2)} \approx \sqrt{1} – 0.999999...817426 \approx 0.13512 \times 10^{-42}$

The ratio $(V^2 / c^2) \approx 0.999999...$ 817426 (86 digits after the point)

The difference: $1 - (V^2 / c^2) \approx 1 - 0.999999...$ 817426 ≈

0.00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000182574

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (9/30, 2008-2012)

We took into account that the mass Mpl = √(hc/G) = 5.45624 ×10^-8 kg corresponds to the limit speed c = 2.997925 ×10^8 m/s. Lower inertia values correspond to lower velocity values, ie Mpl / M = c / V. The lower velocity values coincide with the velocity of an equation containing mass and the gravity constant G, i.e. V =√(GM / λ). We started from this correlation and with simple calculations for quantities and magnitudes on the fundamental phenomena of nature. The correlation of the mass of an electron with an extremely low velocity [v = c M_e / Mpl =√(GM / λ) ≈ e-15m/s] immediately revealed important processes in nature associated with extremely subtle changes in the maximum speed c, which are difficult to measured.

The introduction of the upper and lower limits on the change of energy and the corresponding inertia are simplified the investigation of these equations and facilitated the application of known formulas of physics. The minimum and maximum limits on inertia M, energy E and velocity V were associated with a minimum and maximum limits on the magnitudes of other physical phenomena such as frequency f, wavelength λ, rate of change ±a, period T, force F. Thus it was rationally possible to investigate by calculations various features of the structure of matter (such as electric charge, momentum, number and relations of particles, radii lengths, etc.) as results of the change of these fundamental phenomena. The calculations with the specific minimum and maximum limit on inertia [Mpl =√(hc/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg] give high-precision results that match the properties of the structural particles and electromagnetic phenomena.

> The correlation of inertia to a velocity according to the equation Mpl / M = c /

V revealed in numbers, that a minimum inertia is not missing from the minimum quantities of energy (M = V·Mpl /c = h·f/c^2). On the other hand, the equation of the mass of particles as e / m quantities of energy according to the equation M= E/c^2 = h·f/c^2 reveals that particles of matter are not foreign to the e / m energy and the difference of particles is at extremely high rates of change, exceeding a few million times the rate of light. For example the equivalent energy of an electron corresponds to rates around 10^20Hz while light is lower to 10^14Hz. Thus, the first calculations reinforce the conclusion that a number of microscopic phenomena that have been presented as peculiar, unusual, inexplicable and without an understandable connection between them are incredibly simpler and more understandable. Because they are wave phenomena and interactions at extremely high rates of change at the smallest lengths, at extremely high speeds and in the structure of matter in repetitive ways. The variety of phenomena is created by subtle deviations in the most well-known phenomena. The impression of the peculiarities of microcosm, as cultivated by previous decades of research, is deceptive due to the irrational insistence of researchers to think of separate particles deceived by the habit of common experience, where things in the sensible world have separate properties as bodies and are created by their external combinations.

One can easily be indifferent to these calculations according to upper and lower limits if does not already have in mind an interpretation of how nature works. Modern research on the structure of matter gives an extremely complex picture, and a good knowledge of elementary particle physics rather misleads and frustrates such a simplified research into a few fundamental phenomena, which change according to upper and lower limits. But this simplified research began with a rational background and many years of theoretical preparation. Space was interpreted as a balanced amount of energy due to the simultaneous presence of nature as a whole. Matter has been interpreted as result of rapid changes in this global amount of energy, which remains in equilibrium. The abbreviated solution

for the creation of nature was given with a rational explanation. The rational explanation showed with a few concepts (fundamental phenomena) how the most complex things can be created with quantities and combinations of a few fundamental characteristics of nature and regulated by laws. The first conclusions were in line with a number of observations directly on nature while revealing the impasse in failed questions of some modern researchers. When you can not explain how a green horse flies or how the molecules understand what they are making, the difficulty is not due to natural phenomena but to the absence of phenomena, their misinterpretation and poor description. Thus e.g. researchers wondered if photons had zero mass or if they had an extremely small mass. And they even talk about particles called "photons" which have no rest mass. But they do not hesitate to use the constant h in calculations of e / m energy which in units includes mass (kg · m^2 / s) and explain that photons do not have mass but have momentum (kg · m / s). That is, they had accepted in other words what they denied (absurdity as it is called).

Picture: EC_quantum_collapse_main_FREE

Description: Waves spread out and interfering with each other and together many particles on circular lines resembling orbits. Below it reads: The impression of the peculiarities of the microcosm, as cultivated by the researches of the past decades, is illusory, because of the irrational insistence of the researchers to explain everything by separate particles (misled by the habit of common experience...)

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (10/31, 2008-2012)

The thoughts and excerpts of the following post complement the immediately preceding post. They will facilitate in understanding the theory those who are not well versed in physics.

“These elemental quantities, which are called photons, are still considered to be mass-free (ie mass M = 0) but physicists accept that they have momentum. Many researchers have raised the issue if we need to recognize an insignificant amount of mass for them. We observe weakness and inconsistency in research. The elementary quantity h which is used to calculate the electromagnetic energy, contains mass units kg. Since, then, it does not seem right in physics to talk about mass in electromagnetic waves, then it would be more reasonable to change the relations and the way of calculation of energy and cement a new constant quantity or reformulate the definition of mass. The energy of electromagnetic phenomena is closely related to an elementary quantity as it is summed up by the Plank's constant which has symbol h. So, in physics, electromagnetic waves have no mass, but they have some momentum and they transfer elementary amounts of energy. Since, therefore, it is not forbidden to speak about the momentum p of the photons, it is not forbidden to isolate mathematically the amount of mass which is embedded within this constant amount of angular momentum... Here, we have defined the notion of inertia more generally, as a change in speed or a time delay up to its regularization. That's why we do not hesitate to talk about an elementary mass in nature: This is purely for the theoretical description of phenomena, and for saying that there is a minimal particle. In our theory, the mass of particles is the inertia which has stabilized with periodic phenomena at fast paces, for a short or a long time. So we have rationally overcome the contradiction”. (211)

The minimum quantity of inertia is defined by the minimum quantity of energy Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg. When the minimum quantity of inertia Mmin is inserted into the calculations together with the maximum quantity Mpl =√(hc/G) then the calculations reveal changes on a shared amount of energy and inexhaustible proportions, which are explained by periodic and wave phenomena. Periodic and wave phenomena explain changes that are repeated at extremely high rates and quantities that change proportionally, pulsed and quantized. One of the most important conclusions: The insertion of the upper and lower limits to the change of all fundamental phenomena reveals that all fundamental phenomena in microscopic processes (such as speed, length, time, force, rate of rhythm, as well as inertia) vary proportionally or pulsed and quantized.

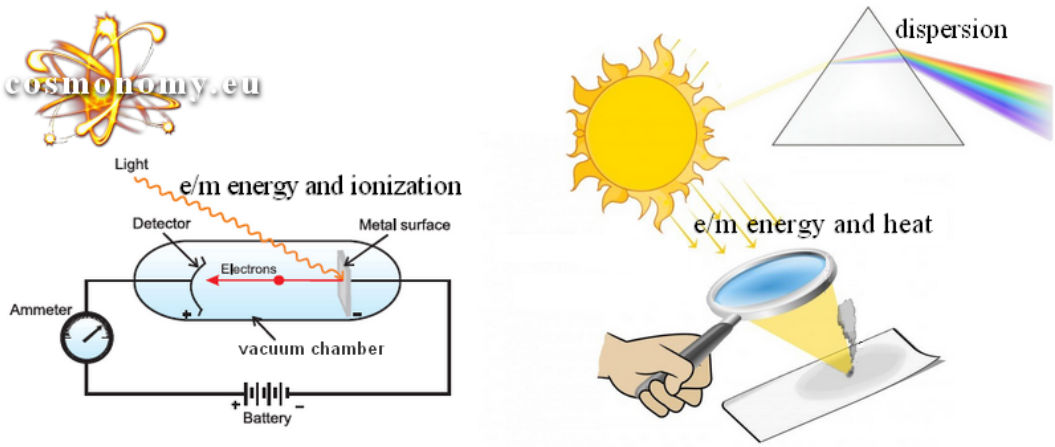
“The forces also, before appearing as permanent, are fluctuating, variable and instantaneous. (In periodic changes, they have up-down peaks, moments of interruption, reversal, they are strengthened or neutralized etc)”. (337)

“The difficulty to comprehend the structure of the matter, it results from the existence of dynamic phenomena without the presence of some constant material body,* as it happens in the macroscopic world of our daily experience. This is contrary to the macroscopic world, where the mass constitutes its substance and something separate of cosmic forces. We seek to learn how the phenomenon of mass is created or maintained in microscopic dimensions with the invisible presence of a common and finite free space and with the oscillation of its energy”. (209)

“the mass in the structure of matter is something, which is caused or created by phenomena of motion without the presence of mass as we perceive it in our visible world. (...) In Newton's era the role of electromagnetism in nature was unknown. The presence of electromagnetic waves everywhere in nature was un-

known as a part of the world, which we do not observe (so easily as the material bodies), but it does not constitute a lack of substance and reality. The blind and formal use of the term "mass" led thenceforth to impasses, it prevented the rational progress of physics and discouraged many researchers who could explain the microscopic phenomena unified in the structure of matter. (...) Then, another rational answer does not exist regarding the inquiry about what a motion is, by which the particles are caused, or what a motion without matter and particles is except for the active presence of free space and the wave change that is caused in its balanced energy…" (210)

Picture: pngwing-Light-matter-3



The difference of particles as focused waves and discrete quantities from wave motion and radiation occurs at extremely high rates of change. The equivalent energy of an electron corresponds to rates around 10^20Hz while light is much lower at 10^14Hz

The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (32, 2008-2012)

Let us recall the explanation for which we are researching and have the first conclusions:

A rational interpretation began "on a complete Universe in all possible ways within a maximum period of time". This global Whole as complete exists at the same time as a shared amount of energy and is presented as free space. Space was interpreted by a balanced amount of energy from the simultaneous presence of the nature as a whole. Matter is interpreted with rapid changes in this global amount of energy which remains in equilibrium. The previous ten posts show simplified what physical phenomena we need to think about and calculate, if this interpretation is correct. The first conclusions were reached that agree with this rational interpretation with the first calculations and without having to think about something strange and rare, exceeding all expectations. **The only strange phenomenon** of this cosmological interpretation is that the Universe participates as a complete Whole - that is, as space – so as the structural elements (matter) to exist and for the creation of natural phenomena. **We perceive the Complete Universe as almost absent** and as a free space between bodies. But this illusion has a natural explanation and is not in conflict with common experience. A complete Universe in all possible ways within a maximum period of time is stabilized and **the total amount of energy is also in equilibrium and therefore is presented to our eyes distributed as free space**. Relatively small deviations and disturbances of this shared amount of energy are perceived as matter, in bodily nature and in forces at a distance.

This simplified description of physical phenomena has utilized the mathematical correlation for the reduction from the maximum speed c corresponding to the limit of the maximum amount of inertia as results from the universal constants h,

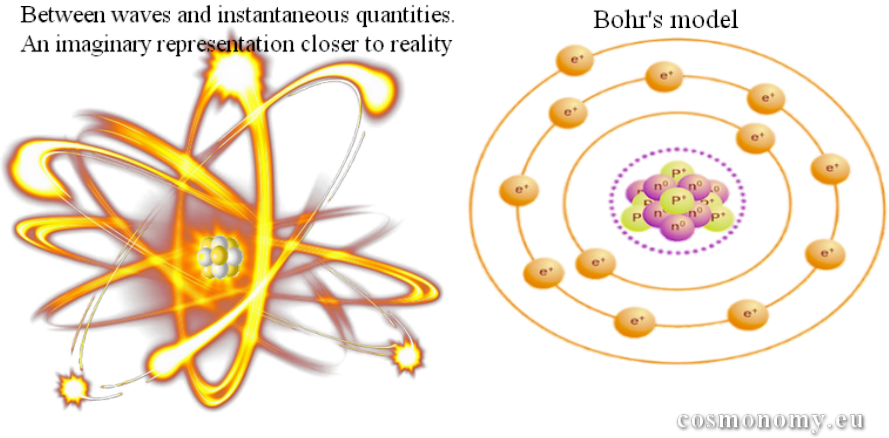
c and G. But the maximum amount of inertia Mpl = √(hc/G) does not exist as a particle and this raises questions. We concluded e.g. that extremely subtle changes at the maximum speed of nature are associated with amounts of inertia that fundamental particles of matter have. The question arises as to what kind of motion occurs at the maximum speed in nature and with which motion a velocity corresponding to an inertia is related [according to the equations Mpl / M = c / V → V = c Me / Mpl = √(GM/λ)]. In this correspondence between speed - inertia for which movement are we thinking? The presence of bodies of greater mass than the theoretical mass Mpl = √(hc/G) = 5.45624 ×10^-8 kg was of course one of the first to be explained. The observation that very few particles from infinitesimal are detected in the structure of matter (according to the correspondence of velocity to inertia Mpl / M = c / V → M = V · Mpl / c) raised an important question that needed an answer / explanation.

It is easy to give up the search for any of our unanswered questions with the excuse that we do not notice anything or that no one has written about this phenomenon. Many phenomena are not directly visible and with a static presence, but we know them from certain consequences, from their involvement in the most obvious ones. The maximum amount of inertia Mpl = √(hc/G) does not exist as a particle and one could easily challenge such an amount of nature. But the minimum amount of inertia Mmin = h·1Hz / c^2 is also not a particle, but corresponds to elementary quantities of energy h·f. Extremely subtle changes occur at the maximum speed of nature and they are not easy to measure, but they are related to extremely subtle changes in the other magnitudes of the fundamental phenomena, which are defined by the minimum and maximum limits. Most phenomena of microscopic origin are associated with these extremely subtle changes on a shared amount of energy.

So, even if we can not answer a question from beginning and if some more subtle remarks are needed, we will be able to answer later. If the conclusion and explanation are wrong, then we will get wrong results that do not agree with the

measurements and we will fall into contradictions. The questions that arose from the interpretation of matter as energy fluctuations on a shared amount of space were logical and hopeful. Not only did they not discourage research, but on the contrary, questions from correct and logical interpretation facilitate research and lead to solutions. On the contrary, an interpretation with absurdities and contempt for common experience such as the interpretation of the total creation of the Universe (Big Bang Theory) was doomed from the beginning to failure with any ability and intelligence! After all, the interpretation of the whole of nature by combinations of particles and without questioning the principle of physical laws was leniently trivial. Fortunately on the one hand, because if this irrational and frivolous interpretation was correct, then indeed no one could ever explain the principle of creation and the principle of operation of nature.

Picture: pngwing-Light-matter-2



33. Our correct answers must satisfy even those who specialize in relevant issues and the most skeptical

We have insisted on the idea of a maximum amount of inertia (which comes from the constants h, c and G, ie $M_{pl} = \sqrt{(hc / G)}$ and how the maximum speed of nature c corresponds to this upper limit [respective equations $M_{pl} / M = c / V \rightarrow V = c\ M / M_{pl} = \sqrt{(GM / \lambda)}$]. We saw the first conclusions and how simple and fast they come out. Extremely subtle reductions near to the maximum speed of nature are associated with minimal amounts of inertia of matter particles and we have seen this correlation in calculations for bad students!

The posts here could directly write some answers to important questions, without any physics and calculations. But here the posts are aimed to thinking people who are looking for serious and convincing answers. That is, answers with information that can be tested and conclusions that are convincing not out of blind trust in some people, but from the critical thinking of the readers. Let me tell you in advance that some of the answers that everyone wants to know are close to views that have been spread. But how can you be 100% sure with so many theories being republished worldwide and with views that are not proven or reinforced by strong observations in the visible world?

Many express their views with certainty, but they would not bet or take responsibility for those who believe in them and their lives are affected. Correct answers to some general questions can be given without calculations and without exhaustive research, even by random thoughts. This ability of the human spirit to think directly of a correct explanation without coming out after years of research and as a conclusion from reasoning has a logical explanation: Some features in the physical world are preserved or often repeated and are universal (e.g. many natural phenomena). So when one notices some characteristics that are retained or repeated very often and are universal and keep them in his mind, then one will have a little knowledge that however remains the same and correct everywhere

and in every time (e.g. biologically I am a part of world, but also the body includes parts). We said something about this mental ability (with rational thinking) in the first posts of this presentation.

"In the case of the study of the Universe (the universe as a whole), we first need an explanation for its structure and not a sufficient knowledge of each astronomical body it contains" we said, among other thoughts. Even if an explanation or a phenomenon enters our mind from the imagination or accidentally and recklessly, this fact does not mean that they will be wrong, as many are in a hurry to question when reasoning is missing or when the view is supported by ridiculous thoughts. A typical example is the brief view of the existence of a god or extraterrestrial civilizations. If one claims with stupid thoughts that there are aliens, then the opposite conclusion does not come that they do not exist. Opinions can be presented as conclusions of stupid thoughts while they are not and are probably supported by stupid thoughts, while opinions can eventually prove to be correct. In short, the truth does not always depend on how a thought was formed and how much research preceded it. It depends solely on whether thought and point of view represent phenomena and characteristics of the perceptible world. With this view of the truth, I could give the most important answers as you want them and ask for your trust by adding some clues. But my goal was to convince my skeptical self and in addition I respected Science, as young people unselfishly dream of it. Our answers should also satisfy those who specialize in relevant issues and not make them laugh. We must take the disputes into account and try to answer the questions they ask us.

The rational interpretation "for a complete Universe in all possible ways within a maximum period of time" that exists at the same time as a shared amount of energy and is presented as free space is extremely simple as no one expected. The physical space was interpreted with a balanced amount of energy, by the si-

multaneous presence of the world as a whole. Matter is interpreted by rapid changes in this universal amount of energy, which remains in equilibrium. Extremely easy answers are given to difficult questions and some correct questions that were ignored or downgraded are formulated. The simplicity of this modern cosmological theory is perhaps as great as the solutions sought by experts. Its simplicity is due to the fact that many phenomena that have been observed as new and strange are the most familiar phenomena (movement, transfer and exchange of energy, time delay, feedback, etc.) at high speeds and rates and with dynamic processes. The posts in this presentation are aimed at all readers and inevitably contain physics, as we discuss nature, its limits and how natural processes are achieved. We can not talk in our century about the Universe and ignore important discoveries and observations that followed the centuries after the ancient Greek philosophers. Or rather, we can talk anachronistically with minds of ancient philosophers, but we do not have the excessive expectation that we will achieve solutions and unquestionable answers.

We used to read books by experts and scientists who simplify their knowledge in order to spread it to the whole population. Here you are watching - in a world first presentation - one of the rare cases where a researcher has good knowledge and has given solutions and compiles them in order to learn them more complexly and mathematically, those experts who thought that they had all the necessary specialization and that they would be the first to have the solutions to their problems!

Picture: dialog (Human figures. How everyone draws a conclusion)

34. Wave and rapid changes in a global amount of energy. (First thoughts that led to the mathematical investigation)

The following thoughts have been recorded in the treatise THE (FULL) UNIVERSE AND THE DYNAMIC (FREE) SPACE. Fundamental Thoughts and Relations on the Interpretation of Nature (published in 2012). These were the first thoughts of the rational interpretation when the focus was on phenomena known from physics and on calculations with upper and lower limits.

From the general description so far, material elements emerge as minimal ways by which the Universe begins to become (relatively indirectly and externally) in its minimum moment and are directly connected to the energy flow of space. Still, the complete Universe of cyclic time is related to the totality of a quantity of energy and to the existence of finite space. And yet, as we have explained, the motion by which the structural elements begin to exist and maintain their microscopic structure is not such motion, as we perceive it to be unobstructed and straight in empty space. As it will be seen, we observe all those features that in the field of classical physics are considered wave properties and phenomena of oscillation and synchronization.

So far, we have thought on motion and change in nature, as we usually perceive it among separate things. We understand and know well the motion of material things in space as a linear motion, which is obstructed or caused by bodies, and thus their speed, direction of motion and the force exerted by bodies on each other change. However, we have noticed that there are also phenomena that are not detected in a form of material bodies, such as light and gravitational force. We easily concluded that the structural elements of nature are elementary changes that take place in a short period of time and in a repetitive way. The division of matter results in microscopic phenomena of motion associated with the invisible presence of the free space. Still, we immediately concluded the limits in length, time and motion in accordance with the basic thought of a complete and

stabilized Universe. So we prepared to look for the relationship of these limits with the motion of bodies, but also with invisible changes that occur by electromagnetic phenomena and wave motions. (...)

As we progress and develop the physical interpretation of the creation of nature and of how nature maintains its unity, we will realize well that nature cannot be understood without phenomena associated with wave motion. In order for the physical interpretation to develop and include phenomena that accompany bodies while they are not observed as bodies, we need a good knowledge of the phenomena associated with wave motion. The vast experience of the visible world and what we know about motion in (three-dimensional) free space is not enough to interpret the Universe as a whole maintained by fixed relations, and proves insufficient to interpret the creativity of nature. Wave motion is associated with a number of phenomena and relationships, which could hardly and accidentally be the result of mechanical motion of visible and astronomical bodies. On the contrary, we observe that the wave motion and flexible phenomena created by this motion need tiny changes and fast intervals to appear. And only in this way can a multitude of invisible or incorporeal phenomena that accompany the existence of almost all (if not all) of separate bodies everywhere in nature be logically interpreted. (296 - 297)

Picture: physics-oscillations-and-waves-phenomena-

(Fields and waves in various applications and behaviours, such as refraction, dispersion, waves from radar of a submarine, from satellite, in the oscilloscope, and in the (e.g., from a satellite, on the screen of an oscilloscope, dynamic lines of magnet and electric charge)

35. How does the quantum physics of the microcosm unite and harmonize with the Newtonian physics of the macrocosm?

In short, since space is a shared amount of energy and since the structural elements are oscillations of this shared quantity, hence the large-scale quantity (large dimensions) is inseparably linked to small quantities (of the structural elements in the microscopic dimensions). Can someone else answer so briefly and simply and without recourse to paradoxical phenomena? (96)

The closest relationship of the astronomical world with its microscopic dimensions had been rationally revealed without calculations from the original thought, when the Universe was defined as a complete Whole in all possible ways at the same time presented as space by the structural elements being oscillations of a shared energy amount. The closest relationship of the astronomical world with its microscopic dimensions is betrayed by equations with the three physical constants h, c and G. Because these three constants h, c and G summarize natural phenomena and forces that have been measured in microscopic processes and astronomical distances. Maybe we should have summarized what these three constants h, c and G mean so that readers who do not remember them from school can understand how they relate here. Later, when the correspondence between mass and velocity (Mpl / M = c / v) according to the limit of maximum inertia Mpl = √(hc / G) was estimated, then the minimum and maximum (min-max) limits on the change of physical sizes were calculated (inertia, force, energy, rate of change, period, etc). The rational connection of the astronomical world with its microscopic dimensions agrees with the inseparable connection of the three physical constants h, c and G (since from these constants a marginal inertia Mpl = √(hc / G) emerges and consequently limits for other processes of nature). But the conclusion about the structural elements as energy oscillations of a shared amount that seems as space shows where we should look for the connection of

the fundamental forces of nature.

Simple limit calculations are possible by connecting the physical constants h, c and G. With these simple calculations (involving the constants h, c and G) magnitudes in the microscopic processes and magnitudes of the astronomical world can be revealed. Then we can look for how exactly these sizes work together. Indeed, the close connection of microscopic phenomena with the boundaries of astronomical world was one of the first conclusions drawn by the first calculations and their many coincidences. In other words, the astronomical world has already been mathematically related to its microscopic dimensions simply by the connection of these three constants (Mpl = √(hc / G) which contain sizes as measured in physical processes). This first connection of microscopic phenomena to the astronomical world by the physical constants Mpl = √ (hc / G) does not seem so important and obvious and that is why it escaped the world research. The few physicists who looked for it did not have in mind the interpretation we have here of matter as oscillations in a shared amount of energy.

The constants h, c and G and their mathematical connection show the closest relationship of the astronomical world to its microscopic dimensions but certainly do not give any explanation. How important and obvious is the connection of the physical constants h, c and G is revealed only when we proceed to calculations and investigate in numbers how and which physical phenomena are connected and when we investigate which other phenomena are missing to fully explain their connection. The introduction of the minimum and maximum (min-max) limits to the magnitudes that change in physical processes (inertia / mass, corresponding energy, force, rate of change, period, etc.) is the necessary preparation for this theoretical research on the connection of the three constants h, c and G.

Note that one of the most important and unsolved problems of physics in the world is how gravity relates to quantum forces. The gravitational constant G in itself is an unexplained fact in their research. Quiet research and the simplest calculations with physical constants reveal the relation of gravity to quantum forces and processes (and the relation of G to the constants h and c) and only in this

way is the solution for the connection of quantum forces and gravity. From the minimum and maximum limits and from the quantities that change as a function between them, the wave process for the conservation of matter and space is revealed. As we have already seen, the gravity constant G is involved with a reduction of the maximum speed c in the process by which the corresponding inertia in nature is created by a shared amount of energy distributed as intangible space. We will say more about the process by which nature maintains the structure of matter in subsequent posts.

Picture: micro-macro-csmnm-smaller-247854-crop-16t-neg

An animated gif image. The animation of the post was chosen to help the imagination and to understand how phenomena that we observe as separate have an invisible connection to each other. This invisible connection is not through the bodies, but from forces that exist distributed throughout the bodies and are carried by the disturbance of a shared medium, as is the case with free space.

Brief information on the three physical constants c, h and G (1/36)

From the inexhaustible measurements and observations of physics and from its entire history, only three quantities can form a large part of physics and summarize fundamental relationships that govern all other relationships and things.

The speed of electromagnetic waves and light symbolized by the letter c is considered a maximum limit on the speed of motion. Einstein formulated the theories (special and general relativity) that were "pillars" in the research and development of 20th century physics with this speed limit. Measuring this speed was not an easy task. It was originally made from astronomical observations, but was measured more accurately by later attempts and experimental devices.

The speed of light is introduced into a number of mathematical calculations that require exceptional accuracy for a number of natural phenomena and are effectively applied to the most complex technology. Consider that in order to be able to control a space device on the surface of another planet, a number of electronic circuits (such as oscillators, tuners, etc.) need to operate with perfect accuracy and have been calculated using the speed of light.

We here begin with the position that the speed of light may not be insurmountable, but it is certainly not a random speed in nature and is a common limit to changes in nature. This careful view, that the speed of light is a definite limit in nature does not contradict the possibility of observing an exceedance of this limit or a deviation where we expected it to be exactly equal.

It can not be disputed by anyone that the speed of light is a defining limit in nature, since in quite a large number of cases it has been observed, proven and used in calculations successfully in technology. The observation of some cases, where a limit is not applied or an excess of it occurs, is not enough to immediately conclude the reversal and to reject the limit. (231 - 232 Volume I)

It took astronomical observations, Maxwell equations, and difficult technologi-

cal experiments to recognize that light does not transmit at infinite speed. It took Einstein's difficult (and mathematically formulated) theory of general relativity for researchers to say that the path of light bends when the rays approach an extremely strong gravitational field of stellar bodies and that light behaves as if it had a minimal mass. The change in the hitherto reckless view that many physicists had about light marked a revolution in science. But the same conclusion comes rationally when we consider that space has a limit of length at maximum distance and curvature and that radiation is its own energy disturbances. (132)

<·> The same conclusion (for a maximum speed in nature) comes rationally from the need to accept the experience according to which there are distances and things do not all interact with each other and at the same time. That is, we see many things that change and not all things change equally fast and at the same time. If separate things had zero interaction time or connection at infinite speed, then they would be one body together. Length and distance would be missing. Things would not have the possibility of (slower and delayed) action between them and all the forces would be applied at the same time without changing the time of their application. Since the forces change so some time passes and therefore the forces are not transmitted at an unlimited speed or at an unlimited rate. *(This rational thought was originally formulated in a philosophical book difficult to understand).

The indefinite limit of a maximum speed is more difficult to dispute, than the proposition that specifically tells us that this maximum speed is the speed of light. Therefore, those who have learned to think specifically and with mathematical precision, should not rush to reject the general propositions. (132)

Picture: speed-c (a prism make light analysis)

Brief information on the three physical constants c, h and G. The constant h (2/37)

The transfer of energy into nature seems to start from the same minimal quantity (constant of action) which Max Planck was forced to think hesitantly in order to be able to interpret paradoxical measurements in the radiation of an incandescent experimental body (black uniform body). This constant quantity is symbolized by the letter h and is related to the energy of electromagnetic phenomena and the structure of matter. When this constant quantity is multiplied by frequency gives energy (h·f = E). It contains units kg m^2 / s and can be expressed as work over time (E·sec) or as momentum on a radius (angular momentum or rotation, p·r). Planck's constant is used to calculate elementary amounts of energy (quanta) in radiation and other energy quantities, such as for the energy levels of the atom and in e/m interactions with atoms.

The existence of this constant and its decisive role have also not been refuted. This is necessary in the calculations for a number of simple and complex applications, which we will find useful up to the daily life of all people. Mainly in electronic devices, such as e.g. in any remote control or in a modern lens with LED light emitting diodes. (Volume I, 232 – 233)

* Wikipedia writes: "It plays a central role in the theory of quantum mechanics, and was named after Max Planck, one of the founders of quantum theory"

Picture: 1-ra140105_1 Description: Picture of an educational device with seven light-emitting diodes (LEDs) in different colors. It has sockets for connecting a voltmeter and an ammeter. Nowadays the constant h can be easily calculated without difficult experiments and expensive equipment

Brief information on the three physical constants c, h and G. The constant G (3/38)

It is worth noting some questions that are hidden in the constant of gravity G and you may not have thought, nor read in physics books. I will give more information about gravity and the G constant compared to the other two constants, because global research has failed to explain this fundamental phenomenon. This failure prevented the understanding of the creation of the Universe and the theoretical connection of gravity with the most powerful physical forces.

<·> The closest relationship of the astronomical world to its microscopic dimensions is manifested rationally without calculations when we think of a Universe as a complete Whole in all possible ways (within a maximum period of time) presented simultaneously as space. The global space is interpreted as a balanced amount of energy by the simultaneous presence of the world as a whole. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared quantity and their structure is interpreted by wave and rapid changes. This is the only interpretation that easily provides the solution to the relationship between the gravity of astronomical bodies and the most powerful forces in the atomic dimensions. It could have been formulated a century ago and now cosmology would be a century more developed.

The two physical constants as we said c and h are observed and are more clearly associated in microscopic phenomena and mainly with electromagnetism. The constant G is clearly associated with astronomical bodies, but it contains a locked force that is extremely weak in contrast to the force of e / m phenomena (as is well known, and in fact with a ratio approaching 10^40 times weaker). If we calculate the gravitational force in our many applications and constructions, we

do it because the positions of bodies are affected by the gravitational field of the planet on which (or inside) bodies are located. We do not utilize the force or gravitational field of bodies around us, as we do for the electric charge or the magnetic field. We can not interrupt or amplify the gravitational force of small bodies or change it at a rate and thus produce an effect on heat, light, displacement, potential difference, particle flow, chemical change, as we do with electric and magnetic field, even with friction.

Massive bodies of a large amount of matter do not appear to be affected by gravity unless they contain so much matter per unit volume that is of astronomical magnitude. Therefore, even when the gravitational force from a body seems stronger, the possibility of a construction at microscopic sizes and some connection at short distances will be lost (as we do in technology with electricity). We can not bring many bodies together and make them affect each other with their own gravity to achieve a work. If our constructions utilize gravitational force to push some bodies in motion and oscillation or for some other work, do not confuse this work with the utilization of their own gravitational field. The gravitational field of the bodies that we touch and that we take into account for a construction has its force only because they belong to an extremely large body with enough mass, such as our planet. If the planet with its own strong gravitational field were missing, these small bodies would have no noticeable effect on each other and our structures would not work.

In short, gravitational force is extremely weak and is not suitable for small-scale work. Another important observation is that the gravitational field remains indifferent to the chemical composition of bodies, that is, its intensity does not change significantly from how atoms and molecules come together and from their chemical reactions. In short, such a force as gravity seems useful only to the order of the astronomical world in space.

Picture: solar-system-planets-shut

Description: The eight planets in orbit around the Sun. Comets and distant stars are painted on the black background

Brief information on the three physical constants c, h and G. The constant G (3.1/39)

An attractive force seems to exist between bodies, which Newton thought of and quantified. Newton stepped on the relationships of motion already expressed (through astronomical observations and experiments) by researchers Kepler and Galileo. At that time when electromagnetism had not yet been discovered and its role in nature was not yet known, to emphasize. The gravitational force and the gravitational field around bodies seem to be regulated by laws, so that the gravitational force varies in proportion or inversely proportional to mass, distance, or radius. * (* See known formula) The rate at which the speed of a body in free fall with this gravitational force has been observed. From the measurements it appears that there is a constant relation which is symbolized by the letter G. The relation that this constant G summarizes is more complicated (G = Fr ^ 2 / M1 M2) and according to Newton's law contains units m ^ 3 / kg s ^ 2. The gravity constant G can easily use it to calculate the weight of its body in various celestial bodies, even without anyone knowing what it is. However, the gravitational field is not easily revealed among the things that surround us and its effect is perceived in the celestial bodies ... (Volume I, 233) (...)

From the observation of the celestial world to its greater depth, many doubts have been raised as to whether it is the same constant as we measure it in our solar system. Not much is said about its regulatory role and it is described more as a metaphysical phenomenon and not with descriptions that everyone would like to hear and understand. (Volume I, 233 - 234 * Here we avoid thinking in terms of General Relativity)

When we introduce the constant of gravity G in the numerator with the two masses, then the numerator in the fraction decreases, since this constant is smaller than the unit, of the order 10^-11. Thus for masses 1kg and distance 1m

we have a result Fgrav = (6.6725 × 10^-11) × 1kg × 1kg / 1m^2 = 6.6725 × 10^-11 N. Although the formula gives a result for a traction force we also observe in the denominator the distance r^2 that separates the two masses M that are attracted to each other. This distance r^2 in the known formula is expressed as a line joining the imaginary centers of two bodies. The masses are considered uniform and spherically distributed and we know that bodies attract from all the radii of their sphere. According to this simple formula, the force of attraction F between bodies changes x^2 times when x is the change in distance r at the denominator. (Volume I, 395, 396)

The constant G of gravity results from the Kepler's 3rd law:

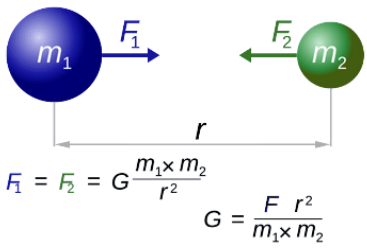
G = 4π^2·r^3 /M·t^2 (= m^3 / kg·s^2)

An example accordingly to the measurements for the Earth and Sun.

4π^2 · (1.495978 ×10^11)^3 / 1.99 ×10^30 · (3.155421 ×10^7)^2 = G

If the distance r is in meters from the central body M, the time t is in seconds and the mass M in kg. The central body is the Sun. The distance r is between the Sun and the Earth. The time t is the orbital period of the Earth around the Sun in sec instead of the 24-hour period. (COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA, p195)

Picture: Gravitational-force-G (The law of gravitational force)



* Johannes Kepler (1571-1630) studied observations of planetary motion as previously collected by Tyche Brahe (1546-1601)

Brief information on the three physical constants c, h and G. Information through the gravity constant G (3.2/40)

If the constant G=Fr^2/M1M2 of gravity were a larger number, then the bodies would give higher acceleration, higher speeds and higher traction forces. The astronomical bodies would probably approach each other with a stronger force of attraction between them and at higher speeds. The intensity g of the gravitational field of a body could increase faster. If, however, the constant G were a smaller number, this would mean less traction force F. The rates of change of speed would be slower and the intensity g of the gravitational field would be less for the same mass. (p198, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

If the attractive force F between material bodies is increased in the equation G=Fr^2/M1M2 or only the distance r (for the same force) is increased, then the mass M will be increased so that the same constant G is maintained. (p198, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

On the other hand, the gravitational field accompanies the individual bodies and then the constant G in the relation of the radius to the mass and to the acceleration appears again (relative formulas g=GM/r^2 => G=g·r^2/M => M=g·r^2/G). In this second case, the constant G reflects a limit of maximum resistance of matter at a maximum gravitational force (Fgmax), since the mass of a body can increase without the acceleration of its gravitational field being maximum in a small radius. Thus, the gravitational force does not quickly exceed the resistance limit, where the structure of matter is maintained. The destabilization processes finally begin with the exceeding of a limit on the increase of mass to stop the infinite concentration of matter ...

If the rate (a) and mass (M) in the relation a·R^2 / M could increase regardless of the radius of bodies, then we would observe in the sky more stars and detect black holes of any radius. Planets and their satellites could be stars and black holes could be anywhere. But in nature a·R^2 / M =G and when the mass is greater then a longer radius of free space is offered to body. (p491, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

The fact that the gravitational constant G is a number of the order of 10^-11 ensures that astronomical bodies can exist with their known masses. It ensures that the force of attraction requires such an increased amount of concentrated matter until it acquires the strong gravitational field that causes thermonuclear reactions. Since this constant G requires a long period of time until the highest velocity is reached from a gravitational acceleration. Smaller accelerations can be caused (at a slower pace), in longer distances and cyclic movements at longer radii, and thus in longer periods and intervals. And as it seems, low accelerations and larger distances need bodies of larger mass (mass / volume, more correctly). (p199, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

The mass of a body could be increased so much in less radius or within a few meters that the body would be destabilized and transformed into nuclear bomb or a black hole, because of a too strong attraction force. We find in nature instead that the structure of matter allows the concentration of matter and the increase in mass until the formation of bodies in astronomical dimensions. The gravitational force does not exceed the limits of conservation of the structure of matter prior to the merger of a large number of material elements. A large number of material elements may be concentrated in a much larger radius (until they undergo a destabilizing pressure). (p199, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

The gravitational force F between two same spherical bodies is equal to gravitational accelerator g that causes the product of these two masses at the same radius r. Or the gravitational accelerator g is equal to force F that the 2 smaller masses, which would be smaller to the square root of the initial mass √M, but in the same distance r would exert to each other. (p197)

$$g = G \frac{M_1}{r^2} \quad \equiv \quad F = G \frac{\sqrt{M_1}\,\sqrt{M_1}}{r^2}$$

An example

Mass of the Earth square rooted √ M1 : 2.443972×10^{12}

F = G $\sqrt{M_1}$ $\sqrt{M_1}$ / r^2 →

F = G $(2.443972 \times 10^{12})$ $(2.443972 \times 10^{12})$ / $(6.3787 \times 10^{6})^2$ = 39.8548×10^{13} / 40.6878×10^{12} → **F = 9.795 N**

g = G M_1 / r^2 → G × 5.973×10^{24} / $(6.3787 \times 10^{6})^2$ = **9.795 m / sec^2**

Picture: g-F-solar-system

Description: The planets all together facing one side of the Sun and the equations for the constant G and the acceleration g

41. The shortest path of thought from which we lead to the required solutions and answers

This is not a page for physics lessons as it seems. We do not repeat the theory as taught in educational institutions. But once a research was started to explain common observations about the natural world, its limits and its essence. Thoughts and observations are now summarized as they emerge when one begins to search with this aim for the physical world as a whole and as a part (which appears from the senses without limits, with an inexhaustible variety of things, but also with laws). Some phenomena that are studied by physics appeared from a brief interpretation of the direct relationship of matter and the individual things with the complete and whole world:

<·> The closest relationship of the astronomical world to its microscopic dimensions manifests itself rationally without calculations when we think of the Universe as a complete Whole in all possible ways (within a maximum of time). The global space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. The complete Universe is presented at the same time absent as space. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared amount and their structure is interpreted by wave and rapid changes.

This thought with its general meanings and with its questions showed which physical phenomena need to be better understood. This research through general concepts led to the physical phenomena which when assembled give the explanation of the close relationship between matter and space. Thus the fundamental usefulness of wave motions in nature was revealed. That is why we have aimed at the solutions needed to confirm this explanation. We keep the observations that are useful and revealing and we learn physics as much as necessary

for those phenomena that are directly involved with the problem as we have formulated it. Knowledge and research will never stop. Infinity is the problems that can be formulated educationally for calculations, but also for the implementation of some human construction. We use the knowledge from the latest research to test the cosmological explanation by calculating the limits and fundamental processes of nature. If we did not have the information from the latest research or if we avoided physics then we would have stopped at useful thoughts, which however can not be confirmed. Then we would be happy with a philosophical theory.

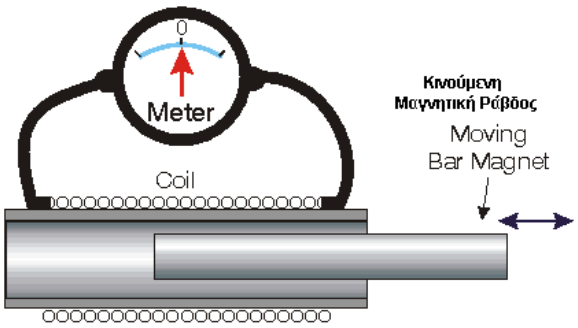
Experts usually have objections to a research with a lack of knowledge (considering as a significant lack of knowledge everything that is taught in their own courses). But when we talk about nature research as a whole and the interpretation of natural phenomena that remain unexplained, probably no one knows what is the necessary information and thoughts that will lead to the answer to the questions. Explaining some phenomena does not always require a better knowledge of a thing, but apt observations, selection of the necessary information and knowledge from different fields of research. As is the case in technology, where for a construction and its operation different phenomena are taken into account and knowledge from separate sciences is utilized (such as the collaboration of many fields of engineering, electronics, geology, aeronautics and informatics). The great discoveries and theories that we read in science books have been extracted from works that were not entirely truthful and the most consistent thoughts. But the books leave the false impression that they came from good knowledge, as it is presented in the previous chapters of book and with the skills that these books in such detail try to offer to students.

Here on the Philosophy and Cosmology Facebook page we do not present the story, how some important discoveries happened in science and how cosmology happened to take shape. The shortest path of thought is presented, from which

we are rationally led to the requested solutions and answers. Readers learn what is the right path of thought and how some random discoveries are inferred from common observations and from logical thoughts that should have preceded. Some of these observations and rational thoughts could have preceded many years earlier and not by chance as historically recorded.

Picture: Faraday-rebarmag

Description: A magnetic rod moves reciprocally through the turns of a coil and a voltmeter connected to the ends of the coil measures alternating voltage



42. Wave and rapid changes in a global amount of energy. Many physical phenomena are mathematically interconnected

<·> When we think of the Universe as a complete Whole (in all possible ways or with all possible events) within a maximum period of time, then the universe is interpreted as a balanced amount of energy by the simultaneous presence of the universe as a whole. Our mind with this rational interpretation "for a complete Universe" that seems at the same time absent as space, immediately goes to the correlation of space with a shared amount of energy. Space without this more precise definition of a complete and simultaneous Universe would forever remain unexplained. Thus, rationally and without calculations, the closest relationship between the astronomical world and matter with microscopic dimensions of space is revealed. The global space has the utility of a shared amount of energy and not just capacity. Structural elements (matter) are revealed as energy oscillations of this shared quantity and their structure is interpreted by wave and rapid changes in this global amount of energy.

"When someone starts thinking: 1) about the free space, as if it were an energy carrier, and 2) about the structural elements as oscillations of a shared substance, somehow as Spinoza approached them: then many important observations and explanations can easily follow. The harder is to believe and to think of the free space as a dynamic phenomenon and as a total amount of energy, which we do not see in the big dimensions!" (p 287, COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA)

When one knows physics and researches with this interpretation in his mind, then from his thought will pass known phenomena, such as oscillation, rate of change, tuning and synchronization, wave propagation, stationary waves. Many observations that are lost in volumes of books and intended to be applied in ev-

eryday life and for professional requirements (along with mathematics that describe phenomena in each case), will then seem to be the keys to research. The cosmological theory that rationally interprets the principle of operation of nature and its structure by wave processes in a shared quantity has a mathematical beauty and valuable interest for physicists. Because - between the solutions that are achieved and the answers that are given – certain universal characteristics are interpreted such as the structure of matter and space. In addition, many physical phenomena are mathematically interconnected and revealed as different due to the rate of change, velocity and angle and this is the complete unification of the phenomena. Physical phenomena which are presented separately in books (speed, change of speed, distance, time and rate of change, inertia and force, force and angle, periodic motion, etc.) are combined to present a fundamental and universal process of nature, where many things happen extremely fast on a shared amount of energy. The interpretation of a global amount of energy by which the structural elements exist as wave and rapid processes requires a large percentage of physics to be completed, which includes wave phenomena, electromagnetism, classical physics for motion and lastly quantum physics and gravity.

Picture: 407ae8f7486c0b13e442fc6ad323cd5b

Description: An animated gif image. Bright circles rotate around a pulsating center but in different directions. The circles are orbits and at the same time bright spots are moving as particles.

Wave and rapid changes in a global amount of energy. Many physical phenomena are mathematically interconnected (2/43)

<·> Remember how we began to think rationally about the Universe with the concepts of a Set and its parts.

· How we defined a complete Universe when we thought that everything possible things has happened in a maximum period of time.

· How we inferred a stabilized Universe from a complete Universe (in all possible ways) and the stabilized Universe was connected to the phenomenon of a global space.

· How the concept of structural elements was related to the beginning of the Universe in the minimum time intervals (since the complete Universe is given in a maximum time period).

· How the global space was connected to a shared amount and matter as energy oscillations in such a shared amount.

· How the shared amount of energy was related to the stability of the whole Set and how the stability of the Set is called "equilibrium" when we think of the shared amount of energy.

· Consider how the equilibrium of the shared amount of energy correlates with the balance or neutrality of space and matter as a phenomenon of oscillations of this balanced amount of energy.

· Consider how the unstoppable mobility of structural elements (of matter as particles) matches their explanation as oscillations and fluctuations in a balanced amount of energy presented as their space.

· Think of how the same structure of matter is interpreted in the Universe since the structural elements are extremely fast processes in a shared amount, by the same periodic wave phenomena.

· Think about how the application of force at a distance in a extremely short

time and synchronously without the intervention of bodies and atoms of matter is interpreted, since every disturbance in the structural elements of matter is associated with disturbances in their shared amount, which we perceive as empty space.

· Think how many phenomena in the smallest dimensions are paradoxical, since natural processes occur at the highest speed, at the highest rates and at the shortest distances and in synchronization between them, which is extremely difficult and impossible to observe from a distance!

· Think about how mathematics is introduced into nature as a language because tiny changes of energy are repeated as numbers and quantities are regulated by periodic phenomena and in a range of high rates of change. The high rates of change and alternation and the periodic effects on a shared amount of energy are consequences of the wave motions. Wave phenomena establish (underpin) nature, not particles with their mechanical movements.

The most different and the most inexplicable natural phenomena are firmly tied in a few lines of thought and applying some rules of logic! While all these conclusions were unknown and separate findings without explanation in physics as taught so far. But that was only the beginning of the beginning, which has escaped the global scrutiny! As the physicist W. Heisenberg (1901-1976) aptly wrote, "asking right questions is often more than half way to solve the problem". Let his thought be extended to the opposite, that is, if you do not ask correctly it is often an escape from the solution of problem and a deception.

We have already proceeded to calculations and application of equations for quantities measured in physical forces and structural elements. The first calculations give more information about the processes that occur in tiny sizes of nature and confirm them. You will see the physical processes more clearly and how the physical forces are differentiated in the following posts, going further with simple equations and with the limits as they have been introduced to physical changes. Everyone will see one by one the logical questions that in physics were left unan-

swered or not formulated while these were revealing questions for research omissions and errors. I postpone the most difficult and formidable answers (mainly about the relationship between gravity and quantum processes) for the last posts. I assume that on days when nothing is published on the page, you study the previous posts so that you can understand and appreciate the whole interpretation of the matter and structure of the universe, as it will be taught in secondary education in a few years.

Picture: electronics-vidplayer-half

Description: Two photos of the inside of an 80's VHS video player. Below is the note: Do you think building this electronic device was easier than explaining the structure of matter and the Universe? It turns out, with careful formulation of the first thoughts (interpretation without calculation) and with cosmological theory as eventually formulated in the terminology of physics, theoretical research and the most important answers about the world and life are easier!

44. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process by which matter is retained

(We return to the details in the terminology of physics)

<·> The application of the correspondence (Mpl / M = c / v) for the calculation of the particles and the relation √(GM / λ) reveal to us a velocity subtracting from the maximum velocity. The inertia of particles is presented by a reverse process that reduces the maximum speed of nature. That is, we observe the opposite of what we initially understand when we look at the correlation relationship Mpl / M = c / v. The maximum inertia (Mpl) corresponds to the maximum reduction of the maximum velocity c and not to the maximum velocity c (which a moving particle would acquire). While the minimum inertia Mmin = h · 1Hz / c ^ 2 = 0.73725 × 10^-50 kg corresponds to the minimum reduction of the maximum speed (which according to M · c / Mpl is -Vmin = 0.40508 ×10^-34 m / s).

The velocity -V which is subtracted [according to the relations V = M · c / Mpl = √(GM / λ)] multiplied by the constant momentum 16.3574 (of the relation Mpl · c) gives the energy h · f. That is, h · f = M · c^2 = Mpl · c · V [where V = √(GM / λ) = f · λpl]. We can calculate the amount of reduction -V from the maximum speed c according to the relations √(GM / λ) = f · λpl for each e / m frequency!

This process of creating inertia and particles begins at the highest speeds of nature as a wave effect and not as acceleration of particles from low speeds. This relation of inertia (of particles) to the reduction of the maximum velocity of nature had been formulated since the first time of the interpretation of matter as wave changes in a shared amount of energy. Rational thinking met with experience after applying and investigating the relations Mpl / M = c / v and √(GM / λ) according to the upper limit of inertia Mpl = √(hc / G) and is checked by calculations. After the correspondence of the inertia of the basic particles of matter at extremely low velocities (for the electron e-15 m / s, for the proton e-12 m / s) it is clear that **the fundamental processes in tiny dimensions of nature begin with motions close**

at the limit of the highest speed. As low velocities as correspond to the inertia of the particles of matter (according to the correspondence Mpl / M = c / v) would not achieve synchronization of many movements and strong interactions. After all, minimal inertia means less resistance and applying a force to particles would accelerate them in the shortest time. Therefore, the extremely low velocities corresponding to the fundamental particles of matter are not the velocities with which nature's creative processes begin. The extremely low velocities corresponding to the fundamental particles of matter according to the first equations Mpl / M = c / v and Mpl = √(hc / G) are not the velocities at which structural elements are created or maintained. Logically (with the reduction to absurdity, reductio ad absurdum) these extremely low velocities (for the e-15 m / s electron, for the e-12 m / s proton) are reductions in extremely high velocities and in wave phenomena occurring at extremely high velocities .

The maximum amount of inertia Mpl = √(hc / G) does not exist as a particle. Likewise, the maximum force and the maximum frequency corresponding to the energy of this maximum inertia show magnitudes that are unreal. Bodies around us and astronomical bodies have many times more mass than the limit of Mpl = √(hc / G). This also raises a question. Why such an upper mass limit Mpl = √(hc / G), since we observe in our world masses above this limit? The calculations according to the limit of Mpl = √(hc / G) give a maximum frequency of the equivalent energy of the order of 10^42 Hz. This is a value extremely above the frequencies of equivalent energy of a proton (~ 10^23 Hz), which is a fundamental component of matter and its effect on its structure is extremely strong. That is, the theoretical calculations according to the maximum limits of inertia Mpl = √(hc / G) initially produce magnitudes that are not observed and if they were correct, then strong explosions would occur around us and the structure of matter would not be stable.

On the other hand, with these limits of maximum inertia Mpl = √(hc / G) in correspondence to the maximum velocity c was revealed: the closest relation of particles with wave energy, the relation of their mass with a certain reduction of the

maximum velocity, the relation of the highest rates of change with the strong forces and short lengths, the relation of the strong forces with extremely short time intervals and with their periodic application. The fine ratio between the quantity of constant h and the wavelength of the equivalent energy of the maximum mass Mpl was one of the first to be revealed, and we will say in a later post. **Many of the questions stopped with the logical thought, that the minimum min and the max limits in the magnitudes have average values**.

Picture: arithmetic-geometric-mean-waves-2

Description: The average mass value together with a geometric figure showing the mathematical relationship a+b/2 and the geometric mean √ab

Interpretation of particles as quantities of energy with inertia in a shared quantity. The process by which matter is retained (2/45)

Reminder: We have taken into account that the mass Mpl = √(hc / G) = 5.45624 × 10^-8 kg corresponds to the limit speed c = 2.997925 × 10^8 m / s. Lower velocity values correspond to lower inertia values, ie Mplanck / M = c / V. The lower velocity values coincide with the velocity of an equation containing mass and the gravity constant G, i.e. V = √(GM / λ). We proceeded to simple calculations from this simple correlation and looking for how the velocity V = √ (GM / λ) coincides with the velocity V of the correlation Mplanck / M = c / V and notice how many conclusions we have drawn.

· We set maximum limits on inertia as a function of velocity and magnitude on the fundamental phenomena of nature. We also set the minimum limits. The numbers from the calculations with these limits easily revealed many important details, which agree with the interpretation of matter as a wave process in a shared amount of energy, which is balanced and appears as free space.

· The correspondence of the mass of an electron at an extremely low velocity [v = c Me / Mplanck = √(GM / λe) of the order ≈ 5e-15m / s] immediately revealed that important processes in nature are associated with extremely subtle changes in the maximum velocity c , which can hardly be measured.

· The search for the velocity V = √(GM / λ) in the well-known equation M = m / √1- (v^2 / c^2) by Lorentz-Einstein showed that this velocity V = √(GM / λ) = c M / Mpl is a velocity -V subtracted from the maximum c. We concluded it (rationally) in the immediately previous post.

· The determination of the minimum and maximum limits on the physical changes according to the physical constants h, c, G led to the concept for the mean values. A simple arithmetic operation that gives the geometric mean value unexpectedly gives the inertia between the rest mass of the electron and the proton. No one can dispute this result and everyone can do the calculation. No

physicist needs to confirm that the mean value of the minimum and maximum limits as determined by the physical constants is around the fundamental particles of matter. We find almost the fundamental particles of matter from only three physical constants (h, c, G) and with the limits as we have introduced them according to these constants, with calculations for school students. The result is terrible, because it comes out without a microscope, without measurements of molecules and atoms, without division of molecules and without the experiments that have historically given the measurements for particles.

· Thus it became clear that maximum and minimum mass are not necessarily phenomena detected in particles. The fundamental particles of matter are some of the quantities of energy presented as particles of equivalent mass in a process of energy oscillations. As already seen, in nature an energy process is applied with minimum and maximum limits of change and the fundamental particles of matter are a small part of this process. We do not need dark matter, no dark energy, no Big Bang in the past. You need an enlightened mind from logic. Space is the undeniable phenomenon that cooperates with matter everywhere and always in the Universe.

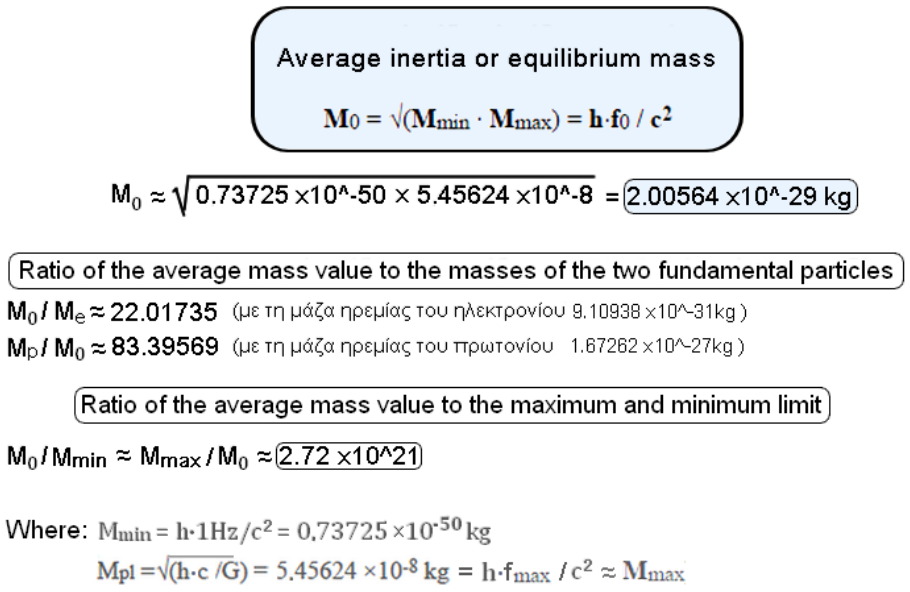
Space has properties and behavior of a shared amount of energy and the structural elements are closely connected with it as pico-bangs in wave phenomena. The universal space is relatively empty for bodies that move without resistance from other bodies. But this property of physical space as an "empty container" is explained by its microscopic structure. At the same time, universal space in its tiny structure is a shared amount of energy distributed in a balanced state. The universal space in dimensions where bodies exist externally with each other (from molecules and beyond) is an empty container. One view does not negate the other. One view alone is half true.

So we will not think of space only as an empty container, nor allegorically as a rubber surface, nor as contradictory as an ocean of energy that no one perceives. If you have not realized it, we explain, calculate and describe the physical process by which the shared amount of energy (of space) is balanced and maintains

the structural elements (matter).

Picture: D69B9621-ratio-average

Description: The average mass value, the ratio of this to the mass of the two fundamental particles and the ratio to the minimum and maximum limits. On the picture it reads: "Research... it couldn't be simpler!". In the published image there is also a background of wave patterns



Interpretation of particles as quantities of energy with inertia in a shared quantity. The coincidences (3/46)

The conclusions were not immediately formulated in a logical sequence and with certainty, as they are now presented and published. Many calculations in agreement with the correlation ratio Mpl / M = c / v and the investigation of velocity from the relation √(GM / λ) = c M / Mpl and some conjectures preceded. Many thoughts on the interpretation of many coincidences that appeared in the results of simple calculations preceded. One of the first observations was

that the marginal inertia Mpl = √(hc / G) is almost close to the inverse amount of the speed of light, ie Mpl = √(hc / G) ~ 1 / c.

This coincidence brings the marginal inertia Mpl = √(hc / G) close to the inverse of the limiting speed of light 1 / c and was one of those coincidences for which, as I wrote, "you do not have to think as a mathematician but as a policeman". This coincidence brought the limit energy Mpl c^2 = Epl as close to the limit velocity c (since Epl / c = 16.3574).

If you think about it more carefully you will see that energy (corresponding to mass) logically has a closer relationship with motion and speed since inertia was associated with the reduction of the maximum speed of light c (according to the correspondence Mpl / M = c / v). This is why a contrast between velocity and change in velocity reappears as a contrast between energy and mass. The closest relationship of energy to mass is somewhat hidden in common experience, when we distinguish motion from the moving body and energy from mass. In the microscopic processes of nature, where the structure of matter and its fundamental particles are formed by wave motions at extremely high rates, particles are not completely separate from motion and energy, and mass is not yet a fixed characteristic, such as mass of visible bodies.

Picture: 1_8327600

The mass (or inertia, more correctly) M_{pl} = 5.45624 ×10^{-8} kg appears also as the inverse of the speed of light c, if this speed is reduced 16.3574 times, namely M_{pl} =1/(c/16.3574).

$1 / 5.45624 \times 10^{-8}\ kg = 1.83276 \times 10^{7}$
This is the speed of light c reduced by 16.3574
(That is $2.997924 \times 10^{8} / 16.3574 = 1/M_{pl}$)

$1 / 2.997924 \times 10^{8}\ m/s = 0.333564 \times 10^{-8} = 1/c$
This is the mass $M_{pl}=\sqrt{(hc/G)}$ reduced by 16.3574
(That is $5.45624 \times 10^{-8} / 16.3574 = 0.333564 \times 10^{-8}$

$$\mathbf{1 / M_{planck} = c / 16.3574}$$
$$1/ \mathbf{V}_{max} \approx \mathbf{M}_{max} \mid \mathbf{V}_{max} \approx \mathbf{E}_{max}$$

$$h / \lambda_{pl} = M_{planck} / M_c \approx 16.3574$$
$$M_{pl} / M_c = f_{pl} / f_c = \lambda_c / \lambda_{pl} = 16.3574$$
$$V = \sqrt{(GM/\lambda)} = M\ c / M_{pl} = E / 16.3574$$
$$E_{pl} = M_{pl}\ c^2 = c\ 16.3574$$

At the bottom of the picture it said: "It was one of the many coincidences for which you don't need to think as a mathematician but as a policeman"

Interpretation of particles as quantities of energy with inertia in a shared quantity. The coincidences (4/47)

<·> The quantity h / 2π determines the radius of the energy barks within the structure of the atom and the subtle characteristics of chemical elements. When this quantity h / 2π was calculated by assuming that it is an elementary wavelength associated with a periodic motion, then a minimum wavelength was almost the quantity h. When a minimum wavelength λmin is equal to the quantity h then the equations give known results with different units of measurement than those we know. This coincidence showed that physical phenomena are not clearly separated in microscopic processes as they are in formulas of physics and as we separate them in visible bodies. This subtle numerical difference of a minimum wavelength λmin and the quantum of action h showed again how subtle or nonexistent the limits of physical phenomena in the structure of matter are, without experiments and without thinking of the particles of matter as phenomena of wave motions. When the minimum wavelength λmin is equal to the quantity h then the energy appears identical to the velocity (their closest relation is shown) and many other coincidences, which here are unnecessary for your memory.

“ So if we assume - even like a tutorial play - that the minimum λmin wavelength coincides exactly with the quantity h then everything changes in physics. This is, because not only a minimum wavelength λmin coincides with another physical constant, such as the quantity of h with its prepared units for the electromagnetic energy. A number of other fundamental phenomena are identical with one another and we obtain the same result with different units of measurement. By a rough implementation of fundamental relations of physics and by the first calculations we see this which we have concluded from the logical analysis of a few concepts: Namely that the sizes and quantities cannot be "static" in most microscopic dimensions of the Universe and in the minimal intervals and that they

do not refer to purely individualized phenomena ”. (254 - 255)

The surprise is greater and the previous coincidence requires an explanation when we see that the minimum wavelength λmin corresponding to the equivalent energy of the mass Mpl = √(hc/G) = 5.45624 ×10^-8 kg is

λpl = c / fpl = h / Mpl ·c = 0.405080 ×10^-34 m.

This wavelength is close to the constant h (i.e. λpl · 16,357 ~ h) without the previous conjecture for the length h / 2π.

<·> When we introduce upper and lower limits to physical change, then the next finding is important for exploring the nature:

“ The three universal constants h, c, G do not connect only in the quantity of an imaginary mass Mpl =√(hc/G. A minimum wavelength λmin derives in theory from their connection, that it almost coincides with the constant h. But the constant h is not only a theoretical quantity and all electromagnetic phenomena are connected with this constant, theoretically and technically. The minimum wavelength λmin almost coincides with the constant h and therefore with the quantity h/2pi which is essential for the structure of matter and regulates radii and lengths of orbits in the structure of matter. Thus, the universal constants h, c, G, pi are also linked between them, just because the minimum length λmin almost coincides with the minimal amount of the constant h ”. (236 - 237)

Picture: 16_3574

The picture was from the following part of the treatise

$\mathbf{M_{pl}\, c^2 = E_{planck}}$ $\mathbf{E_{planck}} / \mathbf{h} = 7.4008 \times 10^{42}$ Hz	$\mathbf{c / h_{bar} = \omega_{max} \rightarrow \omega / 2\pi = f_{max}}$ $= 0.452444 \times 10^{42}$ Hz → $\mathbf{h\, f_{max} = E_c}$
$\mathbf{M_{pl}} = \sqrt{(h \cdot c/G)} = 5.456246 \times 10^{-8}$ kg $= 16.3574 / c$ $\mathbf{f_{pl}} = 7.4008 \times 10^{42}$ Hz $\mathbf{T_{pl}} = 0.13512 \times 10^{-42}$ sec $\mathbf{E_{pl}} = 49.038293 \times 10^{8}$ J $\mathbf{E_{min}} = h\ 1Hz = 6.62606 \times 10^{-34}$ $\mathbf{M_{min}} = h\ 1Hz/c^2 = 0.73725 \times 10^{-50}$ kg $\boldsymbol{\lambda}_{pl} = c / f_{pl} = 0.405080 \times 10^{-34}$ m $\mathbf{a_{pl}} = \mathbf{f_{pl}}^2\, \boldsymbol{\lambda}_{pl} = \mathbf{c}^2 / \boldsymbol{\lambda}_{pl} = 22.186977 \times 10^{50}$ m/s^2	$\mathbf{M_c} = 0.3335641 \times 10^{-8}$ kg = $\mathbf{M_{pl}}$ / 16.3574 = 1/c $\mathbf{f_c} = 0.452444 \times 10^{42}$ Hz $\mathbf{T_c} = 2.210218 \times 10^{-42}$ sec $\mathbf{E_c} = 2.997924 \times 10^{8}$ (kg m^2 /s ?) $\mathbf{M_{min}} = M_c / f_c = 0.73725 \times 10^{-50}$ kg/Hz $\boldsymbol{\lambda}_c = \boldsymbol{\lambda}_{min} = \mathbf{6.62606 \times 10^{-34}\ m}$ $\mathbf{a_{max}} = \mathbf{f_c}^2\, \boldsymbol{\lambda}_c = \mathbf{c}^2 / \boldsymbol{\lambda}_{pl} = 1.356391 \times 10^{50}$ m/s^2

$\mathbf{M_{pl}}$ / $\mathbf{M_c}$ ► This ratio 16.3574 and the fine relative inequality between the limits in the two cases is important and instructive for the research, mainly because of the following observation: The numbers and quantities maybe do not change very much with such a little ratio (since the exponent almost remains the same), however **the units and the phenomena, which we describe change subversively**.

Interpretation of particles as quantities of energy with inertia in a shared quantity. The process of conserving the structural elements (around average values) (5/48)

<·> The next finding that is important to cosmological research when introducing upper and lower limits to physical change is that: “The approach to a limit is removal from the other limit and this variation may be made at a pace, which also has limits: Slower or faster”.

f · fup = fmax → f = fmax / fup → fup = fmax / f.

The investigation shows that the maximum frequency fmax comes from the mean frequency squared f0^2. If the fmax is Epl / h = Mpl ·c^2 / h then the mean frequency f0 is the square root of the maximum frequency fpl. For example, the frequency of the energy [for equivalent mass Mpl = √(hc/G)]: fpl = 7.4008 ×10^42 Hz then the square root of this maximum frequency is: √fpl = 2.720444 ×10^21 Hz = f0.

We find the same frequency for the average energy value, as it corresponds to the average mass value: M0 = √(Mmin · Mpl). For the average mass value M0 = 2.00564 ×10^-29kg corresponds to the average energy value E0 = M0 · c^2 = 1.802582 ×10^-12J and the frequency of this quantity of energy is 1.802582 ×10^-12J / h = 2.720444 ×10^21 Hz

The ratio of sizes to the maximum (upper) limit gives a fup number as a frequency or a ratio of d as the rate of change, if you prefer. This number as a frequency set to the maximum limits determines how much the smallest quantity can be increased (so as not to exceed the maximum limit). That is, instead of fractions: Vmax/Vm = Mmax/M = Emax/E = fmax/f = λ/λmin = amax/a = dup we can multiply the smallest quantity or divide the maximum quantity by this number-ratio (dup) which also appears as a frequency (fup↑). The ratio of sizes to the

minimum limits gives the known frequency f (or n) of the E / h relation (as well as M / Mmin·sec = f).

<·> The two opposite ratios / rates (fup - fdown) determine the position between the maximum and the minimum limit and between them give the product of the maximum frequency fpl corresponding to the maximum quantity of energy Epl for the limit mass Mpl = √(hc/G). That is, fup × fdown = fpl = Epl / h. This relation of the two opposite rates that gives as a product the maximum frequency of the corresponding energy Epl showed that the maximum frequency fpl = Epl / h according to the limit mass Mpl = √(hc/G) contains a trap. Because in the shared amount of energy two opposite changes occur, which correspond to two opposite physical phenomena (with opposite vectors of magnitudes and especially of forces).

The calculation of an average value from the maximum and minimum limit of the changes easily showed that the maximum frequency fpl of the corresponding energy Epl / h is an average frequency f0 squared. Thus the rational thought immediately passed from the research mind that **two opposite wave processes occur in the structure of matter** and this thought had already been formulated as a conclusion: A quantity of energy is concentrated while with the other process a quantity of energy is decentralized. The first process was related to the gravitational field while the second process was related to the electromagnetic field. The investigation that followed revealed a wave process and fluctuation at extremely high rates. Calculations of simple functions of physical sizes reinforce (if not confirm) this rational thinking.

Picture: average-values-max-min-limits

A sample of average values with the limits min-max as it is specified by:

1) The physical constants c, G, h. 2) If $\lambda_{min} = h$

FORMULA	If: $\lambda_{min} = h$	For $M_{pl} = \sqrt{(ch/G)}$
$M_o = h \cdot f/c^2 =$	4.959029×10^{-30} kg	$2.0056443 \times 10^{-29}$ kg
$E_o = M \cdot c^2 =$	4.456952×10^{-13} J	$1.8025828 \times 10^{-12}$ J
$f_o = E/h = M/M_{min} =$	6.726398×10^{20} Hz	2.7204444×10^{21} Hz
$\lambda_o = h/M \cdot c = c/f =$	4.456952×10^{-13} m	$1.1019978 \times 10^{-13}$ m
$T_o = 1/f_o =$	1.486679×10^{-21} s	$3.6758700 \times 10^{-22}$ s
$F_o = M\ c\ f = E/\lambda =$	1.0000 N	16.357408 N
$V^2 = GM/\lambda =$	7.425215×10^{-28} m^2 /s^2	$1.2144000 \times 10^{-26}$ m^2 /s^2
$V_o = \sqrt{(GM/\lambda)} =$		
$= M \cdot c/M_{pl} =$	2.724924×10^{-14} m/s	1.101998×10^{-13} m/s
$f_{up} = f_{max}/f =$	6.726399×10^{20} Hz	2.720445×10^{21} Hz
$M_o / M_e =$	5.44387	22.01735
$M_p / M_o =$	337.288	83.39569

M_0 = Average mass, M_e = Electron mass, M_p = Proton mass

THE RELATION WITH THE UPPER LIMIT (max)

$$\frac{M_{max}}{M} = \frac{E_{max}}{E} = \frac{V_{max}}{V} = \frac{f_{max}}{f} = \frac{a_{max}}{a} = \frac{\lambda}{\lambda_{min}} = \frac{F_{max}}{F} = f_{up}\uparrow$$

THE RELATION WITH THE LOWER LIMIT (min)

$$\frac{M}{M_{min}} = \frac{E}{E_{min}} = \frac{V}{V_{min}} = \frac{f}{f_{min}} = \frac{a}{a_{min}} = \frac{\lambda_{max}}{\lambda} = \frac{F}{F_{min}} = f_{down}\downarrow$$

$$f \times f_{up}\uparrow = f_0^2$$

Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter (6/49)

This investigation began with the rational interpretation of space as a quantity of energy in equilibrium and of matter as rapid changes of this global quantity of energy. After the mathematical correlation of the inertia with the velocity and the introduction of the limits and the functions of the magnitudes in accordance with the physical constants c, G, h, they immediately sought what physical phenomena could occur in microscopic changes so as the structural elements are preserved. The description of the changes and the magnitudes that change clearly show that periodic and wave changes occur on a shared amount of energy that remains constant. Finding the mean value and calculating this value around which the fundamental particles of matter are presented is extremely important. Thus, the first calculations reveal the dynamic origin of these particles, that is, how they are phenomena of a wave and periodic process and not spontaneous and separate components. This also reveals the coexistence of two opposite wave processes for the structure of matter.

<·> We have seen that when upper limits are introduced in the increase of velocity and respectively in inertia then equations for the upper limits follow in the other physical phenomena that change. The physical phenomena we know first and are generally related to motion are described as rate of change, force, energy, period and length. Many other features have been observed in the structure of matter and some of the processes are not known. We have a strong reason to expect that the strangest features in the structure of matter are derivatives of the first physical phenomena we generally observe in motion. These are created and appear as completely different due to the high speed in wave processes and the rates of change that are the highest in nature, in microscopic lengths and with periodic repetition. Extremely subtle deviations in these rates of change also pro-

duce new phenomena and change wave motions.

Extremely subtle reductions from the maximum velocity of nature (as we calculate them according to the inertia-mass ratio Mpl / M = c / v) correspond to subtle reductions in the other physical phenomena that have their maximum values (such as force, energy, rate of change and at time intervals). The velocity from the equations Mpl / M = c / v and $\sqrt{(GM / \lambda)}$ is a function of the other physical phenomena and their magnitudes. If one of the physical magnitudes changes, then corresponding changes occur in the other magnitudes of the accompanying phenomena (as a function of each other). So when we see the minimum and maximum inertia at what values exactly correspond to the other magnitudes (such as energy, frequency and rate of change, force and lengths created) then the research will give more information and the interpretation of structural elements proceeds and gives answers to our questions.

“From the first observations, the upper frequency of the proton passes through the frequency range of the electron (overlapping) or vice versa: the frequencies of the electron enter within the frequency range of the proton. If we had not observed the mean values of the extreme limits in physical changes, we would probably still miss the observation that the two opposite frequencies in these two particles are approaching. Let us emphasize that only a small part of the spacious spectrum of frequencies and respective velocities and mass quantities appears in the structure of matter. This observation implies that there are processes (periodic and wave ones) that favor the particular sections of frequencies, wavelengths and equivalent velocities”. (281)

The calculation of an average value around which the fundamental particles of matter are presented is the first explanation for this observation.

Picture: electron-proton-

Below there is an indicative table with the ratio of the mass of each particle to the upper and lower limit. The frequencies of their equivalent energy are reversed and approaching

Electron $\mathbf{M}_e = 9.10938 \times 10^{-31}$ kg	Proton $\mathbf{M}_p = 1.672621 \times 10^{-27}$ kg
LIMITS OF $M_{pl} = \sqrt{(hc/G)}$	LIMITS OF $M_{pl} = \sqrt{(hc/G)}$
$M_{max} / M_e = 5.989695 \times 10^{22} \uparrow$	$M_{max} / M_p = 3.2620934 \times 10^{19} \uparrow$
$M_e / M_{min} = 1.23559 \times 10^{20} \downarrow = f_e$	$M_p / M_{min} = 2.26873 \times 10^{23} \downarrow = f_p$
TO UPPER LIMIT if $h=\lambda_{min}$	TO UPPER LIMIT if $h=\lambda_{min}$
$M_{max} / M_e = 3.661765 \times 10^{21} \uparrow$	$M_{max} / M_p = 1.99426 \times 10^{18} \uparrow$

Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter (7/50)

<·> The closest relationship of the astronomical world to its microscopic dimensions is manifested rationally without calculations when we think of the Universe as a complete Whole in all possible ways (within a maximum period of time) presented simultaneously as space. The global space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. The complete Universe is presented at the same time absent as space. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared amount and their structure is interpreted by wave and rapid changes.

When the search for the limits of the world and for the principle of nature has begun with the previous interpretation, then many conclusions follow easily and quickly. One of the first conclusions is the connection of the microcosm (in the sense of matter) with a shared amount of energy (in an internal direction with space). Space has been explained as a phenomenon by the simultaneous presence of the universe as a complete Whole and therefore the microcosm is explained integrated with the astronomical world (ie inextricably linked). The conclusion about the gravitational field as a phenomenon created by dynamic and wave processes in a shared amount of energy and at the highest speed of nature could not escape with this interpretation. Thus rationally before any calculation,

the gravitational field is not interpreted so simplistically as force or childishly as a geometric deformation of an elastic surface.

The gravitational field is rationally interpreted by a wave process of energy return to region of concentrated matter, while matter has been interpreted as points of reduction and fluctuation of shared energy that are maintained at extremely

high rates. Calculations of simple functions for the change around an average value with two insurmountable limits (min-max) in the change of a shared energy can describe two opposite forces in opposite wave motions. The gravitational field is one of the phenomena of this contrast (due to an e / m disturbance in the shared amount of energy and the restoration of energy balance, as we will see).

The following are three excerpts from the treatise COMPLETE UNIVERSE - DYNAMIC SPACE & WAVE PHENOMENA, with the first thoughts of rational interpretation as they were formulated simply for such a complex process of nature:

“Also the forces, which appear in the microscopic structure of matter, do not emanate from the microscopic movement of some particles. They are created by the property of the constant space to assemble and disassemble its energy with extreme highest frequency and by phenomena of coordination, that increase or decrease the energy and by stationary waves. Basically, a wave in the isotropic energy of free space can either be radially disassembled (expansion) or be radially assembled (contraction). In this way, the wave is weakened if "transmitted" radially or on the contrary, it is strengthened if it is assembled. Electromagnetic radiation belongs to the first case, while the gravitational radiation belongs to the second case. The view of gravity as a phenomenon of wave motion in the opposite direction can be of decisive importance for the investigation on the maintenance of the structure of matter”. (p43)

“The cause of concentration of material carriers is the wave flow of the energy of the free space for the compensation of its deficiencies, which are presented as material carriers and as local variations in space energy”. (p165)

“The most important is to explain according to which processes this field is created and how these processes are associated with certain other phenomena, which also accompany matter everywhere. We have succeeded in thinking about what to look for in order to investigate this phenomenon and to solve great unresolved problems. All logical thoughts and observations of the phenomena show

that the phenomenon of the gravitational field, can exist everywhere and accompany all material things because is created in microscopic dimensions. We have to look for the answers in the structure of matter and in the wave motion phenomena that we describe”. (p167)

Picture: 6aa291a29c9ff0674e0777f86e6f4bf8 (gif, waves of a black medium gather in a dark hole)

Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter (8/51)

The interpretation of particles in the structure of matter by wave motions in a shared amount of energy is satisfactory even as a title. Its unfolding could stop here. But once we have found the end of the thread and the right path we can not resist the search. Questions remain about many more features of the structure of matter. The characteristics within the structure of matter are interpreted as derivatives of the first phenomena that we observe in the common phenomenon that we summarize in the word "motion". That is, we have begun an interpretation of nature from the simplest and most common phenomena. **As it turns out, the deviations and modes of movement are so many that fast and rhythmic movements can look completely different and as a variety of phenomena at higher speeds and shorter lengths**

“Two different worlds meet with each other into the structural elements of the cosmos called "matter": The human world of mechanical movements up to the astronomical world and a tiny world of wave movements and rhythmic fields. The passage from the world of tiny and rapid changes to the world of mechanical movements occurs within the structural elements. To explain exactly what happens in the structural elements and how these two worlds work together, it is necessary to make use of information on the structure of matter and more difficult mathematics”. (p282)

We leave the most difficult mathematics for those who have such an ability and the great ambition for a Nobel Prize in physics. We will eat the cake and let them take the candles. Notice how we rationally understand nature by introducing in our thinking a few fundamental features and with a more careful wording:

“The tiny world of particles is the world of the shortest interaction times and not just a world of most thin and smallest things. This is the second fundamental difference between the microcosm and macrocosm, after the difference of wave

motion”. (p141)

That is, we observe that the size of things involves motion and therefore time and length, instead of thinking about the size and static dimensions of things. Immediately the adjective "small" reveals more features. The high speed and the angle of motion in tiny lengths create another world from the world as we characterize it with the adjective "big". You do not need to be a physicist to understand this.

* The mass localized as particles,

  the electromagnetic field,

  the gravitational field

  and the nuclear attraction

are common phenomena from the variance of the same amount of energy and all things regardless of their form are transformations of these general physical phenomena. The mistake in modern research, which hindered the interpretation of nature, was this: **They left the mass and particles as segregated from the fundamental physical forces**, as self-ruling, self-inclusive, individual and external phenomena and not as repeated moments in the change of a quantity of energy. (p420 - 421)

Picture: 480px-Helium_atom_QM (From Wikipedia, an illustration of the helium atom)

Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter (9/52)

“A shared amount of energy is entirely presented reversely as a complete lack of energy. Matter is presented as the beginning of the Universe, while the Universe is full within a maximum of time" (p365)

The total amount of energy is the same for all things and the structural elements are shaped by the same energy fluctuations in one and the same dynamic space. Free space does not expand or shrink. Free space is a shared and balanced amount of energy with fluctuations, which create phenomena of concentration and decentralization in the isotropic energy transfer by waves. Free space compensates in the fastest way (almost c) for its energy deficiencies, the deficiencies that make up the material world. But the wave flow to compensate for the shortcomings, again creates some shortcomings very quickly and thus retains the material elements. Centralized energy transfer explains the gravitational field effect, while decentralized energy transfer explains the electromagnetic field.

· Electromagnetic fluctuations and fields.

· No restoration of the equilibrium, wave phenomena, synchronized changes and stagnant situations.

· Particles and their interactions.

· Gravitational field (a reverse wave in the process of energy transfer).

All the above are inseparably included in a broader process where energy varies at the fastest rates so as return to the equilibrium. Whatever happens in the microscopic space, which we can observe very indirectly, using sophisticated instruments and computers, is nothing more than elemental changes in quantities and sizes of length, time, pace and energy. They are periodic changes with insurmountable limits, because they are caused to a quantity that remains constant. All other physical phenomena (such as heat, electric charge, the transfer of ener-

gy in certain proportions, the strange properties of the particles and ultimately the formation of atoms) are explained by this synoptic process. (p179)

We have interpreted physical forces and matter as phenomena from the disturbance of a shared quantity, by wave motions and oscillations of energy around mean values and with opposite forces associated with the concentration and decentralization of energy at extremely high rates. Now we will logically look through calculations to see the derivative phenomena that have been observed as different (especially the gravitational field, the nuclear and electric field, the electric charge) with which magnitudes are related mainly to the rates of change and then to the force and times. These phenomena that underlie nature as seen up to the farthest end of free space are high-speed and repetitive, they are also common processes throughout nature, since space itself is a shared amount of energy distributed in a state of dynamic equilibrium.

Picture: 714169509a-waves

Description: Moving image showing oval waves on a black background

53. The shortest course of thinking and explanation that give reliable answers

The present cosmological theory began with the idea of the universe as a complete Whole (in all possible ways) within a maximum period of time, where it simultaneously exists as space. The world space is interpreted as a balanced amount of energy from the simultaneous presence of the Universe as a whole. But so far we have proceeded to an interpretation of the structure of matter. One would ask to know directly about the boundaries of space and the maximum time that the Universe is complete (as defined from the beginning). The search necessarily began somewhat upside down from the smallest parts of the Universe. Because most of our observations of physical phenomena come from our local environment here on Earth. Fortunately, however, a multitude of phenomena are fundamental and pervasive throughout the Universe. Many physical phenomena that we have observed and learned nearby are the same phenomena that the Universe has unimaginably far from us. Our research uses the knowledge of the fundamental phenomena that are observed here locally and in the microscopic dimensions. Definitely, the research will utilize a lot of observations about the universe in its astronomical dimensions. But research proceeds from understanding physical processes to the tiny dimensions as we can and observe them near us and in our own bodies, since it is impossible to be transported throughout the universe. But also as shown by the countless number of galaxies, it would be misleading for cosmological research to know each celestial body separately.

"Knowledge of nature as a whole is not knowledge of a particular thing," it was said at the beginning of this presentation. Cosmological research proceeds with the observations for general characteristics of things, for the necessary phenomena and processes of nature that are preconditions for the variety of its forms. "We need an explanation for the structure of the Universe and not a good knowl-

edge of every astronomical body it contains," as we said. Equipped with the holistic interpretation of the structural elements of the universe (as wave motions in the presence of a shared quantity) and prepared with calculations as we have done them according to a few universal constants, you will see that we can not only estimate the limits of astronomical world, but also to interpret some of its features. You will see how far cosmological research can go with rational thinking and simple calculations. When we are ready then the most probable numbers for the global boundaries of space and time and the explanation of how the distribution of astronomical bodies is achieved will be published.

But we have not yet completed the interpretation of the processes by which the structural elements are preserved, and **the questions we had about their role in nature were an obstacle** to understanding what the whole Universe is. After all, a variety of phenomena have been observed in the structure of matter, and physicists demand their full interpretation and precisely the quantities and processes by which the phenomena differ. Here they will find what they were missing.

Later, towards the end of the presentation of this cosmological interpretation, you will read the most modern and consistent thoughts about the relationship of the Universe and matter with life and whether there is any involvement of a God and what God. Without having a correct interpretation of the limits of the Universe, of how nature works and with what processes of natural phenomena do not ask for convincing and remarkable answers to these questions. Before reading reasoning and observations about the relationship between nature and life or some theological version, it is essential that you understand how nature works and has its laws, and that you have the mental resources to separate fantasy from reality. The presentation of the cosmological theory (for a complete Universe that seems absent as a global space) will end with important thoughts and unequivocal remarks on the subject that every human being has always wo-

ndered ... Our answers will always be as consistent as the most skeptical people require, not with prejudice and religious belief and with whatever doubt is imposed by the lack of knowledge.

If you are frustrated with surrealist theories, fragments of ancient wisdom, and imaginary things that cannot be verified, here you will find the most consistent thoughts in the world connected with the most obvious observations, which explain the scientific measurements. You can check the calculations, if not yourself then with help of a good high school student. The measurements have been used for calculations that extend this cosmological theory and the conclusions are in agreement with the quantitative characteristics of the nature.

Picture: methodic/PinClipart_-

Description: A line coming out of a maze. The correct path of thought from which we are led to the solutions and answers we seek

54. A summary of a few lines to remember the path of rational interpretation:

This cosmological theory has begun with the thought of the Universe as a complete Whole (in all possible ways) within a maximum period of time presented simultaneously as space. The global space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared amount which remains in equilibrium and their structure is interpreted by wave and rapid changes. A shared amount of energy appears as empty space, while with it the structural elements are preserved as its fluctuations. Space has properties and behavior of a shared amount of energy and the structural elements are closely connected with it as pico-bangs in wave phenomena.

The Universe in the whole of time is complete before the relative moment in which its parts begin to exist. The beginning of the Universe is not outside the Universe and the structural elements are the Universe itself in its minimum (shortest) moments. Thus the closest relationship of the astronomical world with its tiny dimensions is manifested rationally and without calculations. One of the first conclusions and with the least number of thoughts was that the principle of conservation of energy coincides with the principle of conservation of the same total Universe. The total amount of energy is the same for all things and all the structural elements are formed and maintained with the same energy fluctuations of one and the same dynamic space (which exists as their common core). Actions at a distance between bodies (intangible forces) are produced by wave motions of space.

Many newer observations and important conclusions have been added to this

summary of the original theory. This interpretation was extended and improved after the calculations for the minimum (min) and maximum (max) limits on the physical changes, in accordance with the physical constants of the maximum speed c, the elementary quantity for the e / m interactions h and the constant G for gravitational force. The calculations of the physical changes have given the correct results in accordance to the acceptable measurements as they are locked in the physical constants, but also with investigation for deviations of the physical constants and the limits in changes.

The next post will remind you of the most important observations and conclusions of the interpretation, which came from calculations or agree with them (so far) and they are needed for the specialization of the research. We say "specialization" because the interpretation has started from general, common and widespread characteristics of nature and as concise as possible. We can explain and calculate the particular characteristics of the microcosm and it seems that we have rightly started with this reductive (and simplistic) interpretation. The conclusions that will follow should be especially noticed by the physicists who research.

Picture: scientific-method-research-2

Description: The known method of investigation is shown in boxes : Observation - Question - Investigation - Hypothesis - Experiment - Verification of hypothesis or Rejection - Conclusion - Public report. A general question for each observation is not introduced in this method: Is it a rare and unique observation or is it frequently repeated and widespread? This is a feature in experience that simplifies the investigation and links the observation to a general explanation

55. A summary of a few lines to recall some of the conclusions of the interpretation, which came after calculations:

· A limit of maximum inertia comes from the three most important constants √(h·c / G). We have used the units of measurement of the International System. The constant h in the relation Mpl = √(h·c / G) is chosen and not the constant h (bar).

· When the correspondence of velocity to inertia (Mplanck / M = c / V) is formulated then the change of magnitudes have a maximum limit max which was missing from physics. The ratio of values to the maximum (upper) limit gives a fup number as a frequency or a ratio of d as rate of change, if you prefer. The ratio of values to the minimum limits gives the known frequency f (or n for particles) of the E / h ratio (as well as M / Mmin ·sec = f).

· The application of the correlation ratio (Mpl / M = c / v) for the calculation (inertia and corresponding velocity) of particles and the relation V = c M / Mpl = √(GM / λ) reveal a velocity -V that is subtracted from the maximum c. The inertia of particles is manifested by a reverse process that reduces the maximum speed of nature. The fundamental processes in the tiny dimensions of nature begin with movements of the highest speed.

· An extremely low velocity -V together with the familiar constants h and c which are obviously related to electromagnetism give in the calculations high accuracy results and reveal the involvement of the constant G in the microscopic processes, as we said. The extremely fine reductions from the maximum speed of nature (as calculated according to the inertia-velocity proportion Mpl / M = c / v) also correspond to subtle reductions in the other physical magnitudes. A number of microscopic phenomena are associated with extremely small velocity deviations in decimal places of the maximum speed limit, which we ignore and are not easy to calculate.

· The correlation of inertia with a velocity according to the equation Mpl / M = c

/ V revealed with numbers, that a minimum inertia is not missing from the minimum quantities of energy (M = V·Mpl / c = h·f / c^2).

· Because the constant of gravity G has been introduced for the calculation of the upper inertia limit [Mpl = √(h·c/G) = h·fpl/c^2], all the results of the calculations for microscopic phenomena come out with high accuracy and with the participation of the constant G in the calculations, which is negligible for force calculations in microcosm. But the gravity constant G is necessary for describing and calculating subatomics changes (as you have seen) and not for calculating the gravitational force on particles, as a professor would misunderstand. [* "The introduction of the gravitational constant G to the calculation of mass in microscopic dimensions does not introduce the gravitational force into the structure of matter. This constant is associated with deceleration processes, which give finally the gravitational field." p285]

· The calculations with the specific maximum inertia [Mpl = √(h·c / G) = 5.45624 × 10^-8 kg and the minimum Mmin = h·1Hz / c^2 = 0.73725 × 10^-50 kg] give high precision results, as they match the properties of the particles of matter and electromagnetic phenomena. These limits are in line with the universal's physical constants, but will likely require subtle corrections. ["In order to obtain the quantities and sizes of known physics and in particular about the structure of the simple atom, it is requisite that the minimum limits and the maximum limits are almost these which we can easily calculate by using the universal constants h, c, G , pi". p. 265]

· Then we calculated an average value of the two limits (min-max) for an average inertia value M0 = 2.00564 × 10^-29kg. The result of the mean value is among the magnitudes determined by the basic particles of an atom of matter. That is, the electron and the proton have magnitudes close to the mean values (for an average mass value of ~ 10^-29kg).

· The constant G in microscopic processes (along with the familiar constants h and c which are obviously related to electromagnetism) is associated with an ex-

tremely low velocity -V which is as high as the inertia is greater. We have seen that this subtraction speed -V from the maximum c gives the corresponding inertia [-V = c · M / Mplanck = √(G · M / λ) → M = -V · Mpl / c]. The maximum inertia (Mpl) corresponds to the maximum reduction of the maximum speed c. The minimum mass Mmin = h·1Hz / c^2 = 0.73725 × 10^-50 kg corresponds to the minimum reduction of the maximum speed (which according to M · c / Mpl is -Vmin = 0.40508 × 10^-34 m / s). So the minimum inertia which is extremely small corresponds to the maximum speed c that we generally give to light, since it corresponds to an extremely small reduction in the maximum speed, which can not be measured. In addition it gives the definitive answer to the question of whether "photons" have an elementary mass.

· The e / m waves have been interpreted as the result of a deceleration, ie a decrease of the maximum speed (on another phenomenon, which we are looking for and you will find out later). This reduction is extremely small to measure and corresponds to photon inertia to a minimum of 0.73725 × 10^-50 kg. Theoretically, the velocity reduction for the rest mass of an electron 9.10938 × 10^-31 kg (corresponding to an h·f quantity of energy of corresponding frequency 10^20Hz) is only 5.0052 × 10^-15 m / s.

· Therefore the difference of known particles from e / m fields occurs at extremely high rates of change that exceed the frequency of light (at least a few million times). The equivalent energy of an electron corresponds to rates around 10^20Hz while for light it corresponds to lower rates of 10^14Hz. However, a phenomenon (which escapes us) allows only certain quantites of energy h·f to be maintained as basic particles that compose the structure of matter with rest mass h·f / c^2.

· The gravitational field is rationally interpreted by a wave process of energy return to the region of concentrated matter, while matter has been interpreted as points of reduction and fluctuation of shared energy maintained at extremely high rates (around average values, as we concluded). We assume this is one of the microscopic phenomena that has escaped and explains the energy fluctuation

around an average value and at which the maximum velocity from which a deceleration process begins will be sought. Two opposite wave processes occur in the structure of matter: A quantity of energy is concentrated and an almost equal quantity of energy is decentralized (with an extremely small difference in time).

· Calculations of simple functions for the change around an average value with two extremes (min-max) in a shared amount of energy can describe two opposing forces in opposite wave motions. This opposition to two physical processes of the highest speed and the highest rates of change explains how certain quantities of energy are presented as fundamental particles in the structure of matter, while a quantity of energy with values up to the upper limit (as we have calculated) is not represented in particles. The fundamental particles of matter are a small part of this rapid process where a shared quantity changes at minimum and maximum values. That is why particles are not completely separate from motion and energy, and mass is not yet a fixed characteristic, like that of visible bodies.

· Space is a shared amount of energy distributed in a state of dynamic equilibrium and this interpretation of space shows us that we can proceed to calculations for its own amount of energy as a function of length. But first we need to know how energy is distributed within the structural elements and what happens inside, where it does not happen on the free space. (In future posts we will show with simple calculations what space matches the characteristics of the structural elements).

Picture: web-order-fulfillment-inventory-management-

Description: A notebook with checkboxes, which means that we proceed in the correct and rational order of thoughts

What about the oscillations and energy fluctuations that maintain the structure of matter? (The image as is formed in our minds so far, 56)

The multitude of different phenomena has been explained as derivative phenomena of a fundamental one which we call "motion" and by characteristics of motion, which with the resistance to motion increase. We have succeeded in thinking on matter and researching its structure with this reductive and simplistic interpretation of nature beyond all expectations and with the simplest calculations. All the other things and the names by which natural processes are explained in modern research without their characteristics being derivative phenomena of motion and synchronization (such as various particles and their properties) are deceptive thoughts and fantasies. Deceptive thoughts are not saved from mathematics and their serious presentation and have misled world research.

But the motion that underlies nature is not the random motion in free space and the motion of separate bodies. Motion and characteristics of motion from which all nature is maintained and has its equilibrium (and its laws) is wave motion, that is, motion due to perturbation in a shared quantity that is balanced. Characteristics of wave motion (and changes that are repeated at extremely high rates) are within the structure of matter and therefore in all individual bodies. So the image that is now formed in our mind for a simple matter atom with more details of the fundamental phenomena after the calculations with minimum and maximum limits in the physical changes is the following:

We have interpreted physical forces and matter as phenomena from the disturbance of a shared quantity, with wave motions and oscillations of energy around mean values and with opposite forces, associated with the concentration and decentralization of energy at extremely high rates. The fundamental particles of matter are some of quantities of energy presented as particles of equivalent mass in an extremely fast process by energy oscillations. Two opposite wave

processes occur in the structure of matter: A quantity of energy is concentrated while with the other process a quantity of energy is decentralized. The average energy value E0 = M0 · c^2 = 1.802582 ×10^-12J corresponds to the average frequency f0 = 1.802582 ×10^-12J / h = 2.720444 ×10^21 Hz. This shows a process of concentration and decentralization of h·f energy from wave motions in two opposite directions: one entering to center and one leaving to periphery, in other words. A frequency range of almost the same, from a few Hz to 10^21 Hz corresponds to each direction of this energy oscillation with two extreme limits around average values.

Strong electric and magnetic fields alternate and oscillate (fluctuate) without being able to move away from the disturbance points. Wave motions in two opposite directions predispose us to energy oscillations that are not just rotational around a nucleus. Oscillations of energy in the direction of center and periphery at the highest rates and around the speed of light at extremely tiny lengths we do not expect to detect them simply as movements. We expect that microscopical **energy oscillations and energy changes that are repeated extremely rapidly will be detected as something permanent within the structure of matter**, such as particles, particle properties, properties from the interaction of particles, and as permanent forces. "The passage from the world of tiny and rapid changes to the world of mechanical movements occurs within the structural elements." (Page 282. See again the animation that accompanies the post and is simplistic to imagine an invisible phenomenon which is fundamental and dynamic and many other characteristics and stable properties are produced by it).

Researchers should pay more attention to the posts that follow because they will need to fully express the relationship between gravitational force and nuclear force in language of mathematics and will be able to further explore the dynamic plot in the structure of matter.

Picture: atom-waves-centralized--tr-plus4-txt

Description: Pulsating waves and oscillations of energy make up the atom

57-1. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Comparison and mapping of sizes)

The characteristics of the structure of matter which are to be explained follow this apt question: What happens at these extremely high rates of change within the structure of matter and energy is not transferred like e/m radiation in free space? The fundamental particles of matter and their inertia occur at these extremely high rates of change, which are millions of times higher than the rates of change of the two components of the fields of light. This is not accidental. The answer to the question was facilitated by the finding that the extremely high rates of change corresponding to the elementary particles are around an average value. The first and simplest observations to answer this question come when we look at the values that are at the top (maximum) and the lowest values (minimum) and what changes as we approach and pass the average values. The investigation followed focused on this question.

In this investigation it was still necessary to look at the magnitudes of the physical forces which are accurately observed in the structure of an atom, mainly of electric charge and nuclear attraction. Therefore, another investigation into calculations followed to estimate the magnitudes of the resulting forces in atomic dimensions and then to compare them with the theoretical magnitudes of the general force, which the calculations easily give when we introduce a maximum inertia limit [such as the $\sqrt{(h \cdot c / G)}$]. It was a smart choice not to use subdivisions or multiples of the unit of measurement to facilitate comparisons of sizes that were extremely small and those that were extremely large. The same units of measure (of the SI) with the same symbols were used in all calculations. For example, m for length, sec for time and period, m / s for speed, kg for mass and inertia, J for energy, N for force, Hz for frequency. This option greatly facilitated the observation of mathematical relationships between the results and the estimation of the

difference in values obtained by simple calculations. Subdivisions and multiples as well as conversion to another system of units were mainly used for comparison with measurements and results from some other surveys.

Picture: subdivisions-multiples

Table of some symbols for multiples and sub-multiples:

Numeric factor	Greek term	English term	Symbol
10^{24}	γιώτα	yotta	Y
10^{21}	ζήτα	zetta	Z
10^{18}	έξα	exa	E
10^{15}	πέτα	peta	P
10^{12}	τέρα	tera	T
10^{9}	γίγα	giga	G
10^{6}	μέγα	mega	M
10^{3}	κίλο	kilo	k
10^{-2}	σέντι	centi	c
10^{-3}	μίλι	milli	m
10^{-6}	μίκρο	micro	μ
10^{-9}	νάνο	nano	n
10^{-12}	πίκο	pico	p
10^{-15}	φέμπτο	fempto	f
10^{-18}	άτο	atto	a
10^{-21}	ζέπτο	zepto	z
10^{-24}	γιόκτο	yocto	y

Comment: Subdivisions and multiples. Both small and large numbers in the structure of matter are mathematically connected

58-2. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

As the interpretation of the structure of matter progresses, we understand that **we are investigating the wave changes that hold certain quantities of energy as particles**. The difficulty of interpreting more features of atomic matter increases. Interpreting the structure of matter with more features requires more difficult mathematics and more difficult calculations and was quickly seen by a number of calculations and the search for the connection of quantities between them. When we aim at the questions that arise then the interpretation of the structure of matter proceeds rationally and the pieces of the puzzle fall into place. If we do not have questions and if we do not aim at solving some problems, then the interpretation will remain stagnant and any misunderstandings will not be revealed.

The simplest calculations with the values of the maximum limits [according to the limit of maximum inertia Mpl = √(h·c / G) and the correspondence Mpl / M = c / V] give results at extremely high rates and for extremely strong forces in extremely short lengths. The limit of maximum inertia Mpl = √(h· c / G) is 10^21 times higher than the rest mass of an electron and in theory there could be particles with a rest mass many times greater. The forces that theoretically come out in microscopic lengths from such particles with a mass greater than the known particles are more powerful than forces that astronomical bodies have with each other. The structural particles of matter do not explain such strong forces. In the structure of matter no particles with a correspondingly large mass and in such microscopic lengths as in theoretical calculations are observed. This observation is a trap, because by finding (that such particles do not exist at such close distances) any professor would stop the investigation. However, the rational interpretation proceeded with the conclusion that, although such particles and in such an approach within the structure of the atom did not exist, but a (shared) amount

of energy was present in another way ... Besides, as we have said, a number particles could exist according to the correspondence Mpl / M = c / V and yet, the particles that make up the structure of an atom are minimal. The particles of the structure of matter were explained as a result of oscillations and fluctuations of energy at extremely high rates. The fundamental particles of matter are a limited part of this wave process and energy oscillations according to the minimum and maximum limits of change and around the average values as we easily saw. Therefore the strong forces within the structure of the atom had to be sought in wave motions and interactions of the shared quantity by which the structural particles are created and maintained as independent.

Picture: hf-λ-

THE RESPECTIVE FORCE (±N) FROM THE ENERGY (h·f) IN RELATION WITH WAVELENGTH λ AND TO THE MINIMUM LENGTH IN CERTAIN SELECTED PHENOMENA

FREQUENCY f in Hz	WAVE-LENGTH λ=c/f (in m)	ENERGY J E=hf in J	FORCE $F=E/\lambda=E^2/h\cdot c$ in J / m	FORCE $F=E/\lambda_{pl}=E_{pl}/\lambda$ in J / m
			2.2×10^{-42}	16.3574
1×10^{6} Ground wave	3×10^{2}	6.626×10^{-28}	2.2086×10^{-30}	1.63573×10^{7}
7.495×10^{14} Violet color	4×10^{-7}	49.66×10^{-20}	1.2415×10^{-12}	1.225930×10^{16}
1×10^{16} Extr ultraviolet	3×10^{-8} (10nm)	6.626×10^{-18} (41eV)	2.2086×10^{-10}	1.63573×10^{17}
1×10^{18} Hard X	3×10^{-10} (1Å)	6.626×10^{-16} (4135eV)	2.2086×10^{-8}	1.63573×10^{19}
1.2356×10^{20} Electron	2.4263×10^{-12}	8.1871×10^{-14}	3.3743×10^{-2}	2.02110×10^{21}
6.7×10^{20} ($\approx f_o$) $\sqrt{4.5244\times10^{41}}$	4.45695×10^{-13} ($\approx\lambda_o$)	4.45695×10^{-13}	1 N	1.100264×10^{22}
2.720442×10^{21} (f_o)	1.101998×10^{-13} (λ_o)	1.802582×10^{-12} (E_o)	16.3574 (F_o)	4.449940×10^{22}
2.272×10^{23} Neutron	1.3195×10^{-15}	15.054×10^{-11}	11.4088×10^{4}	3.716303×10^{24}
fpl 7.4008×10^{42}	$\lambda_{pl}=0.40508\times10^{-34}$	49.038145×10^{8}	1.21058×10^{44}	1.21058×10^{44}

$F=E/\lambda=E^2/h\cdot c$

$\approx 10^{43}$

$\approx 10^{43}$

59-2b. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

What we see in the short calculations: 1) We intentionally use the formula for gravitational force (with the constant G) and we see a strong force Fg in a radius of about one atomic nucleus. 2) We compare this strong force with the force of the electric charge Fel and find that the second is 861.022 times weaker. 3) Surprisingly, the result of strong force and electric charge is around the right magnitudes, but it comes out as a gravitational force with two imaginary particles, which would have the limit mass Mpl = √(h·c / G). 4) Indicatively (below) we calculated the gravitational force with the same amounts of mass in a distance length which (according to the minimum and maximum limits) is the average value. The result is a force of average magnitude.

Picture: Fg-Fel-1eng

[<·> **What force results** by the Newtonian proportion for a radius $r_e = 1/4\pi\ \varepsilon_o\ (e^2 / M_e\ c^2) = k\ (e^2 / M_e\ c^2) \rightarrow r_e = 0.2817937 \times 10^{-14}$ m and for masses $M_{pl}^2 = h{\cdot}c/G = (5.456243 \times 10^{-8}\ kg)^2$

$\mathbf{F_g = G\ M_{pl}\ M_{pl} / r_e^2} \rightarrow G\ 29.7706 \times 10^{-16} / 7.940767 \times 10^{-30} =$

$19.864432 \times 10^{-26} / 7.940767 \times 10^{-30} = \mathbf{25.01576 \times 10^3\ N}$

Electric force for equal radius r_e according to: $F_{el}{\cdot}4\pi{\cdot}r^2 = (1/\varepsilon_o){\cdot}(q{\cdot}q2) \rightarrow$

$\mathbf{F_{el} = k\ e^2 / r_e^2 \rightarrow k} \cdot 2.566968 \times 10^{-38} / 7.940767 \times 10^{-30} = \mathbf{29.05356\ N}$

$F_{el} = 29.05356\ N = h{\cdot}f_e / r_e = E_e / r_e$

$\mathbf{F_g / F_{el}} = 25.01576 \times 10^3 / 29.05356 = \mathbf{861.02219}$

<·> **What force results** by the Newtonian proportion for a mean length $\lambda_0 = 1.1019978 \times 10^{-13}$ m and for masses $M_{pl}^2 = h{\cdot}c/G = (5.456243 \times 10^{-8}\ kg)^2$

$\mathbf{F_g = G\ M_{pl}\ M_{pl} / \lambda_0^2 = 16.3574\ N} = \mathbf{E}_0 / \lambda_0$

$F_{el} = k \cdot e^2 / \lambda_0^2 = 0.01899766\ N$

$F_g / F_{el} = 16.3574 / 0.01899766 = \mathbf{861.022}$]

60-2c. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

What we see in the short calculations: In the previous calculations (of the previous post) we observe the quantitative relationship of the strong gravitational force (as we assumed) with the force of the electric charge. We find that the ratio 861.022 is related to the so-called finely ground constant α and to 2π, the number associated with repetition and periodicity. We also observe that the square root of this ratio of the two quantities again gives a number close to the magnitude we found for the the electric charge force.

Picture: Fg-Fel-2eng

[$\mathbf{F}_g$ / 861.02219 = $\mathbf{F}_{el}$

Also we will observe the following coincidence:

861.02219 / 2π = 137.0359 = 1/α (fine structure constant)

If this maximum gravitational force F_g is reduced 137.0344 ·2π = 68.51722 ·4π times, it gives electromagnetic.

$\mathbf{F}_g$ / 137.0359 · 2π = $\mathbf{F}_{el}$

$\mathbf{F}_{el}$ = G M_{pl} M_{pl} / r_e^2 (137.0344 ·2π) = **29.054 N**

With a rough calculation we find, that the gravitational force between two particles which would have the maximum mass, is almost the electromagnetic force squared.

√861.02219 = 29.34317

The radius r in the denominator should be 29.34317 times greater (around r = 8.26872 $\times 10^{-14}$ m and r^2 = 68.3717 $\times 10^{-28}$ m^2) for the electromagnetic force to emerge precisely from the Newtonian relation of gravitational force. We find the same ratio 861.022 for two forces resulting from the energy of the electron: In relation to the length λ_e and in relation to the radius r_e we have:]

61-2d. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

What we see in the short calculations: We observe that G Mpl Mpl = h c and that h c / k e^2 as G Mpl Mpl / k e^2. The units of measurement for electrical and magnetic phenomena in these equations are eliminated and the force of the electric charge can be compared as a gravitational force and as a common force of engineering. We investigate the force of an electric charge as a gravitational force (with the constant G) and observe the relationship to the length of a distance that is supposed to be a radius or a wavelength. Here you see a selected part of these comparisons and searches in the calculations.

Picture: Fg-Fel-3eng

[The two forces from the relations with the constants of gravity and electric force give the ratio 861.022 when are calculated for equal radius because $\mathbf{G\ M_{pl}\ M_{pl}\ /\ k\ e^2} = 861.022$ and the relation $G\ M_{pl}\ M_{pl} = h\ c$.

$861.02219 / 68.518 = 12.56636 = 4\pi$

$861.02219 / 2\pi = 137.036 = 1/\alpha$

> So that the electromagnetic force $F_{el} = k\ e^2 / r_e^2$ can result from this known equation of gravitational force:

$F_{el} = G\ M_{pl}\ M_{pl} / r_e^2\ (137.0344 \times 2\pi) \rightarrow$

$F_{el} = G\ M_{pl}\ M_{pl} / r_e\ r_e\ (68.51722 \times 4\pi) \rightarrow$

$F_{el} = G\ M_{pl}\ M_{pl} / \lambda_e\ r_e = h\ c / \lambda_e\ r_e$]

62-2e. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

Picture: Fg-Fel-4eng

[The previous underlined ratios (861.021) are equal to this below:

$$c{\cdot}h \,/\, k{\cdot}Cb^2 = 861.021 = 2\pi \cdot 137.0344$$

A maximum gravitational force F_g in microscopic lengths gives ratio 861.022 times = F_g /F_{el} with the electromagnetic force:

$F_g = G{\cdot}M_{pl}\, M_{pl} / r_e^2 = F_{el} \cdot 861.022 = F_{el} \cdot 2\pi \cdot 137.036 = F_{el} \cdot 4\pi \cdot 68.518$

Because $G{\cdot}M_{pl}^2 = h{\cdot}c \rightarrow F_g = h{\cdot}c / r_e^2$

The electromagnetic force results from the above equation for gravity if the radius r_e^2 in the denominator increases 861.022 times.]

63-2f. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

In these selected calculations we see the following:

1) A calculation of a gravitational force for two masses of average value M0 (~ 10^29kg) which approach between the rest mass of an electron and a proton. We calculated a distance r ~ 10^-14m which is also close to the radius of a nucleus. And of course we found an extremely weak Fg force.

2) In the next calculation we set the same masses of average value M0 = √(Mmin × Mmax) and distance the average length λ0, which is slightly larger. And of course the result is an extremely weak force Fg (the minimum force magnitude as we have found it according to the limits we have introduced). Nothing paradoxical.

3) In the third calculation we set the maximum mass / inertia limit Mpl (~10^-8kg) according to the correspondence Mpl / M = c / V and the mass we have as a minimum limit Mmin. The first mass is extremely large for the structure of an atom (unreal) and we do not observe it in the structure of matter as a particle. The second mass is the minimum inertia corresponding to a photon of the lowest frequency (1Hz). Distance λ0 is the average length, which is within the radius of an atom of matter. The result is the same minimum force Fg as the two masses around the value of the known particles. (M0^2 = Mmax Mmin). That is, if we say that there is such a large mass of Mpl (~ 10^-8kg) inside the structure of matter, then the weak gravitational force Fg we assume within the tiny radius of an atom could be the same as with known particles an electron and a proton.

4) In the fourth calculation, we compare this weakest force of gravity Fg with the electric force Fel. We see that the ratio of the two forces is about the same as

we know (~ 10^43 or ~ 10^40). This is approximately the ratio of the mean force F0 to the minimum magnitude as found (16.3574 / 2.21022 × 10^-42), but this is also the ratio of the mean force F0 to the maximum magnitude force (1.21 × 10^44 / 16.3574), which comes from masses of the maximum value (~ 10^-8kg) in extremely small radii (~ 10^-34m).

Stay on the page to read the important conclusions that will follow. Try to familiarize yourself with these thoughts and calculations for school education.

Picture: Fg-Fel-M0eng

[Some indicative calculations for estimating forces and the relationship between nuclear, electric and gravitational force.

<·> **What force results** by the Newtonian proportion for a radius $r_e = 1/4\pi\ \varepsilon_o\ (e^2 / M_e\ c^2) = k\ (e^2 / M_e\ c^2) \rightarrow r_e = 0.2817937 \times 10^{-14}$ m and for masses of mean value $M_0 = h \cdot f_0 / c^2 = 2.0056443 \times 10^{-29}$ kg

$\mathbf{F_g = G\ M_0\ M_0 / r_e^2} \rightarrow 2.684086 \times 10^{-68} / 7.940767 \times 10^{-30} = \mathbf{3.380134 \times 10^{-39}\ N}$

<·> **What force results** for the mean length

$\lambda_0 = 1.1019978 \times 10^{-13}$ m and for masses $M_0 = h \cdot f_0 / c^2 = 2.0056443 \times 10^{-29}$ kg

$\mathbf{F_g = G\ M_0\ M_0 / \lambda_0^2 = 2.210217 \times 10^{-42}\ N}$

<·> **What force results** for the mean length

$\lambda_0 = 1.1019978 \times 10^{-13}$ m and fir masses $M_{pl} = \sqrt{h \cdot c / G} = 5.456243 \times 10^{-8}$ kg and $M_{min} = 0.73725 \times 10^{-50}$ kg

$\mathbf{F_g = G\ M_{pl}\ M_{min} / \lambda_0^2 = 2.21022 \times 10^{-42}\ N}$

$$\mathbf{M_0\ M_0 = M_{pl}\ M_{min}}$$

The electric force for equal radius r_e (since electric charge $\pm e = 1.602176 \times 10^{-19}$ Cb)

$\mathbf{F_{el} = k\ e^2 / r_e^2} \rightarrow \mathbf{k} \cdot 2.566968 \times 10^{-38} / 7.940767 \times 10^{-30} = \mathbf{29.05356\ N}$

$\mathbf{F_{el} / F_{g(\lambda 0)} \approx 1.3145 \times 10^{43}}$

$\mathbf{F_{el} / F_{g(re)} \approx \quad \times 10^{40}}$]

64-2g. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

Some indicative calculations for estimating the magnitude of physical forces and the closest relationship between nuclear, electrical and gravitational force.

Some equivalences for calculations of force and energy with the constants of gravity G and electromagnetism h are summarized. We have equations that give the result with the constant of gravity G and equations that give the same result with the constant h of the electromagnetic phenomena, without the constant G, as we have said. (...) The newer relations M · c^2 = h · f according to this correspondence between velocity and inertia (Mpl / M = c / V) give the same result as the relation G Mpl Mpl / λ. Using these simple equations we can see: What exactly changes in physical phenomena when described with the constant of gravity and what changes when we calculate the same result with the constant h of electromagnetism.

Picture: Fg-Fel-eng

[Theoretically, each quantity of energy hf as a wave oscillation to the corresponding wavelength λ gives a force F. Even if such a force does not actually occur, its calculation is of interest and utility in the investigation of invisible phenomena (high speed and rate change).

The following calculation gives a force from the ratio of the equivalent energy hf of an electron to the corresponding length λ.

$\mathbf{F}_e = h \cdot f_e / \lambda_e = E_e / \lambda_e \rightarrow$

$\mathbf{F}_e = 8.18710 \times 10^{-14} / 0.242463 \times 10^{-11} = 3.37431 \times 10^{-2}$ N

$\mathbf{F}_{el} = h \cdot f_e / r_e = E_e / r_e \rightarrow$

$\mathbf{F}_{el} = 8.18710 \times 10^{-14} / 0.281793 \times 10^{-14} = 29.05359$ N = $\mathbf{k\ e^2 / r_e^2}$

$\mathbf{F}_{el} / \mathbf{F}_e = 29.0535 / 337.431 \times 10^{-4} = 861.023$

This ratio ~ 861.022 results from two lengths $\boldsymbol{\lambda}_e$ / $\mathbf{r}_e$:

$\boldsymbol{\lambda}_e$ / $\mathbf{r}_e$ = 0.24263 $\times 10^{-11}$ / 0.281793 $\times 10^{-14}$ = 861.022

And $\boldsymbol{\lambda}_e$ / $\mathbf{r}_e$ 2π = 137.0359 = $1/\alpha$

So simply we have found the electric force in correspondence with masses and gravitational force:

$$\mathbf{F}_g = \mathbf{G}\ \mathbf{M}_{pl}\ \mathbf{M}_{pl} / \boldsymbol{\lambda}_e\ \mathbf{r}_e = \mathbf{F}_{el} = \mathbf{h}\ \mathbf{c} / \boldsymbol{\lambda}_e\ \mathbf{r}_e$$

]

65-2h. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

We see the constant of gravity G with what magnitudes it comes out.

The constant of gravity G of astronomical magnitudes with the mass of the Sun and the Earth.

The gravity constant G derived from the tiniest quantities that theoretically corresponds to "particles" such as photons of radio waves.

We just see how the gravity constant G can be related to the smallest magnitudes as well as to astronomical magnitudes. Whether there really is such a connection and it is in an unknown way or unworthy of reason was not left without investigation.

Picture: G=

$$G = \frac{F \; r^2}{M_1 \; M_2} \quad G = \frac{F \quad r_{ers}^2}{M_{sun} \; M_{earth}} = \frac{F_{pl} \; \lambda_{pl}^2}{M_{pl} \; M_{pl}} = \frac{F_{min} \; \lambda_{pl}^2}{M_{min} \; M_{min}} = \frac{F_o \; \lambda_{pl}^2}{M_{min} \; M_{pl}}$$

For $\mathbf{G} = 6.6725 \times 10^{-11}$ set :	
$\mathbf{M}_{pl} = 5.45624 \times 10^{-8}$ kg	$\mathbf{F}_o = 16.35736$ N
$\mathbf{M}_{min} = 0.73725 \times 10^{-50}$ kg	$\mathbf{M}_{sun} = 1.99 \times 10^{30}$ kg
$\boldsymbol{\lambda}_{pl} = 0.40508 \times 10^{-34}$ m	$\mathbf{M}_{ear} = 5.973 \times 10^{24}$ kg
$\mathbf{F}_{pl} = 1.21057 \times 10^{44}$ N	$\mathbf{r}_{ers} = 1.496 \times 10^{11}$ m
$\mathbf{F}_{min} = 2.210218 \times 10^{-42}$ N	$\mathbf{F} = 35.4383 \times 10^{21}$ N

66-2i. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

The force where electrical charges are attracted or repelled is calculated with the constant *k* similarly as the gravitational force is calculated by the constant G. Physical constant *k* is a combination that facilitates our calculations, such as the G is for gravitational field. The constant *k* = 1/4π εo = 8.98755 ×10^9 N m^2 / Cb^2. We can more easily see how values of electromagnetic phenomena are associated with quantities of energy (hf) of particles and other periodic movements when we remove the Cb units and when assigning the electrical force to equivalent quantities of energy. We can simplify the constant *k* deleting the Cb units:

k · (1.6021764 ×10^-19 Cb)^2 = 23.0707641 ×10^-29 N·m^2

The result has the same units (N·m^2 = J·m) such as the product of the two physical constants c·h. So we can do the first comparison:

c·h / 23.0707641 ×10^-29 = 861.02151 = 2π ·137.0344

c·h / 2π ·137.0344 = k · Cb^2 = J^2/N

k = c · h / Cb^2 · 2π ·137.0344

<·> The product of the two constants c·h has the same units such as k·Cb^2 and their ratio is:

c·h / k·Cb^2 = 861.02151 = 2π ·137.0344

Calculations with this amount k·Cb^2 = 23.0707641 ×10^-29 N·m^2 here are excellent interest in understanding and explaining what the electrical charge is.

“By simplifying the constants of free space (ε μ) and the constant k, the units Cb =Amp·sec, which are related with the electric charge are avoided. Thus again we find the fundamental units of the known phenomena of motion and energy in general. The quantities and sizes which we count after simplification, compared

to the known minimum (Emin) and maximum (Emax) limits and other physical constants (c,h,G), approach these, as we have find but with a standard deviation: The results differ or have ratio 861.02 with each other or this amount divided by pi of the circle. This investigation shows that the known phenomena of motion and change in the energy within the structure of the atom are differentiated from this constant amount. They are differentiated and the atom has this known structure only because we have introduced the electric charge Cb=1.6021764 ×10-19 with this particular numerical value". (p327)

Picture: Fel-k [

The constant $\mathbf{k} = 1/4\pi \cdot \varepsilon_o = 1 / 1.1126506 \times 10^{-10} = 8.98755178 \times 10^9$ N m^2/Cb^2

$\boldsymbol{\varepsilon}_o = 36\pi \cdot 10^9 = 8.854187 \times 10^{-12}$ Farad /m (dielectric constant of vacuum).

Electric force in Bohr's radius $r = 4pi \cdot \varepsilon_o \cdot h_{bar}^2 / M_e \cdot e^2 = 5.291772 \times 10^{-11}$ m

$\mathbf{F}_{el} = \mathbf{k\ e^2 / r^2} \rightarrow 2.307076 \times 10^{-28} / (5.291772\ 10^{-11}\ m)^2 = 8.238718 \times 10^{-8}$ N

We can simplify the constant k erasing the Cb units:

$k \cdot (1.6021764 \times 10^{-19}\ Cb)^2 = 23.0707641 \times 10^{-29}\ N \cdot m^2$

The result has the same units ($N \cdot m^2 = J \cdot m$) as the product of the two physical constants c·h. Thus, we can make a comparison:

$c \cdot h / 23.0707641 \times 10^{-29} = 861.02151 = 2\pi\ 137.0344$

$c \cdot h / 2\pi \cdot 137.0344 = k \cdot Cb^2 = J^2/N$

$k = c \cdot h / Cb^2 \cdot 2\pi \cdot 137.0344$

<·> The product of the two physical constants c·h has the same units as $k \cdot Cb^2$ and their ratio is:

$$c \cdot h / k \cdot Cb^2 = 861.02151 = 2\pi\ 137.0344$$

The calculations with this amount $k \cdot Cb^2 = 23.0707641 \times 10^{-29}\ N \cdot m^2$ have exceptional interest to we understand and explain what the electric charge is.]

67-2j. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles. In conclusion)

We have calculated a force of medium-sized F0 ~ 16.3574 to a short length λ ~ 10^-13m almost in the radius of an atom according to the lower and upper limits of inertia and the corresponding changes. We observe that the electrical force in a certain radius close to atomic nucleus (according to k·e^2 / r^2 = 29.054N) is around the mean foece F0 ~ 16.3574, as masses of the protons and the electrons is also around the average M0 ~ 10^-29 kg mass. Calculation of medium force with constant G shows the weak gravitational force increased with fantastic mass particles (× 10^-8 kg) in certain atomic radius. However, the force of average F0 in the radius of an atom of matter is strong as electromagnetic without such particles. When we increase the masses to the maximum limit of Mpl ~ 10^-8kg in the calculation with the constant G of gravitational force then the gravitational force in an atomic core radius comes out in nuclear size. However, so much mass particles do not observe them. It is paradoxical that **we find e / m and nuclear force by the formula that gives gravitational force and this only happens with the limits of inertia and energy we have introduced** (according to universal constants c, h, G do not forget).

In theory, the force is extremely more powerful (even from the known nuclear) when calculating it with the maximum quantities of energy Mpl·c^2 = h·fpl or corresponding inertia h·fpl/c^2 at the minimum length ~ λmin. We can not ignore the minimum (min) and maximum limits (max) that have defined and hurried to deny them because they come out of the known constants (c, h, G), according to known formulas. The proper sizes for the structure of an atom come out with these limits. Such lower and upper limits give average values approaching the measured sizes by which the structure of the matter has its known characteristics. So something we ignore or think about non-existent phenomena and an ex-

planation need.

Picture: Fe-FeI (or spectrum1-2)

[The ratio 861.022 results from two forces as they are calculated from the energy of the electron to its length λ_e and to radius r_e (where $r_e = k\ e^2 / M_e\ c^2$):

$\mathbf{F}_e = hf_e / \lambda_e = E_e / \lambda_e \rightarrow$

$\mathbf{F}_e = 8.18710 \times 10^{-14} / 0.242463 \times 10^{-11} = \mathbf{3.37431 \times 10^{-2}}$

$\mathbf{F}_{el} = hf_e / r_e = E_e / r_e \rightarrow$

$\mathbf{F}_{el} = 8.18710 \times 10^{-14} / 0.281793 \times 10^{-14} = \mathbf{29.0536} = k\ e^2 / r_e^2$

$\mathbf{F}_{el} / \mathbf{F}_e = 29.0536 / 3.37431 \times 10^{-2} = \underline{861.023}$

> This ratio ~861.022 results from two lengths $\boldsymbol{\lambda}_e$ / $\mathbf{r}_e$:

$\boldsymbol{\lambda}_e / \mathbf{r}_e = 0.24263 \times 10^{-11} / 0.281793 \times 10^{-14} = \underline{861.022}$

$\boldsymbol{\lambda}_e / \mathbf{r}_e\ 2\pi = 137.0359 = 1/\alpha$

> Two particles with maximum theoretical mass M_{pl} at the radius ~0.28179367 $\times 10^{-14}$ m would have a stronger gravitational force:

$\mathbf{F}_g = G\ M_{pl}\ M_{pl} / r^2 = 25.01576 \times 10^3$ N

$\mathbf{F}_g / \mathbf{F}_{el} = 25.01576 \times 10^3 / 29.05356 = \mathbf{861.02219}$

If this maximum gravitational force F_g is reduced $137.0344 \cdot 2\pi = 68.51722 \cdot 4\pi$ times, it gives electromagnetic.

$\mathbf{F}_g / 861.02219 = \mathbf{F}_{el}$

Eventually we find the equality relation:

$$\mathbf{F_g = G\ M_{pl}\ M_{pl} / \lambda_e\ r_e = F_{el} = h\ c / \lambda_e\ r_e}$$

]

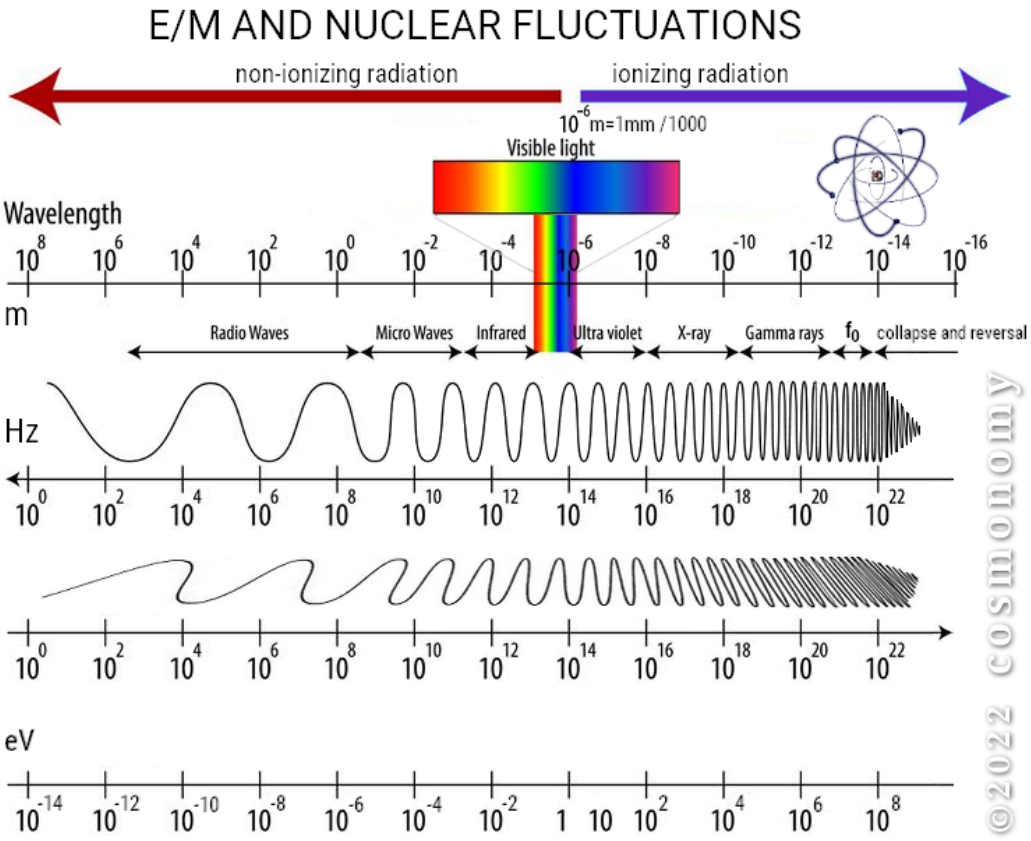
68-2k. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles. In conclusion)

> We do not observe in the structure of an atom the maximum force size of Fpl ~ ×10^44 N which corresponds to the maximum inertia Mpl= √(h·c/G) = h·fpl/c^2 and at the minimum length (λmin = G·Mpl/c^2 = h·fpl/Fpl = Epl/Fpl = c/fpl). Neither we notice and measure the minimum force of Fmin ~ ×10^-42 N as we calculate for the average λ0 length. **The two ends on the theoretical scale of energy and the corresponding force (×10^-42 - ×10^44 N) do not appear in the structure of an atom, but we observe and measure the average values of these two unnoticed limits**. The force that is greater than the average F>F0 size is the strong and within a range of the forces called "e / magnetic" and "nuclear" force. The force that is less than the average F<F0 size is the most weak force and close to gravitational force range. Therefore, the aim of the investigation is now to find what can change in the sizes related to motion, energy and inertia and the same force appears different.

If we had calculated the scale of force from a minimum size Fmin ~ 10^-42N to a maximum size Fmax ~ 10^44 N without having calculated average values of sizes, then we would probably collide with experience. However, after finding a medium value and the explanation of physical forces by waves where are concentrated or decentralized we can see that this scale of force (according to the limits introduced into agreement to the universal constants c, h, G) is fraudulent. Firstly, because **it is a force of two opposite directions that have an average size as a component force**. One of the first estimates after this investigation of the scale of force is that **the force of average size to a smaller radius is presented as a nuclear force while towards a longer radius (out of an atomic radius) is presented as an e / magnetic and gravitational force**. We think about the average force

as a result of a force application in opposite directions. Secondly, we think about the force in atomic sizes as fluctuating and periodically changing with the given that energy oscillations and periodic movements occur and constitute the structure of matter. **The force as floating and opposite directions explains the structure of matter** and this will be the next targeting of the investigation.

Picture: double-spectrum-3



69. Ionizing radiation and health (a break with a related subject)

A break in the publication of cosmological theory for "a universe within a maximum time period that exists as a space".

Radiation is a health topic and is of interest to all readers. Radiation that causes ionization (the removal of electrons from atoms) starts at slightly higher rates than visible light (f>10^14Hz) and is called "ultraviolet". These radiations of the highest rates (from alternating fields) have the shortest distance between their waves (λ < ~10 millionths of a meter) and are therefore penetrating and behaving more like particles than waves. All other radiations below the visible light limit (f < 10^14Hz) and used in innumerable applications with technology devices do not cause ionization in the atoms of matter (except in exceptional cases under certain auxiliary conditions).

How ionizing radiation is extremely dangerous you will understand when you simply think the following: The weakest ionization affects the outer layer of electrons and expels the "valence" electrons as they are called. But from this outer layer to the atoms of matter is determined how they will unite with some other atoms, with which other atoms and how they will continue to be bound to molecules. The chemical behavior of matter is affected. As you can see, when the radiation exceeds the rates of light then it acts as if we were throwing in a production machine with many moving parts some things that obstruct its moving parts. If the chemical behavior of atoms changes then their plot and the processes by which they may have executed a plan change.

All other radiations and fields that are below the zone of visible light and are used in countless constructions (f < 10^14Hz) do not affect so decisively, focused and directly each atom of matter. But they can also be dangerous and harmful especially when their power is increased (many radiations together synchronized and stronger fields), due to the increased heat they generate on a mass and the

influence of conductivity. Field strength, exposure time, and distance from the source (to the direction of propagation) are the three most important characteristics for a rough estimate of whether the risk of non-ionizing radiation is lower or greater.

The following information is from Wikipedia and has been selected for a brief update of the readers.

Some examples of activities where occupational exposure is a concern include:

· Aviation staff (most exposed population)

· Industrial x-ray

· Medical Radiology and Nuclear Medicine

· Uranium mining

· Nuclear plants and workers in nuclear fuel processing plants

· Research laboratories (government, university and private sector)

Read more directly on Wikipedia

Picture: Ionizing radiation/types-radiation-

Description: How penetrating are the ionizing radiation a, b, gamma, c, X and neutron from various materials, such as paper, human body, thin aluminium foil, lead, cement

70-3. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Periodic forces)

The calculations of force with quantities of energy and wavelengths were also childish and any professor would interrupt this investigation. However, we have seen the simplicity of nature as a whole and not the simplicity of professors, who themselves make problems more difficult in their imagination to show their abilities. We have found the edges in the change of certain sizes (their minimum and maximum boundaries) and we calculated these two ends on the scale of energy and the corresponding force. Thus a force of medium magnitude was manifested as a result of the application of force in opposite directions. The medium-sized force towards a smaller radius is presented as nuclear while towards a longer radius outside an atomic radius is presented as an e-magnetic and gravitational force.

The observation that we are investigating "fluid" phenomena such as e / m fields, energy fluctuations and radiation is not escaped. Therefore, whatever forces are created will also be variable. But when the dynamic phenomena are repeated and are periodic, then **the force will also have characteristics as a function of time and period**. Then force can have peaks and moments of weakening and periodic change of direction. The extremely high rate of change in the processes by which the structural elements are maintained leads to the equally important conclusion that any periodic change in forces is extremely fast. This simplistic investigation (of the boundaries of nature through physical constants) revealed that **time as a period, especially within the structure of matter, is fundamental and extremely decisive for the application of force**, and that "the intervals for interaction are decisive for the duration of force and the transfer of energy." Since the fixed structure of matter has been interpreted as a work of wave phenomena and energy oscillations, the correlation of force to time was immediately understood as important as the conclusion for a periodic change in the forces

somewhat hidden within the structure of matter.

"A slow rate of change increases the delay for the application of a force or on the contrary, the delay increases the time interval T for the application of a force. On the other hand, the time is shortened regarding the application of a force with the fast rate of change or on the contrary, the force is applied in the shortest time interval". (p354) It was obvious that the higher magnitudes of the strong forces did not come out randomly from calculations according to the limit of maximum inertia $\sqrt{(h \cdot c/G)}$ and corresponding energy. But these were not magnitudes for static forces and one-way and this was not evident from the simple formulas. In general, it was obvious that the higher magnitudes of the calculations were decisive for fluctuations of the shared energy and somewhat explain the presence of the most powerful forces within the structure of an atom and its characteristics. The minimum and maximum sizes of our simple calculations are based on the three physical constants according to which the physical forces are applied, let us not forget it.

Picture: F-E-h-txt

71-3b. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Periodic forces)

Electromagnetic and nuclear fluctuations. Mathematics in language of nature is periodic changes in units of time. This table contains the known spectrum of e / m radiation. This table here presents the lowest frequencies to the highest of nature as **a table with the elementary quantities of energy by which nature and its structural elements are founded**. This you did not expect. These are not only the frequencies of radiations. These frequencies correspond to quantities of energy per period by which a shared quantity can oscillate in a sinusoidal manner. **Particles and matter are formed and maintained by quantities of energy with such oscillations**. The structure of matter seems to be made up of few particles and this is a deceptive image. The table with the scale of energy quantities and oscillations in the unit of time explains not only the presence of particles, but also how particles have interactions and can be combined in inexhaustible ways.

The concept of energy was used simulated for all natural phenomena. It was divided as a quantity after the calculation of an lower and upper limit and with the characteristic of the wave change in a sinusoidal manner. Thus **the calculation of energy in the sense of periodicity and frequency of repetition gives mathematical characteristics of high accuracy**. Periodicity characterizes fluctuations of a quantity of energy which is returning to equilibrium due to the maintenance of the minimum and maximum limits. Therefore between energy and unit time a proportion exist and thus energy in nature is changing computed (in a calculated way). This division of energy from a minimum to a maximum quantity set the energy within time limits. The minimum quantity to the maximum quantity of energy is a quantity that has a minimum change time up to the selected limit of one second.

What quantitative characteristics are in changes of energy that display it in various forms were sought after this division of energy amount and its close connection to the concepts of period and time. Energy as repetitive phenomenon is

closely linked to time and periodicity as its features. Therefore, the research further for what periodic changes that are produce new phenomena and forces is easier.

Picture: spectrum-full-2

periodic table of energy

cosmonomy

FREQUENCY RANGE Hz	NAME	FREQUENCIES multiple units	WAVELENGTH	ENERGY
$-0{,}4524 \times 10^{42}$ Hz – -3×10^{20} Hz NUCLEAR / PARTICLES	NF	3×10^{32} GHz - 3×10^{11} GHz	6.626×10^{-34} m ($\times 10^{-24}$ Å) - 10^{-11} m	1.871×10^{27} eV - 1.24 MeV 2.9979×10^{8} Joule – 4.369×10^{30} °K
$f_0 \approx \sqrt{10^{42}}$ Hz	DBW		$\approx 10^{-13}$ m	$\approx 3 \times 10^{6}$ eV $\approx 10^{-13}$ J
3×10^{19} Hz - 3×10^{20} Hz	Y	30000 PHz - 300000 PHz	10^{-11} - 10^{-12} m (1pm = 0.01Å)	124 keV - 1.24 MeV (1.24×10^{6} eV)
3×10^{18} Hz - 3×10^{19} Hz	Y	3000 PHz - 30000 PHz	10^{-10} - 10^{-11} m (10pm)	12.4 keV - 124 keV (1.24×10^{5} eV)
3×10^{17} Hz - 3×10^{18} Hz	HX	300 PHz - 3000 PHz (3 EHz)	10^{-9} - 10^{-10} m (10^{-10} =100pm = 1Å)	1.24 keV - 12.4 keV (1.24×10^{4} eV)
3×10^{16} Hz - 3×10^{17} Hz	SX	30000 THz - 300000 THz	10^{-8} - 10^{-9} m (1nm)	124 eV - 1.24 keV
3×10^{15} Hz - 3×10^{16} Hz	EUV	3000 THz - 30000 THz	10^{-7} - 10^{-8} m (10nm)	12.4 eV - 124 eV
3×10^{14} Hz - 3×10^{15} Hz ~ VISIBLE LIGHT	NUV	300 - 3000 THz (3 PHz)	10^{-6} - 10^{-7} m (100nm)	1.24 - 12.4 eV
3×10^{13} Hz - 3×10^{14} Hz	NIR	30 THz - 300 THz	10^{-5} - 10^{-6} m (1μm)	1.24×10^{-1} - 1.24 eV
3×10^{12} Hz - 3×10^{13} Hz	MIR	3 THz - 30 THz	10^{-4} - 10^{-5} m (10μm)	up to 1.24×10^{-1} eV
3×10^{11} Hz - 3×10^{12} Hz	FIR	300 - 3000GHz (3 THz)	10^{-3} - 10^{-4} m (100μm)	up to 1.24×10^{-2} eV
3×10^{10} Hz - 3×10^{11} Hz	EHF	μέχρι 300 GHz	10^{-2} - 10^{-3} m (1mm)	up to 1.24×10^{-3} eV
3×10^{9} Hz - 3×10^{10} Hz	SHF	μέχρι 30000 MHz (30 GHz)	10^{-1} - 10^{-2} m	up to 1.24×10^{-4} eV
3×10^{8} Hz - 3×10^{9} Hz	UHF	μέχρι 3000 MHz (3 GHz)	1 - 10^{-1} m (10^{9} Å)	up to 1.24×10^{-5} eV
3×10^{7} Hz - 3×10^{8} Hz	VHF	μέχρι 300 MHz	10 - 1 m	up to 1.24×10^{-6} eV
3×10^{6} Hz - 3×10^{7} Hz	HF	μέχρι 30 MHz	10^{2} - 10 m	up to 1.24×10^{-7} eV
3×10^{5} Hz - 3×10^{6} Hz	MF	μέχρι 3000 kHz (3 MHz)	10^{3} - 10^{2} m	up to 1.24×10^{-8} eV
3×10^{4} Hz - 3×10^{5} Hz	LF	μέχρι 300 kHz	10^{4} - 10^{3} m	up to 1.24×10^{-9} eV
3×10^{3} Hz - 3×10^{4} Hz	VLF	μέχρι 30 kHz	10^{5} - 10^{4} m	up to 1.24×10^{-10} eV
300 Hz - 3×10^{3} Hz	ULF	μέχρι 3 kHz	10^{6} - 10^{5} m	up to 1.24×10^{-11} eV
30 - 300 Hz	SLF	30 - 300 Hz	10^{7} - 10^{6} m	up to 1.24×10^{-12} eV
3 Hz - 30 Hz	ELF	3 - 30 Hz	10^{8} - 10^{7} m	1.24×10^{-14} eV – 1.24×10^{-13} eV
$h \approx 4.13567 \times 10^{-15}$ eV/Hz $h \approx 4.13567$μeV/GHz $h \approx 1$ eV / 241.8 THz		$f = c / \lambda = E / h = M c^2 / h = a / c$	$\lambda = c / f = h / M c = h f / F$	$E = h c / \lambda = h f = F \lambda = h \cdot V / \lambda min$ $M = h / c \lambda = h f / c^2 = Mmin \cdot f$

1 Joule = $6.24150974 \times 10^{18}$ eV | 1 eV = $1.602176462 \times 10^{-19}$ Joule

* Note, there is no boundary between bands

S=Super, U=Ultra, V=Very, L=Low, M=Medium, E=Extremely, H=High, F=Frequency, FIR=Far infrared, MIR=Mid infrared, NIR=Near infrared, NUV=Near ultraviolet, EUV=Extreme ultraviolet, SX=Soft X rays, HX=Hard X, Y=Gamma rays, DBW=Delayed balancing waves, NF=Nuclear freq

From the treatise:
COMPLETE UNIVERSE - DYNAMIC SPACE & WAVE PHENOMENA
How physical laws and forces are applied (Cosmonomy)

72. Periodic motions and forces on a shared quantity of energy

What happens at extremely high rates of change and a quantity of energy is trapped? We already have important conclusions from our calculations according to the minimum and maximum limits of physical quantities and observing the average values. More explanations will be given for the research of physicists. Here are some thoughts that are useful to understand well what happens in the tiny processes of nature.

We modern people can understand from the revolution of digital technology better how important the speed and the repeated change in nature's foundations is, how nature is smart and creative, and how it appears in mathematical proportions. For many centuries, no efficient construction had evolved to perform fast and difficult calculations. In order to build a computer with the technical capabilities as we know it today, it was necessary that the electronic technology had been developed. Only after the manufacture of the electronic valves in the 20th century began the successful efforts and of course these first fabrications did not resemble the later computers with their tiny components. The language in which calculations are performed quickly and results are stored could not be the flow of a liquid or moving mechanical parts. Operations with large numbers and the making of many synchronized calculations need speed and agility with minimum inertia. Therefore, a large number of pieces would be needed to move and to be adjusted like pieces of jigsaw, while their movements had to be performed quickly by hand or automatically by the force of (slow) springs or the (slow) movement of some fluid. These difficulties (namely the number of mechanical parts and the speed of movements and alternations) were theoretically overcome by the application of electricity.

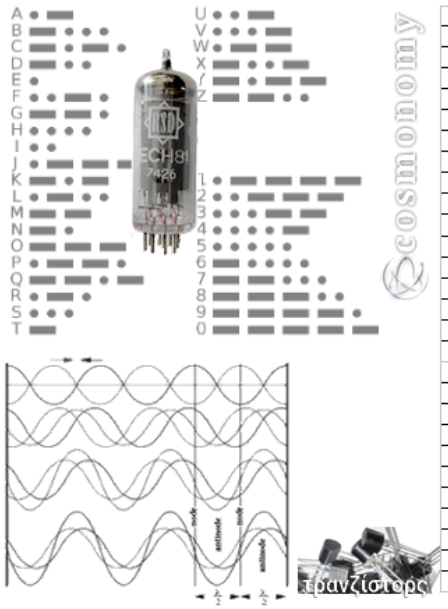
The electric current could change quickly and could be used as a language

consisting of moments (pulses) when electricity flows and moments when the flow is interrupted. This is similar to the Morse code, which was used for telecommunications. The sounds of this code were generated by the touch of a button. The electric current passed instantly and the sound was brief as well. This was all accomplished by a brief press of a key. By pressing the key for a longer period of time the current flowed for longer and the sound was also prolonged. This was the principle of operation. Morse devised a combination of short and prolonged sounds for each letter of the alphabet, for numbers, punctuation, and other signs of expression. The language of computers is made of such electrical pulses. That is, moments when a minimum amount of current passes and moments when this flow is interrupted. These moments of closing - opening (in circuit with the electric flow) are represented by numbers 1 and 0. The language of digital technology consists of sequences of 0 and 1. Each digit of such a sequence is called a bit and 8 bits make a byte. By the codification of the 8 bits can we represent 256 (= 28) different characters as a result of 256 different combinations of 0 and 1. So, the one, who built an electrical circuit, which allowed the electricity to pass and not to pass quickly, made a leap for the invention of computers without knowing it! The next and inevitable leap was to prepare a complete language with zeros and aces (software, as this was named later), which would correspond to commands and to the language we use to talk and write, just as it was more simply done with the Morse code.

The construction of the electronic valves allowed for the first time fluctuations in electricity to be made at rates of thousands of times per second. Many electronic valves could send and receive electrical pulses amongst them and one valve puts the other in operation or shuts down for a certain amount of time. Storing these combinations of electrical pulses was another difficult problem for the computer development. In a few decades and especially since the construction of the transistors, it had been possible to fluctuate the electric current several billions times per second. The function that the electric current becomes a short and controlled pulse was ensured by the low volume and weight, low voltages and

less heat loss of the transistor. Thousands of transistors together could quickly open and close as switches and exchange electric pulses. What was needed for the development of computers was the coding of the pulses, as we have explained above in a simplified manner. It was necessary to combine the pulse of the current (turning on and off in high frequencies) with a number of many pulses for each letter of the language or for a whole word. For many centuries, it hardly any step could be made for the reason we mentioned in a simplified manner: It was necessary to combine a large number of "signs" in a variety of ways, at the highest speed and in small space. This complex and fast operation could not be done with gears and springs. And nature with the variety of its structural elements and the fastest rhythms in their microscopic structure seems to know it ... better than man. (57 - 59)

Picture: waves-repetition-graphics/trans-morse-binary+table+2



Character	Binary Code	Character	Binary Code	Character	Binary Code
A	01000001	a	01100001	!	00100001
B	01000010	b	01100010	"	00100010
C	01000011	c	01100011	#	00100011
D	01000100	d	01100100	$	00100100
E	01000101	e	01100101	%	00100101
F	01000110	f	01100110	&	00100110
G	01000111	g	01100111	'	00100111
H	01001000	h	01101000	(	00101000
I	01001001	i	01101001	)	00101001
J	01001010	j	01101010	*	00101010
K	01001011	k	01101011	+	00101011
L	01001100	l	01101100	,	00101100
M	01001101	m	01101101	-	00101101
N	01001110	n	01101110	.	00101110
O	01001111	o	01101111	/	00101111
P	01010000	p	01110000	0	00110000
Q	01010001	q	01110001	1	00110001
R	01010010	r	01110010	2	00110010
S	01010011	s	01110011	3	00110011
T	01010100	t	01110100	4	00110100
U	01010101	u	01110101	5	00110101
V	01010110	v	01110110	6	00110110
W	01010111	w	01110111	7	00110111
X	01011000	x	01111000	8	00111000
Y	01011001	y	01111001	9	00111001
Z	01011010	z	01111010	?	00111111
				@	01000000

73-2. Periodic motions and forces at extremely high rates on a shared quantity of energy

Another crucial observation about the presence of force in the microscopic phenomena is the interpretation of the structural elements as wave phenomena and hence, as changes which are made periodically. When we get closer to this explanation for the formation of structural elements with the participation of the energy of isotropic and free space, then the force ceases immediately to have the meaning of a static action, as we perceive the force in the bodies, which have the Newtonian inertia. We recognize easily and with great interest that forces are created between tiny quantities and forces change at extremely high rates and with processes that are reversed extremely quickly. (387)

Let's imagine a light source that lights up once every 1 second and then fades quickly. An obstacle may lie between the source of light and our eyes and hinders the light from passing through. If the obstacle leaves and comes back to its place at a slower but regular pace once every 2 seconds, then we will see the light flashing at this slower pace. Every 2 seconds, an obstacle enters in the way of the light source, and we will not see the light once per second. If we are more observant, we will see that only when the obstacle coincides to enter in the way of the light source at the same moment when the light is on, (that is, synchronized motion), only then we will see it blink at this slower pace once every 2 seconds. If the obstacle leaves every time the light is off and comes back when the light turns on, then we will never see the light on with this opposite timing. And if the rhythm, according to which the obstacle returns, is 1 time almost every second, but not with absolute periodic precision (not exactly), then we will notice that the light does not blink at a fixed rate of 1 sec. And if the light keeps being on for a little more time, then the synchronization with the moving obstacle will be easier. Even a person who does not know physics can perceive the significance of this recurrent phenomenon that we easily imagine here. More generally, when an in-

teraction is achieved by the mediation of one thing and this thing, which mediates, is not motionless but is reciprocating, then the interaction becomes relative. **The interaction is regulated by and depends on the mediator's rate of change**. This also means, that the interaction can be faster or more powerful, but if the mediator does not favor it with its own rhythmic change, then the opposite occurs. After this easy theoretical observation we can think better about the dynamic relation of structural elements with the free space, which are energy fluctuations of it. (358 - 359)

Picture: blinking-light/example-of-intermittent-effect-animation2

Description: A rotating beacon of red light. A simple example: The lamp is continuously illuminated, but a rotating "obstacle" can change the direction of propagation and the light appears somewhat intermittent

74-3. Periodic motions and forces at extremely high rates on a shared quantity of energy (Minor fluctuations and information)

All information, which is transmitted by using electromagnetic waves, is generated by fluctuations of these waves. In general, these fluctuations may be in the rate of waves (ie, deviations in their frequency) and may be variations in their intensity and synchronization. When waves with such fluctuations act somewhere, then **they produce a result that also has fluctuations**. This is the principle of the transformation of variance from one form to another. For example, when the sound waves fall on a surface, vibrations are caused. If this surface produces minimal electricity, then the produced electric current has fluctuations in its intensity and its rate and these fluctuations are proportional to the vibrations of the surface. The microphones operate in this way. Also it is remarkable that more variations and thin fluctuations can be generated in the electromagnetic waves of higher frequencies. This means, that electromagnetic fluctuations of higher frequency can transfer more information. The explanation of the structural elements as fluctuations in energy of the free space gives also this solution so that the reproduction of complex phenomena and the creative processes of nature, by which some phenomena can be repeated in an extremely wide variety, can be explained. (318 - 319)

The role of the free space reminds us of the role of a radio signal carrier. The carrier signal of a radio transmitter (for which most electricity is spent) is an unmodified signal, a waveform “empty” of information. The carrier signal acquires this valuable attribute when properly transferring our information and this is achieved by different methods and by using appropriate devices. The carrier signal can transfer information if its frequency or phase or its amplitude are modified or it can do that digitally with some newer methods. Signal modulation is the process of changing one or more characteristics of a high frequency periodic wave-

form in correspondence to another fluctuating signal. If the modification of carrier signal occurs at a higher rate then more information is transmitted. In the simplest methods, the music we hear (the radio) and the images we see (television) are nothing other except for very rapid changes (of a sinusoidal waveform), fluctuations and pulses (in frequency or amplitude) to the carrier signal. The carrier signal remains relatively constant and common, whereas all the images and sounds are shortest modifications of the carrier signal... (384 – 385)

This example from electronic technology is the most appropriate example of our experience to simulate how the constant amount of energy fluctuates and associates itself with the quantities that appear as structural elements of things. It has the effect of stability, auto-correction, sampling, speed and rhythm, the modulation of a dynamic phenomenon such as a sinusoidal waveform, the generation of new signals and distortions, it also includes a relation between bandwidth and density of information and many other similarities comparing to the dynamic role of the free space. In order to complete the interpretation of the structural elements, we need to think about them as waveforms which thus also convey information. Now everyone can understand how the description of structural elements as energy variations in a common quantity not only simplifies the explanation for many natural phenomena but also how much the structural elements are enriched with motile details that regulate the astronomical world. Now everyone can understand how **poor and anti-scientific the description of matter as a compound of few particles was**. (385)

Nature works with the periodic change of energy and force within the structural elements and at extremely high rates. If we understood it then we can imagine how nature achieves and creates with so many possibilities, which invaluably exceed the possibilities of digital circuits, which act as electricity switches at relatively low frequencies. Consider that structural elements of nature not only oper-

ate at extremely high rates that man has not yet achieved, but the energy that fluctuates is not in stagnant materials such as are electronic components, but materials / components themselves that mediate for the transfer of force and energy are also transferred and moved!

Picture: waves-repetition-graphics/150--waves-modulations

Description: Wavy lines on a dark background and some types of signal modulation. Waves can have subtle fluctuations and deviations at fast rates. So they leave an imprint with their effect, and that imprint is the information that is transferred...

75-4. Periodic motions and forces at extremely high rates on a shared quantity of energy (Useful thoughts before calculations)

The structural elements (and consequently the material things) begin to be formed in periodic ways in the shortest intervals and by rhythmic and alternating phenomena. Even a child can think that the interactions will not be contiguous with such periodic changes and in the shortest intervals. Some changes in hf energy quantities of microscopic phenomena and in their other sizes fluctuate and are interruptible. They are slower or faster and have breaks or connections. This is similar to when we turn on and turn off a switch quickly, since technology has achieved the production of digital switches, the application of which proved to be valuable beyond any stretch of the imagination for the manufacture of electronic processors. With such a view about the structural elements, when we think of their motion in terms of wave motion and not linear and mechanical motion, then the microscopic world immediately appears to have its normal complexity. Because it is revealed in such a way furthermore:

• The decisive role of the short interruption of periodic changes for the formation of the structure of matter,

• Along with the decisive role of rate, timing and synchronization.

• It is revealed how mathematical relations are applied by nature itself, since these quantitative relations and their proportions are created by the limits and the alternations in motion. (143)

* Add, that the shorter period of interruption and change can and does achieve more modifications on waves per unit time and the required distances are also shortened. Thus the microscopic structure of matter is not only random, but the microscopic lengths are necessary for the fastest processes and for the synchronization of many movements together.

Picture: waves-repetition-graphics/blue-light-wave-wavy-wallpaper-txt

Description: Light waves, rays, particles meet at various points

76-5. Periodic motions and forces at extremely high rates on a shared quantity of energy (A maximum force is attenuated by wave processes in the structure of matter)

From the first thoughts we have emphasized that the dynamic structure of matter is presented to be the same in the Universe, with some common features that betray its closest connection with a common substance. The stability of the structure of matter and its resistance to the mechanical forces of the environment has also been confirmed. The structural elements are quite durable and the physical properties of matter cannot be easily lost. This stability comes from something else that is already stable and strong and not from some encounter of particles, but this something to us does not appear as a body or separate particles. In addition, we find that in nature there is an extremely delicate and fast process by which particles and fields mediate and achieve:

· Attenuate the forces (created by changing a large amount of energy).

· The forces (which are wave motions extremely fast) are adjusted and adapted so as stable structures be formed. The structural elements are natural switches and attenuators of extremely high rates. (381)

We have found the minimum and maximum ends in the change of certain sizes and we calculated these two ends on the scale of mass [Mpl =√(h·c/G) = 5.45624 ×10^-8 kg and the minimum Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg], energy and the corresponding force. Thus, a force of average magnitude appeared - among other sizes - as a result of applying force in opposite directions (for the average value of energy E0 = M0·c^2 = 1.802582 ×10^-12J). The force of medium magnitude F0 towards a smaller radius is presented as nuclear while towards a longer radius outside an atomic radius it is presented as electromagnetic and gravitational. The fundamental particles of matter are limited quantities of energy and oscillations around average values (where M0 = 2,00564 ×10^-29kg) in

a wave process, as we easily saw, with a very fast process where a shared quantity changes with minimum and maximum values. The physical world extends to larger dimensions from the approach of the structural elements. The mean force F0 at the largest radii weakens and the shared energy is presented as a free field of action for the structural elements. That is, space appears after attenuation of a maximum force (which has a direction towards shorter radius lengths). We can almost conclude that the particles of matter have this utility to interrupt the shared amount of energy, to weaken a maximum force and the quantities of energy that exist as particles of matter are somehow kept free from the shared amount. **The shared amount of energy with the force weakened between the particles appears as their free space.** Note this terrible conclusion (which one can easily understand without being a teacher), because it is connected with the mathematical proof of the Universe as a complete and simultaneous whole. This conclusion (for a maximum force directed at the shortest radius lengths and attenuated by the wave processes in the structure of matter) is supported by calculations. This is confirmed as we explain in more detail the wave principle of matter formation and its structure with oscillations.

Subsequent posts will offer some more mathematical observations and explanations, which confirm the previous conclusion, but will be useful only to physicists.

Picture: waves-repetition-graphics/particles-physics-atom-hd-txt-

Description: The shape of an atom in dark waves, with the following notes:

•The particles and fields mediate and reduce the forces (created by the change of a large amount of energy).

• The forces (which are wave motions and extremely fast) are regulated and adjusted to form stable structures. Atoms are physical switches and extremely high frequency attenuators

77. Oscillations and energy fluctuations maintain the structure of matter. Wave motions and forces in two opposing directions. (The new image from calculations)

· The minimum and maximum sizes of our simple calculations [on the scale of Mpl =√(hc/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg] are based on three physical constants (c, h, G) according to which physical forces are applied. Calculations with these inertia limits give high precision effects, which match the characteristics of matter particles and electromagnetic phenomena.

· We are investigating wave changes that hold certain quantities of energy as particles and as long as the interpretation of the structure of matter progresses we will understand it better.

· What happens to the extremely high rates of change in the structure of matter and the energy (close to the average energy E0 = 1.802582 × 10^-12J) is not transmitted as the e/m radiation in the free space?

· Energy oscillations and changes that are repeated extremely quickly (extremely high speeds at extremely short lengths) are detected as something permanent in the structure of matter, such as particles, their properties, properties from interaction of particles and as permanent forces.

· The difference of known particles from the e/m fields is presented at extremely high rates of change (n> 10^20 Hz) that exceed the frequency of light (~ 10^14 Hz).

· The sorting of energy quantities from a minimum value to a maximum value (and the rest of the sizes that have a function) reveals average values. The particles of matter have inertia and corresponding energy that are extremely subtle divergences from average values. [M0 = 2.00564 ×10^-29kg and E0 = 1.802582 ×10^-12J].

· We have interpreted natural forces and matter as phenomena by disturbing a shared quantity, by wave movements and oscillations around the average values and with opposing forces related to concentration and decentralization of energy at extremely high rates. The fundamental particles of matter are some of the quantities of energy presented as particles with equivalent mass in an extremely fast -paced process of energy oscillations. In the structure of the material, two opposite wave processes occur: a quantity of energy is concentrated while by the other process is decentralized. A frequency range almost the same, from a few Hz to 10^21 Hz is corresponding to each direction of this energy oscillation with two extreme limits around average values (E0 = h·f0 = M0·c^2 = 1.802582 ×10^-12J).

· We have found the minimum and maximum ends in the change of certain sizes and calculated these two ends on the scale of energy and the corresponding force. Thus - among other things - a medium -sized force has been revealed to the average length that is almost as much as the radius of an atom λ ~ 10^-13m as a result of implementation of force in opposite directions. The medium-sized force to smaller radius <10^-13m is presented as nuclear and to a longer radius > 10^-13m outside an atomic radius is presented as an el-magnetic and gravitational.

· Time as a period especially within the structure of matter is fundamental and extremely decisive for the application of force. We are thinking about force in

atomic sizes as fluctuating and periodically changing since the fact that energy oscillations and periodic movements are happening and constituting the structure of matter. Dynamic phenomena are repeated and are periodically, so force also has characteristics depending on time and period (an equation for exploring MV = Ft).

· Two opposing forces in opposing wave movements in the middle radius ~ 10^-13m. The fundamental particles of matter are a limited part of this wave process and energy oscillations according to the minimum and maximum change limits and around the average values as we have easily seen. Fundamental particles of matter are a small percentage of energy in this rapid process, where a shared amount changes at minimal and maximum values. That is why the mass of matter particles is not yet a stable feature, such as visible bodies, and we use the term "rest mass" to facilitate research.

· Electromagnetic waves have been interpreted as a result of an extremely fine deceleration, that is, by an extremely subtle decrease in maximum speed (of some other phenomenon) according to the equation Mpl / M = c / V where Mpl=√(hc/G) => -V = c M / Mpl = √(GM/λ_m). For the particles of matter even more energy corresponds and their inertia corresponds to an even more reduction in maximum speed. We now see a reversal in some sizes near the average sizes, as well as sizes that have two opposite processes. The question arises: What happens around the average sizes and energy fluctuations change behavior? How are conditions for oscillation of energy quantities without spreading in space? The secret is hidden in the wave movements that occur in the opposite direction and around an average radius formed by oscillations in a shared amount of energy.

Image: (The steps of the investigation lead to the objective)

78. What differentiates h·f as radiations from h·f as particles? (We still haven't explained ...)

Watch in the first world presentation (on FB started on 21/3/2021) the interpretation of the structure of matter and the Universe, with what thoughts it developed and the solutions it achieves. After 77 posts, the unique interpretation of the structure of matter is still presented. Later you will see how this interpretation corresponds to a complete Universe, which at the same time appears as absent in the form of space and as a shared amount of energy (in which the structural elements are oscillations, as we explain). The pseudo-problem of modern researchers on the relationship of quantum physics to the astronomical world and gravitational force has been solved simply, logically and mathematically. The mathematical **solution for connecting the microcosm to the astronomical world was overcome** by explaining the structural elements as oscillations in a shared amount of energy, which is presented as space between them. Thus **the structural elements by which the physical world exists are infinitesimal variations of a shared and large quantity that is in equilibrium**.

The time had come for me to give a clearer answer and explanations for keywords of interpretation, such as what "minimum time tmin" means in nature, the speed -V from which motion was reduced, how space was involved with energy in the structure of matter and which motion had the maximum velocity c (since light was also calculated with an extremely fine velocity reduction, which corresponded to an extremely fine amount of inertia). The identification of the particles with an amount of hf energy was also not forgotten. What was certain was that the inertia of the particles of matter was associated with extremely high rates of change (at n>10^20 Hz while light is at ~ 10^14 Hz) and with a greater decrease -V of a maximum speed. The rest mass of the particles was converted to a corresponding quantity of energy hf but the question of the difference between particle

and radiation remained. "What is the difference between h · f as radiation and h · f as mass" with the introduction of the limit speed c^2 (since M = hf / c^2 = E / c^2)? What kind of movements and fluctuations does the electric charge produce?

These are some of the questions that were initially deliberately ignored for the development of interpretation. The calculations utilized the reliable measurements of physics and produced the correct results according to limits, which I had already rationally (from earlier) concluded that nature has. These were some questions precisely because we were unaware of how structural elements are created and maintained. Their answer is facilitated the more we describe the structure of matter as energy oscillations and periodic changes. The research with the calculations that followed confirmed this reasonable expectation, that the questions have an answer and provide solutions.

Questions about interpreting the structure of matter as oscillations in a shared amount of energy and many other questions could not be left unanswered. The unanswered questions of an explanation are a bad sign for its credibility. Such questions are not taught in physics lessons. Those who repeat what they have learned usually do not research and could easily discourage and underestimate a researcher who would not have convincing answers. But the honest researcher, himself is a strict evaluator of his effort. The honest researcher should observe the questions that his thoughts create and not avoid and hide them. And as will be seen historically, especially for the study of the limits of the universe and the interpretation of nature as a whole, an indispensable supply was impartial and selfless thinking.

Picture: waves-particles-hf

Description: Waves forming atomic orbits and waves leaving a center

79. Wave motion toward the direction of a center. (A conclusion that leads to solutions to the problem of preserving the structure of matter)

The concentration of energy of space itself at extremely high rates is a conclusion for the rational explanation of the gravitational field. This conclusion was reinforced after the calculation for the mean values in the magnitude changes (min-max) with the presence of a shared amount of energy and the finding that a proton and an electron of the structure of matter have properties that are extremely close to the mean values, and are slight deviations from them.

The conclusion about wave motion to the direction of a center (as a first interpretation for the gravitational field) immediately seemed of great importance for the interpretation of the structural elements. Such a wave motion in the opposite direction was also one of the most interesting phenomena to investigate how and if it actually happens. What exactly can happen with waves to the direction of a center, as opposed to the electromagnetic radiation coming out of the periphery? Such a transfer of energy with waves that concentrate and explain the gravitational field does not have the obvious characteristics of electromagnetic radiation, where magnetic fields alternate with electric and the radiation propagates decentrally and accompanied by a number of interactions (such as thermal, optical, electrical, chemical phenomena). "The waves which are concentrated end up being limited to the same minimum radius length and a question arises immediately that everyone would think of. What can happen in such a case?" (416)

The interpretation of the gravitational field by a concentration of waves still gave the conclusion for a minimum length as the radius decreases and the waves approach the center. This conclusion was an additional indication of the correctness of the interpretation, because the minimum length of the space was a conclusion which had been rationally drawn from other reasonings, before each cal-

culation and without the observation of the gravitational field. Now, the minimum length of space comes back to mind as a minimum concentration radius and even more surprisingly, because the velocity -V subtracted from the maximum speed according to the equations Mpl / M = c / V where Mpl = √(hc / G) => -V = c M / Mpl = √(GM / λ) also comes from the equation f·λpl, ie it is related to the minimum length λpl (corresponding to the energy Epl = h · fpl = Mpl · c^2 => λpl = h / Mpl · c = c / fpl).

A minimum length and radius of nature came rationally from a general principle (as well as a minimum period of time and a maximum speed), without calculations. From the other theory for the correspondence of the maximum inertia Mpl = √(hc / G) to the maximum speed c (according to Mpl / M = c / V) a reduction velocity corresponding to the inertia of the particles is derived from calculations (from the equations - V = c M / Mpl = √(GM / λ) = f·λpl). An incredible coincidence for a minimum length of nature! Many other thoughts on the description and characteristics of such a reverse wave propagation to a microscopic radius followed. These thoughts are transferred below as food to research, without being verified. Such a phenomenon of reverse wave direction is of great interest to any physicist even as a conjecture. The theoretical search for its characteristics and the way in which the fields may change hides unknown processes in the structure of matter, which with simple calculations have escaped me, until now.

Image: circle-rolling—res-ellipse-txt

Description: A rotating light forms smaller circles, concentrates in the center and then question marks appear as if from an explosion

80-2. Wave motion toward the direction of a center. (The first thoughts)

We have explained the relationship of the strongest force (nuclear) to the weakest force of gravity in the structure of matter by the oscillation of shared energy and its wave motions in opposite directions and around average values. Below you will read some of the first thoughts and conjectures about wave motion toward a center, which can be extended to more complex calculations of the magnitudes that vary within the structure of matter (velocity, inertia, energy, frequency, particularly length and angle, energy levels and radii etc). Motivational thoughts are thrown (to physicists) for such a mathematical investigation and will likely lead to important discoveries.

“ The energy which is concentrated in a wave manner (gravity), is amplified in amplitude with the approach to the minimum length (unto which the waves focus). This is an exponential increase in the gravitational field, and acts more strongly at tiny lengths, while the waves which are gathered start weaker from astronomical radius. On this concentration phenomenon with the limit of a minimum radius length, we can still think that energy is accumulated in the unit of time, while the length of the focusing radius has a limit. Waves, which are concentrated from the periphery, are limited to the same minimum length. This implies an energy increase of the waves that arrive in relation to the fixed length (and this phenomenon can be mathematically summed up by the $h \cdot f/\lambda min$ relation). We also observe a velocity by the relation of the frequency of the concentrated waves with this minimum length ($V=f \cdot \lambda min$). This velocity is higher when the frequency of waves is higher. **This is the centripetal velocity which we have found by the equation -$V=\sqrt{(GM/\lambda)}$ and is the reduced speed from the reduction of the maximum speed**. ” (415-416) The concentration of waves, the minimum length and radius ($\sim\lambda pl$) and the reduction from maximum speed c [according to $-V = c\ M / Mpl = \sqrt{(GM/\lambda m)} = f \cdot \lambda pl$] are related to mass/inertia of particles ($M=h \cdot f/c^2 = h/c \cdot \lambda$) since

M = -V·Mpl /c = h·f/c^2 (with the upper limit of h·fpl /c^2)

“ The known relations of physics seem to express this phenomenon that we imagine here and we can think of a simple interpretation: The waves which had a radial motion at maximum speed, lose their radial motion with their arrival at the limit of the minimum radius but the kinetic energy should somehow be maintained. At the final point where the limit of the shortest length is, the radial speed will be minimal, if not zero. Since the concentrated waves reach a minimum radius length already having the maximum speed c, therefore, on the contrary, their radial velocity decreases. However, as we have found by the known relations, the energy (hf) is related to the reduced velocity [-V=f·λmin=√(GM/λ)]. This is a velocity which is subtracted from the maximum speed c”. (416)

“ The velocity from the equation (-V=f·λmin) is the velocity which we have found through the survey about mass of the three physical constants Mpl=√(h·c/G) by equations V = √(GM/λ) = M·c / Mpl = f·λpl. The ratio of energy (hf) to this reduction speed gives a momentum, ie h·f / V = p. The minimum energy to the radius of the minimum length ≈ λpl also gives an alterable momentum Emin/λpl = Mmin·c/Tpl = Mpl·c/sec = 16.3574 kg·m/s^2. The momentum p in relation to the minimum length λmin gives an angular momentum (L), ie p·λmin = L. Thus, as we observe from the first fundamental thoughts and equations, the peak in the concentration of the waves causes the effect of a rotary motion and centrifugal forces in subatomic scale. (...) Termination of waves in the propagation medium and reflection are also related to the generation of stationary waves”. (416)

Image:circle-rolling-gif\circle-rolling—nucleus-explosion/nucleus-explosion.gif

81-3. Waves of reverse direction in the structure of matter are associated with a strong force (Useful Thoughts for research specialization)

As we have explained [according to the equations Mpl / M = c / V => M = V·M-pl /c where Mpl=√(h·c/G)]:

“The speed of electromagnetic waves is not exactly the same for the whole spectrum. By the relations √(GM/λ) = f·λmin we can calculate the amount of the reduction from the maximum speed c for every frequency! We can do this by the first equation after we have first calculated the amount of inertia corresponding to the amount of energy hf according to the relation hf/c^2. Inertia increases and speed decreases with increasing frequency”. (344) We have seen how subtle the reduction in maximum velocity is with the example of the rest mass of an electron (-V= 5.0052 ×10^-15 m/s). Equations using the maximum velocity of propagation c to calculate lengths, rays, frequencies, times, angles, energies, distances do not give the exact result for the higher frequencies. The maximum speed is c-V (344) where V= M·c / Mpl = √(GM /λ) = f·λpl.

The concepts of electric and magnetic fields were not necessary for the initial thoughts. (291) For the investigation of the wave effect to the direction of concentration towards a minimum radius and with a corresponding reduction of the maximum speed c in the structure of matter, we do not miss the relation of the maximum speed c with the known equation c0 = 1 / √(μ0 · ε0) since we expect that the electric and magnetic fields of the concentrating waves will not have their characteristics as in the known propagation of e / m radiation. The e / m effects occur with the decrease of the maximum speed c and the particles occur with an even greater decrease (according to Mpl / M = c / V => -V = c M / Mpl = √(GM/λm) = f·λpl => M = -V·Mpl /c). Therefore, the phenomena of electric and magnetic field and the phase between them have some important relation with this -V reduction from the highest speed of nature. The maximum speed c with the approximation

of many decimal numbers belongs to a wave motion of some other physical phenomenon (on the oscillation of shared energy, ie space).

“The magnetic and electric fields do not alternate vertically with each other and they are not transmitted as waves. The electric and magnetic fields alternate and fluctuate without being able to move away from the points of disturbance”. (264)

“When particles and small quantities of mass are presented, in this case the space does not have the minimum resistance and delay, which would allow the waves to transfer their energy as electromagnetic at the speed of light (and with quantities of energy that correspond to the minimum time). Instead, the space behaves like a “bad” load and the transmission of wave energy is blocked or delayed more, shows increased resistance and energy is forced to "vibrate" and alternate as trapped. When the electric and magnetic fields propagate at the maximum speed c, they are in phase between them and perpendicular to the direction in which they move. In the case of particles, the energy does not propagate like electromagnetic waves, the space does not return to its balance, and the reduction in energy is not compensated in the minimum time. The propagation of the e / m waves is obstructed and the two fields are not perpendicular to the direction of their movement”. (301-302)

Therefore, waves which in free space would propagate radially until they attenuate are concentrated in the structure of matter to the direction of the radius of minimum length and slow down. Their direction is reversed in an extremely short time, the waves are decentralized as electromagnetic and stationary waves are created. Electric and magnetic fields are present, but they have such properties that they are forbidden to propagate as radiation due to the angle at which they alternate and from their encounter with waves in the opposite direction. Radiation and e / m waves occur in free space at the highest speed of nature at the mo-

ment of a disturbance of electric and magnetic fields, which are already alternating and reflected in the structure of matter. That is, the structural elements consist of standing waves and reflections by the oscillation of the shared energy. Ultra-fine decelerations and changes in the angle of these fields produce light and generally the various radiations as a result. However, waves and energy oscillations are maintained in the structure of matter with an opposite force to the direction from the mean radius (λ ~10^-13m) to the minimum radius (λmin ~10^-34m).

Image: frames-rolling-questions-nucleus/frames-rolling-questions-nucleus

Description: Two bright circles on the left and right of the image. Smaller circles are formed towards the centre of each one. The center of the left circle shows question marks while the center of the right circle looks bright like an explosion along with small fragments like moving particles

82-4. What exactly is the motion at maximum speed c and from which motion is the velocity -V reduced? The answer shows the relationship between nuclear force and gravity and electromagnetic force. (The most important secret of nature for physicists!)

We calculate according to the equations Mpl / M = c / V όπου Mpl=√(hc/G) => -V = c M / Mpl = √(GM/λ_m) = f·λ_{pl} a reduction from the maximum speed c and we saw that the minimum (infinite) reduction corresponds to e / m quantities of energy of the lowest frequencies. The reduction from the maximum speed c is greater the greater the inertia and therefore for the particles of matter, as we have seen. We found with the example of the rest mass of an electron (M = 9.10938 ×10^-31 kg) that the reduction is extremely small (-V = 5.0052 ×10^-15 m / s). The interpretation of the structural elements by wave phenomena on a shared amount of energy showed that the maximum speed of nature (which Maxwell had associated with the change of electric and magnetic field) is somewhat slowed down in the structure of matter and that its fundamental particles presented with this slight deceleration. We found the minimum and maximum limits of the variables, we saw how the quantities (inertia, energy, lengths and rates) for the particles in the structure of matter fit and we drew important conclusions. However, we hid the question of which motion reduced the velocity -V and which motion had exactly the maximum speed c, since for the e / m radiations there was an extremely subtle reduction of the maximum speed. **The rational explanation of the gravitational field with waves concentrating at a minimum radius has led to the thought of slowing down the waves and therefore that the reduction from the maximum velocity occurs in concentrated waves**. The calculations give increased force and energy for lengths less than the average value and the strongest force is in the opposite direction from the propagation of e / m radiation. Thus a physical process was easily revealed which could explain from which motion the velocity -V was reduced and which motion had the maximum speed c:

The maximum speed c with the precision of many digits after the decimal point is related to a wave motion of the shared energy where is directed from the periphery to center. The reduction of the maximum speed occurs at the exact limit of a minimum concentration radius. And since we know that the force of gravitational field is extremely weak and appears in large dimensions and more obviously between astronomical bodies, immediately our thought goes to the possible relation that the force of gravity has with the nuclear one. By abduction reasoning, it is not the gravitational field that transfers energy and concentrates in tiny radius and creates particles and nuclear force. In contrast, a strong force is reproduced by the shared amount of energy (space) in microscopic lengths and this force called "nuclear" occurs with the oscillations of the shared amount of energy within the microscopic structure of matter. When the structure of matter is stabilized then **the nuclear force remains attenuated as a gravitational field, apparently with the contribution of waves of opposite direction** in lengths extending beyond the average length (r> ~ 10^-13m) to the direction of the circumference, ie outside from the structure of matter.

The complete and simultaneous Universe (with its total energy) is interrupted (momentarily) by matter and the most powerful force (of the simultaneous Set) weakens with opposite wave phenomena. Thus the complete and at the same time Universe is presented between the structural elements as a common and shared space with weakened forces. But if the reduction from the maximum velocity (to the nearest many digits after the decimal point) occurs in waves that are concentrated due to an extremely strong force, then this means that the **electromagnetic radiation is also extremely subtle fluctuations of the strongest force**, since according to Mpl / M = c / V radiation is produced with an extremely minimal reduction of the highest velocity and the highest velocity (to the nearest many digits after the decimal point) belongs to a motion that gathers waves to a minimum length. **Particles that have higher inertia compared to the quantities of electromagnetic radiation** are the result of even greater deceleration in wave motion,

which is associated with extremely strong force and the exact limit of higher speed c. This is the short answer, which will be the greatest discovery within this cosmological theory according to the view of physicists. Also, as all those interested (not just physicists) will see, this explanation is one of the most important discoveries for those who associate events with the entire universe or with a god and give food to the imagination. That is, a simultaneous effect of the Universe by a physical process in microscopic dimensions is confirmed and explains its "absence" as a phenomenon of dimensions outside the structure of matter, where the shared amount of energy is in balance and exists as space.

The interpretation of the wave structure of matter by oscillations on a shared amount of energy is confirmed by the conclusions to which the original thoughts led and by the same conclusions that come out with the calculations. The interpretation of the structure of matter by oscillations and wave motions in a shared amount of energy is further enhanced by explaining the attenuation of radiation (or force) by the square of the distance. This explanation confirms (as we will see below) the existence of an extremely powerful force that arises from a shared amount of energy when it is disturbed.

Picture: frame-nucleus-txt2 (A synthesis of previous images)

Notes:

* Important equations are pending. Here we are missing some equations that every physicist requires to be convinced of the connection of gravitational force with electromagnetic and nuclear. These equations are the last missing for establishing this explanation of the structure of matter from oscillations to a shared amount of energy. If these are also expressed by me ... then the others will lose another valuable find. To help those with a mathematical advantage, Maxwell's equations must add the reduction of the maximum velocity c, the corresponding

increase in inertia, the function of the frequency and the h constant, and the reverse direction of the wave from a periphery to center and all these should be described in relation to the change of the electric and magnetic field (in their values and in their angle).

** The preparation is more than enough and we have connected the physical constants with each other and with all physical quantities. We have equations that give the result with the constant of gravity G and equations that give the same result with the constant h of the electromagnetic phenomena, without the constant G. We achieved this with the equation Mplanck / M = c / V and according to the limit of maximum inertia Mpl = √(h · c / G). The newer relations M · c ^2 = h · f according to this correspondence between velocity and inertia give the same result as the relation G Mpl Mpl / λ. We can see in numbers what changes in physical phenomena when described with the constant G of gravity and what changes with the constant h of electromagnetism for the same mathematical result. We can see the function of physical quantities when they are at their maximum value and when they are at their lowest value. Simple calculations showed that the fundamental particles of matter are around the mean value at the periodic change of a shared amount of energy, and it was clear that opposite wave phenomena could explain opposing and periodic forces within the structure of matter. The relations of physical forces begin from tiny dimensions and confirm the explanation of space as a balanced amount of energy (by the simultaneous presence of the universe as a whole) and the explanation for matter as rapid changes in this universal amount of energy, which is constantly returning in equilibrium.

83-5. Waves of reverse direction in the structure of matter are associated with the strongest force

The calculations of forces using the constants h, k and G (of electromagnetism, electric charge and gravity) gave the quantities of energy and force in order from a minimum to a maximum magnitude. Simple calculations have shown that the fundamental particles of matter are around the average value in the change of a shared quantity of energy, which is not all present in particles. This was the first explanation for the question, "what happens at extremely high rates of change?". Especially after finding an average value between the limits of the change of energy and inertia, it became clear that two opposite wave motions could explain at least two opposing forces within the structure of matter, as well as other coexisting opposites that appear as opposite actions and properties. Therefore, the question "what happens at extremely high rates of change and energy is not transferred like e / m waves" was associated with the next thought of wave interpretation: that waves are decentralized as e / m and at the same time waves are concentrated as a field of attraction in tiny dimensions an atom. That is, the suspicion and the hypothesis entered into the mind for a strong oscillation of energy, which is not purely electromagnetic as in free space and is maintained with an extremely strong force associated with waves in the opposite direction (concentrated). It is no coincidence that the gravitational field with its gravitational force starts in the structure of matter and the structure of matter also necessarily includes nuclear force.

"The relation of the constant G to the microcosm means, conversely, that the gravitational field is created with great precision, with mathematical proportions and with the most stable relations of nature, as well as the speed of electromagnetic waves. Because these same phenomena and the same proportions are needed and repeated everywhere in the Universe and we observe them among

the most complex things, regardless of their variety and instability. The relation of the constant G to the structural elements would be impossible and inexplicable, if the structural elements did not start with the specifications of one and the same space... ". (248)

"The distant connection of the nuclear force to the gravitational field is not accidental. Larger bodies can only be created when there are structural elements with their nuclear force (which is the most powerful) and therefore then the gravitational field may appear (with its weak force) ". (404)

If we think of physical forces and simply measure their sizes and vectors without thinking about how they are applied, then the forces remain inexplicable and if they have some resemblance it remains hidden. We have thought about the physical forces from the outset with the right interpretation, which, with the method of abduction, the structural elements are oscillations of a shared quantity and the distance forces are wave movements. After finding for average values on the changes of sizes (min-max) in the presence of a shared amount of energy, a F0 force was revealed average in size to the average length that is almost as much as the radius of an atom ~ 10^-13m. The average force to smaller radius r <10^-13m is increased as nuclear while to a longer radius > 10^-13m outside an atom has attenuation and is presented as an e-magnetic and as a gravitational force, which comparatively is a weaker force between the structural elements. The constant of gravity G also occurs with tiny processes and the gravitational force is undoubtedly the result of balancing opposite forces in the change of shared energy as the rest of the most powerful force. The most powerful force begins in the tiny dimensions and is relegated to the structure of matter. A quantity of energy changes balanced and thus the structure of matter is maintained dynamically.

Many characteristics of the structure of matter have contrasts and the nuclear force also have extreme contrast to the gravitational force of stars. However, the structure of matter is maintained and balanced with these contrasts, which are explained by the fluctuating application of a strong force in opposite directions, when the shared energy is disturbed and oscillating extremely quickly. Thus this theoretical observation was added to the explanation of the structure of matter, for a oscillation of shared energy, by which wave movements occur instantly in opposite directions and at extremely high rates, that is, from center to periphery (decentralized) and inversely (centralized). Therefore, the known forces described in physics were identified in accordance to this explanation for the structure of matter by oscillations of a shared amount of energy and opposite wave movements. The most powerful force relates to the extremely short oscillation of the shared amount of energy and appears as nuclear in the structure of matter. The other forces relate to the disturbance and weakening of the most powerful force and we will classify them into a subsequent publication.

"Nuclear force, particles, electromagnetic field, gravitational field and structure of matter are phenomena produced and maintained by the fluctuation of the same amount of energy: space. These phenomena are decisively different from the rate of fluctuations and their direction ". (455 – 456)

The oscillation in the direction of waves towards the radius of the minimum length in the structure of matter occurs in the presence of a maximum force from the shared amount of energy and can be considered "tiny explosion" or "pico bangs" to understand allegorically, how irrational it was the explanation once given by some engineers, that the Universe has a beginning outside of time and space (hence without matter and motion) in a sudden and unnatural way, which Fred Hoyle ironically called "Big Bang".

Picture: nuclear-force (an animated gif image)

84-1. The delay in resetting the balance. (Thus a global force of shared amount of energy was initially revealed)

We have seen that increased inertia corresponds to a higher speed of reducing the maximum speed (according to Mpl / M = c / V where Mpl=√(h·c/G) => -V = c M / Mpl = √(GM/λ_m) = f·λpl. The calculations of average values (for energy E0 = h·f0 = M0·c^2 = 1.802582 ×10^-12J) have revealed an extremely strong force towards a minimum radius and as we explained, reverse -direction waves are slowing (with more speed reduction than corresponds to radiation, which have frequencies below the energy of an electron f < ~10^20Hz). The strong force created in tiny lengths by the oscillation of the shared energy and with direction towards the minimum length of a radius appears to balance waves where would go as a radiation to radius longer than the average length (~ 10^-13m). We want to better understand how some quantities of energy remain trapped and presented as particles [on the scale of mass for a limit of Mpl =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]. Average sizes explain the balancing opposite direction forces, but something is happening around the average values in the oscillation of shared energy and balancing is not complete. Unlike the radiation, which is transported extremely quickly and with the distance weakens.

We observe that radiation with its highest speed transfers energy shared to space and thus the energy balance returns. The free space with its minimal inertia allows the waves to be more transported faster. The faster transportation of the waves shows that the shared energy that has been disturbed returns to its balance in an extremely short period, regardless of whether the disorder is repeated. The energy disorder is transferred with the minimum resistance until the quantities of energy are distributed to a larger volume and thus the disorder weakens. In this description again we observe and we can explain that **within the structure of matter there is an increased delay in resetting the energy balance**.

The energy that would be transported as radiation into the free space regresses and remains as trapped with the increased delay in restoring balance. But this increased delay occurs in increased quantities of energy that the particles have in the structure of matter and for which more inertia and more slowdown in the maximum speed corresponds. While we observe that the return of balance is shorter for radiation that has lower energy quantities and correspond to less inertia. We have concluded that a strong energy oscillation is maintained with an extremely powerful force associated with reverse -direction waves (centralized). We can say that in the structure of matter there is a maximum slowdown in the movement of the shared amount of energy and its own deceleration explains that increased quantities of energy are observed as particles of matter. While its lower slowdments create smaller particles and radiation. In other words, the inertia we calculate for particles and radiation is a slowdown in the shared amount of energy. **The structure of matter testifies to a process of slowing down the highest speed in a shared amount of energy along with a process of restoring the balance**. On the one hand is the shared amount of energy and the maximum force that restores it to balance and on the other are small amounts of energy that oscillate and interact with each other with weaker forces. The average values of these two ends are the result of a dynamic balance that gives the structure of the simplest atom of matter. The number of more particles in atomic structure is explained by extremely subtle deviations at the average values of the minimum and maximum limits.

The more we observe the structure of matter as an oscillation of the shared amount of energy (the space) and as a result of wave phenomena, the more we learn. A treasure of physics had remained buried in researching matter as particles. **Research of matter as particles leaves unexplained the phenomena that are not particles, but with these intangible phenomena, matter has a dynamic structure and a variety of tiny phenomena**. On the contrary, research on the structure

of matter as an oscillation of the shared amount of energy and as waves explains the variety of tiny phenomena that are not particles (so simple, as derivative movement phenomena) and particles are revealed as special moments of these extremely fast fluctuations and energy exchanges. The laws (of movement and nature) are introduced by the shared amount of energy (and are laws of wave movements). Observing all sizes and how they change to each other is a mathematical and rational research, which gives knowledge of conclusions and explanations.

"We need to understand that we are not talking about a multitude of things and their story. What we need to know better in order to be able to describe them, understand them and reveal unknown relationships of nature through the structure of matter is not some things. We need knowledge of the quantities and mathematical relationships that link them (...). What is done in the tiny space and which we can observe very indirectly, using complex instruments and computers are nothing more than elementary changes of quantities. So, in order to be able to think and understand we will need to represent these changes with shapes, circles, bows, strings, radii, trigonometric functions and observe the numerical values of changes (with the fragmentation and "freeze "of changes in lengths, intervals, equivalent quantities), from which the results of the measurements come out." (An quote from 2012 edition).

That is why the more we know about the wave movement, the more we will understand the structure of matter and more explanations we will give to the variety of tiny phenomena.

Image/Video: Spirograph-with-atom. Description:

A geometric spirograph in use creates symmetrical patterns. See again how a subtle deviation in length when is repeated can create symmetrical and complex patterns. Imagine that the structure of matter is created by extremely fine deviations in the average values of a shared quantity and at the highest rates of nature!

85-2. Movement due to resistance, repetition of the same resistance and periodic movement and tendency to restore balance. The delay in reset balance (the foundations of nature)

Here are a few important excerpts that will facilitate readers who want to remember this cosmological interpretation and understand it better. Readers who are not physicists will see the solution to eternal questions with rules of logic, with common experience and common language. Pay all your attention (with slow reading) to the next excerpts, because the observations they contain - from personal research and wording - are the keys to interpreting the structural elements and of the whole nature.

<·> Cosmological theory has begun with the thought of the Universe as a complete Whole (in all possible ways) within a maximum period of time presented simultaneously as space. The global space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared amount which remains in equilibrium and their structure is interpreted by wave and rapid changes. A shared amount of energy appears as empty space, while with it the structural elements are preserved as its fluctuations. Space has properties and behavior of a shared amount of energy and the structural elements are closely connected with it as pico-bangs in wave phenomena.

"Our physical interpretation has begun with the common finding that the free space and distance are imperative and with certain properties to have matter and the multitude of things. This finding becomes more obvious and explained when we show how the complete and stabilized universe relatively begins to take place at the shortest periods of time by material carriers where exist as fluctuations of a

constant amount of energy ... " [The complete universe & the dynamic space, ©2012]

"As we develop the physical interpretation of the creation of nature and how nature maintains its unity, we will realize well that nature cannot be understood without the phenomena related to wave movement. The physical interpretation to proceed and include the phenomena that accompany bodies without themselves being observed as bodies, we need good knowledge of the phenomena associated with the wave movement. The vast experience of the visible world of bodies and what we know about movement within (three -dimensional) space are not sufficient to interpret the universe as a whole maintained with stable relationships, and proved inadequate to interpret the creativity of nature. The wave movement is linked to a multitude of phenomena and relationships that could hardly and accidentally be the result of mechanical movement of visible and astronomical bodies. On the contrary, we observe that the wave movement and phenomena created by such movement require tiny changes and quick intervals. Only in this way a multitude of invisible or intangible phenomena that accompany the existence of almost all (if not all) of separate bodies everywhere in nature can to be reasonably interpreted". [The complete universe & the dynamic space, © 2012]. This is the most valuable knowledge to explain a multitude of natural phenomena, their principle and how the universe succeeds in being maintained and in creative motion.

"The disturbance of balance creates wave phenomena."

"When a constant quantity is disturbed (eg stagnant water), then synchronized disorders occur, energy is transmitted by waves and the disturbed quantity "tries" to return the original state of balance ..."

"Wave is the accumulation (or reduction) of energy when disturbing a medium where it is in a stable state and tends to quickly return to its original equilibrium state. The disturbance of balance causes concentration points and points of decrease in the quantity of energy where is transmitted and the tendency to restore to the balance state, by transferring energy from the points where there is a surplus to points where there is a deficit or with other conditions for balancing".

"Movement caused by the disturbance of a fixed medium-carrier is a constantly obstructed movement or movement with resistance, in contrast to the external, distinct and at various times motion of material things. (...) The initial movement and energy transmission on a stable recipient-medium creates instant changes (in its cohesion), which ultimately do not allow its destabilization and thus the energy is constantly relayed through one and the same thing as a wave".

"a preventable motion, motion with a tendency to return to the rest state of space and it is the wave motion. The wave motion does not "obey" Newtonian logic of motion, since its presence is due to the resistance projected to change and not to lack of resistance" .

Movement "each time from the beginning at a new distance and at a new time, from the end of the previous waves on a means of propagation, which resists its change and returns to the state of equilibrium".

"So when we think of the well-known phenomenon of wave motion, then we immediately understand and investigate light as a phenomenon from the disturbance of a carrier, which returns to its equilibrium (of the free space)."

"The tendency to return to equilibrium causes a force ..."

* (Some excerpts from the 2012 edition)

Image: waves-3EQO- (An animated gif image. A black fluid ripples)

86-3. The delay in restoring balance and the principle of maintaining power (For physicists. Ratio of hf quantity of energy, period and total equilibrium time)

The following conclusions were drawn from the attempt: 1) to interpret a maximum rate of energy transfer from a changing e / m field (since we have set a frequency limit) and 2) to understand the relationship between the speed of e / m radiation and the change in energy in a shared quantity (which is its carrier). As we have observed, the quantity of energy h·f up to light and even at a higher frequency seems to be transferred in the free space at the maximum speed and the space returns to its equilibrium extremely quickly. While the quantity of energy h·f in the structure of matter at higher rates (one electron or more, f>10^20 Hz) seems trapped and is represented by some of the possible particles according to Mpl / M = c / V (as a proton, neutron, meson, etc.) and these particles have more inertia than light.

“The relation h·f = E which gives us simply the transmitted energy for each frequency does not show any other difference between the electromagnetic waves. This is the same with the basic relation f·λ =c= 1/√(μ0 ε0) which tells us about the constant speed of the electromagnetic waves in the free space. But in nature, the electromagnetic phenomena and the wave movements, which they cause, appear in the most extreme ways and in an inexhaustible variety”. (p311)

“The change in the quantity of energy of the free space causes wave phenomena, because the transfer of energy is not realized automatically and meets some resistance (similarly to an initial impulse in a stagnant quantity of water). How many waves can go through in the unit of time? Can the number of waves, which is repeated, increase without limits? If yes, then this would mean, that the time intervals which intervene between waves can also be minimized without limits. (...)

Also, the unlimited increase of frequency, would mean even infinite quantity of wave energy that is transferred in the unit of time". (p288)

"By the rational analysis of the concepts we observe that the velocity of the wave transfer is associated with the inertia of the balanced medium and some of its properties. A time is offered by the inertia of the medium to accumulate energy until the moment this energy starts to be defused and continues to be transferred. This inertia and time determine momentarily the velocity of the fluctuation." (p288,289)

"The minimal possible time tmin and the fastest rhythm of repetition of waves fmax are related with the maximum marginal speed Vmax, that we consider to be the speed of light (the speed c that these waves have always into free space). The maximum limit to the number of waves per unit of time implies also a maximum limit to the quantity of energy Emax that can be transmitted by waves in the unit of time. Because there is a minimal time Tmin and the time interval is not zero, there is a limit to maximum frequency for transfer of energy and a maximum speed of motion". (p288)

"The velocity Vc of light waves - which is always measured the same regardless of the number of waves per unit time and regardless of the quantity of energy transmitted - is a constant resulting from some changes (fluctuations) of energy. Frequency can to change, as well as time interval between the production of waves, as well as the quantity of energy dissipated or transmitted in waves. The speed c is a physical constant resulting from the change of time and quantity of energy ... The equable speed of electromagnetic waves c results from the minimum time Tmin required to transfer (or replenish) a minimum quantity of energy (Emin = h·1Hz)" i.e. with the minimum inertia of space. (From the 2012 edition)

“The minimum time tmin is the same for all waves and frequencies and the same minimum quantity of energy Emin is always transferred in this minimum time tmin. When the number of waves and together a quantity of energy, which they transfer, increase in the unit of time, then the minimum quantity of energy is again transferred in the same minimum time interval tmin. In the time interval which we add up (in 1sec), a multiple quantity of energy is transmitted but with a larger number of waves. The energy to time ratio h·f / t remains the same (note E / t = Power). This proportion is mathematically described :

$h \cdot f_{min} / t_{min} = P = h \cdot f_{max} / t_{max}$

Higher frequency waves transfer more energy within one second, but the same minimum amount in the minimum time Tmin. The E / t ratio is constant”. (p289)

“The presence of electromagnetic waves is the induction of new waves, which occurs every time from the beginning and at a next time moment, from the end of the previous waves into a propagation medium, that resists its change and returns to balance. (...) What we measure as the velocity of wave movement in the free space is ultimately the minimum time at which the energy of the medium is transferred, replenished and absorbed per minimum quantity”. (p289,290)

“The speed Vc of the light waves is a constant resulting from wave changes in energy, as does the constant h. The wave change in the energy of the space is a fluctuation of a quantity, which takes place in the minimum possible time for the minimum quantity and in a multiple time for a multiple quantity of fluctuation. Therefore, according to simple logic, the maximum speed c with which the electromagnetic disturbances hf propagate must be associated with the energy of these energy changes”. (23.2. The close relation between energy conservation and speed c. Page 291)

“By introducing a minimum amount of time within which the minimum quantity of energy can accumulate or be equalized, the fundamental h·f relation reveals more phenomena that are related to each other. According to the relations:

P = h·fmin/tmin = h·fmax/tmax

When the frequency f increases (increased number of waves in the time unit), the time t also must be increased so that the principle of conservation of energy is not violated”. (p291)

“The increased frequency seems to be associated with the increased quantity of energy (accumulated or decentralized) and with a longer recovery time in the equilibrium state. Instead, the lower frequency is associated with less energy and shorter time for the counterbalance of energy. (...) The large quantity of energy at the shortest time interval is equal to the small quantity of energy over a long time interval. To do this, the same minimum quantity of energy must always be changed to the same minimum time Tmin.

That is, it should be valid: Emax / Emin = Tmax / Tmin” (291,292)

“If the product h·f changes and the energy increases or decreases while the time t in the denominator remains the same, this also means a change in power. (...) The elementary quantity h could be transferred without a limit to the frequency. Somehow the maximum frequency limit h·fmax should be imposed. It is imposed by the limit of a minimum time in the change of energy and the minimum time is due to the inertia of the free space until it returns to its balanced state”. (p292)

“The quantity of energy hf per unit of time is the fundamental relation that interprets the principle of the conservation of energy”. (p292)

"Stability at propagation velocity is interpreted because propagation is repeated by feedback from the balanced medium itself, even after the initial perturbation has ceased. However, the velocity, the direction of motion and the rate of change are not necessarily determined and smoothly at the time the initial disturbance is caused. Local fluctuations within one and the same medium, almost like the surface ripples of a fluid are maintained until the original state of equilibrium is somehow restored. But conversely, the balance of the medium / energy carrier is to blame for its resistance to disturbance and so local fluctuations can be created". (From the 2012 edition)

Image: a700e868c450e35ef735e7a2ddc3191d or ...

87-4. The delay in restoring balance and the principle of maintaining power (A global force of shared energy is a force for concentration and restoration of balance. The structure of matter with this force is maintained)

A limit (low and high) was imposed on the maximum quantity that can be transferred per unit time with the ratio for the quantity of energy h·f as a function of time (Emax / Emin = Tmax / Tmin). The return of energy balance in a minimum of time explained the wave motion at the highest speed. If the maximum quantity Epl (= 49.038 ×10^ 8 J) corresponds to 1sec then the minimum quantity h·Hz corresponds to the minimum time Tpl = 0.135120 ×10^-42 sec. (p.317) It was then sought what happens to the energy h·f that occurs in particles in the structure of matter and this energy is not transmitted like radiation. With this energy / time ratio for e / m radiation, the next issue was to calculate the time interval corresponding to the equivalent energy of an electron and a proton. The quantities of energy of these two basic particles are not radiation (photons) and it is expected that the ratio energy to time will be different (not as required by the original equation). Indeed, a shorter time interval (1.669532 ×10^-23 sec) corresponds to the equivalent energy of an electron and a longer time interval (3.065517 ×10^-20 s) to the proton energy. These time intervals coincidentally are almost the period 1/f corresponding to the energy of these particles (0.80933 ×10^-20 sec for the electron and 0.4407745 ×10^-23 sec for the proton) but vice versa, as you see in the numbers. The application of the equation for the conservation of power (h · fmin / tmin = P = h · fmax / tmax) in calculations for the equivalent energy of the electron and the proton give an energy deficit for the first and a surplus of energy for the second). The application of the equation of conservation of power was temporarily frozen, but some important conclusions were drawn in line with all previous interpretation, which are summarized below. Applying the equation of conservation of power will serve many more observations. But the first goal was not to rewrite physics, but to prove that structural elements are periodic changes and

forces in a shared amount of energy and at extremely fast rates. And as you can see, there was a nature study (as a whole) that degraded. Physics lacked simple but necessary equations and functions especially for cosmology.

“ If energy is compensated at minimum time tmin per minimum quantity, then its change occurs as radiation and oscillations according to the equations of conservation of power:

P = h·fmin / tmin = h·fmax / tmax

and the speed is regular according to the corresponding equations:

c^2 = h·fmin / Mmin = h·fmax / Mmax

The proportion Emin / Tmin = Emax / Tmax = Epl / sec responds to the question about the condition in that the energy returns to equilibrium. As this equation is applied, then a minimum change of energy corresponds to a minimum time and the speed is the maximum c. Has this proportion to the equivalent energy of particles been violated?” (p293)

“The minimum quantity of energy h·fmin corresponds to the minimum time Tpl = 0.135120 ×10^-42 sec. The maximum quantity h·fmax = Epl can be transferred if has the time of 1 sec”. (p300)

As long as the power conservation equation Emin / Tmin = Emax / Tmax is valid, the equilibrium return time is the minimum and the velocity of e / m waves is the maximum c. The equilibrium time is not the minimum for the presence of particles in the structure of matter. The recovery time is longer than the wave transmission period exceeding the mean frequency value for the elementary quantity h. This means that there is a period of time (an opportunity) for the energy balance to be delayed and perhaps never to return.

“ According to the equation for the conservation of the power Emin / Tmin = Emax / Tmax when the energy increases then the time in which a minimum quantity of time repeat (and an elementary energy) also increases. As the period of re-

currence is shorten, then an other time which is the total time of recurrence is increases. We observe in the equivalent energy of one electron, that these two time intervals approach to be equalized. In the equivalent energy of one proton, these times are reversed: The total time of recurrence (t = E·tmin / Emin = h·f / Pmax) outmatches the time of period of the equivalent energy". (p300)

We have concluded: " The speed of electromagnetic waves is not exactly the same for the whole spectrum. (p344) The maximum velocity is slightly reduced at the increased inertia h·f / c^2 and particles in the structure of matter have a higher inertia and correspond to a greater quantity of energy than e / m radiation. " When particles and small quantities of mass are presented, in this case the space does not have the minimum resistance and delay, which would allow the waves to transfer their energy as electromagnetic at the speed of light" (p301)

So when we look at which values of the quantities are at the peak (maximum) and which are low (minimum) and what changes when we approach and when we pass the average values, then we observe that:

" The reduction in speed from the maximum speed value of the e / m fluctuations and their increased inertia h·f/c^2 is associated with a delay in the equilibrium restoration of the shared energy of the free space". (p343,344) The period of a wave to the average value (starting from the lowest frequencies) is slower than the equilibrium restoration period. That is, the restoration time of equilibrium in the energy fluctuations of space is shorter than the period when the fluctuations are repeated.

" When the rate of fluctuation exceeds the average value, then the period of which the wave is repeated decreases, while the time of which the energy returns into balanced increases. Exceeding the average frequency f0, the time of restoration in energy balance (E0 / t0 → t0 = E0·tmin / Emin) is slower than the time of period in that the wave energy is changing or transmitting. This means, more en-

ergy is possible to transfered or accumulated, before the energy balance returns, before the whole of quantity return back in point of perturbation". (p376)

" If the uniform restoration of energy equilibrium is disturbed (Emin / Tmin = Emax / Tmax) then a delay to the restoration increases and phenomena of kinetic energy are created in different angles and dynamic energy. This is the principle for the separated presence of energy quantities that be detected as particles at more high rates. Here the description of energy exchange is complicated and are need exacting mathematic. We have formulated the question of how the atoms of matter are created with the assessed particles. We have formulated even the question of how particles with mass are created, since theoretically a certain inertia corresponds to every quantity of energy h·f. Conversely, every quantity of mass also is a quantity h·f/c2. After of our observations to the fundamental phenomena we educe the radiation and particles have the common trait: They are fluctuations to a balanced quantity of energy. Their difference is created at most short wavelengths and if other forceful e/m fields impede the propagation of waves that have upper frequency than light. However the fundamental particles of an atom are these quantities of energies which are created at the average values of energy fluctuations. Two opposite motions in opposite direction are appear to have equal rate of change and be counterbalanced in these fluctuations. In these e/m fluctuations (of average values) changes the angle of their propagation in free space and due of conservation of power, the delay time in restoring of energy equilibrium place new conditions for the transferred of energy". (p376)

" We do not forget the observation, that the atomic nucleus is not always a particle and that there are atoms with a larger mass and atomic number. We can explain the regulated increase in the number of particles and the formation of more complex nuclei and atoms according to the phenomena of the disturbance of a shared amount of energy, wave motions and related phenomena and the

rapid restoration of equilibrium. Along with the wave phenomena, some movements as we have seen them in the visible bodies also cooperate, such as e.g. is the rotation, momentum and oscillation of the particles themselves within fields of forces. We estimate that the creation of these (mechanical/bodily) motions that are mixed in the wave phenomena make difficult the calculations and the proof for the wave structure of matter". (p378)

Image: em-delay-osc-gif

Period and Time for Energy Quantity

FREQUENCY in Hz	PERIOD λ/c in sec	TIME E/t in sec	ENERGY hf in J
1×10^{6} Ground waves	1×10^{-6}	1.3512×10^{-37}	6.626×10^{-28}
7.495×10^{14} Color of violet	1.334×10^{-15}	1.012677×10^{-28}	49.66×10^{-20}
1×10^{16}	1×10^{-16}	1.3512×10^{-27}	6.626×10^{-18}
1.2356×10^{20} Electron	8.093234×10^{-21}	1.669530×10^{-23}	8.1871×10^{-14}
6.726395×10^{20} $\sqrt{0.452444} \times 10^{42}$	1.486686×10^{-21}	9.088705×10^{-23}	4.45695×10^{-13}
$\sqrt{7.4008} \times 10^{42}$	3.67587×10^{-22}	3.675860×10^{-22}	1.802581×10^{-12}
2.272×10^{23} Neutron	4.401408×10^{-24}	3.069843×10^{-20}	1.5054×10^{-10}
$f_{pl} = 7.4008 \times 10^{42}$	1.351205×10^{-43}	1 sec	4.9038145×10^{9}

In the equivalent energy of one proton, these times are reversed:

The total time of recurrence ($t = E \cdot t_{min} / E_{min} = h \cdot f / P_{max}$) outmatches the time of period of the equivalent energy.

The equation for the ratio of energy per time interval (conservation of power): Emin / Tmin = Emax / Tmax

88. The most important conclusions

This is the 88th publication of the sectional presentation of the most advanced cosmological theory, and we still focus on the structure of matter. Explaining structural elements (what they are and how they are structured) is an inseparable issue from explaining nature as a complete Whole. The answer to one is needed to answer the other. So don't rush to understand answers about the Universe and god without having the structural elements explained. Within the structural elements are the minimum limits of nature and at the same time a process that unites the structural elements directly with nature as a complete Whole. And nature as a complete and simultaneous Whole is paradoxically presented to the structural elements as space. This connection we explain and the explanation is correct. Temporarily forget what you heard or read without explanations in popular books, only unanswered questions and the story of a few researchers. The explanation for a complete Universe that appears absent as space is simple (with fundamental phenomena) and without hiding the first problem of cosmology: how do physical laws apply? The first and simplest calculations for structural elements as oscillations of a shared amount of energy give results not only for particles. As you will soon see, they also give results for physical space and astronomical bodies and therefore for the Universe in its largest dimensions.

We have introduced upper and lower bounds on physical quantities and these match measurements for features within the structure of matter and the structure of matter as it is dynamic. Calculations according to these limits and physical quantities give results for the structure of the universe that also fit and explain it. [Note: The quantity of energy h·f has been scaled according to minimum and maximum magnitudes on the scale of a corresponding inertia Mpl =√(hc/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg. Calculations are based on three physical constants (c,h,G) according to which physical forces are applied]. If I were addressing all readers, then perhaps the calculations would

be missing and the physics would be more limited. Readers who preferred the absence of calculations will justify that within the presentation there are calculations, simple equations and functions, since only in this way the explanation for a complete Universe that seems absent as space can be confirmed and further developed. Besides, as it turns out, quantitative changes are indeed important for the regulation of nature, and calculations of microscopic processes prove revealing of the inseparable connection of matter with space and with wave phenomena at extremely high rates.

“Our explanation of the natural phenomena and of the beginning of the creation of things began with this definition: The whole Universe is 100% present and always as a common superset before every separate body. We concluded that the free space is a reality in advance in all possible ways (within the limits of a maximum common time). But this reality is presented as a universal amount of energy for the possibility of all which can happen a posteriori and indirectly by the physical carriers/particles, which exist as oscillations of this balanced quantity. Even the application of laws to nature was explained in this way. After the investigation of the boundaries of physical changes, we conclude by the equations the existence of a maximum force that exceeds the sizes that have been measured for the fundamental particles of the structure of an atom. We also observe that the force of the electric charge occurs by a slight attenuation of a concentration force around of the mean values and that the force is presented in the microscopic space at a radius by a periodic process as shown by the constant pi”. (p353)

Image: txt-image

Description: The outer side of the version with the stamp for a primary source and a mark of atomic orbits.

89. Summary focused on the last 6 posts (A universal amount of energy constantly returns to equilibrium)

· The maximum speed c with the exact limit of several digits after the decimal point is related to an oscillation of the shared energy (i.e. space) which has a direction from the periphery to the center with a limit of a minimum radius length, opposite to the direction of e/m radiation. This wave motion of space to the celestial bodies appears as a gravitational attraction while in microscopic dimensions within the structure of matter it reproduces and weakens with a periodic process and appears as a nuclear force.

· Simple calculations have shown that the fundamental particles of matter are around the average value in the periodic variation of a shared amount of energy (E0 = 1.802582 ×10^-12J). It has been clearly seen that opposing wave phenomena can explain opposing and periodic forces (as well as other oppositions) within the structure of matter. The average values of the quantities explain the balancing of forces of opposite direction.

· Relations of the physical forces begin from microscopic dimensions and confirm the explanation of space as a balanced amount of energy (from the simultaneous presence of the world as a whole) and the explanation of matter as extremely rapid changes of this universal amount of energy, which constantly returns to equilibrium.

· The inertia we calculate for particles and radiation is slowing down the shared amount of energy. The structure of matter testifies to a process of slowing down the highest speed to a shared amount of energy along with a process of rebalancing.

· A simultaneous effect of the Universe with a periodic process in microscopic dimensions is confirmed and its "absence" is explained as a phenomenon of geometric dimensions outside the structure of matter, where the shared amount of energy is in equilibrium and exists as space.

· A powerful force which has been called "nuclear" is reproduced by the oscillations of the shared amount of energy (of space) at extremely high rates and over microscopic lengths, but this force within the microscopic structure of matter is degraded.

· Free space with its minimum inertia [scale Mmax =√(hc/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg] allows waves to travel faster. The faster transport of waves shows that the shared energy that was disturbed returns to its equilibrium in an extremely short period.

· What we measure as the speed c of the e/m waves in free space is finally the minimum time Tmin during which the energy of the medium is transferred, replenished and absorbed per minimum quantity (Emin = h·1Hz) i.e. with the minimum inertia of the space .

· The minimum time tmin is the same for all waves and frequencies and in this minimum time tmin always passes the same minimum quantity of energy Emin. The energy-to-time ratio h·f / t remains the same (E / t = Power). This ratio is mathematically described: h·fmin / tmin = P = h·fmax / tmax. Higher frequency waves carry more energy in one second, but the same minimum quantity in the minimum time Tmin. The E / t ratio is constant.

· A limit (low and high) on the maximum quantity that can be transferred per unit of time was imposed by the ratio for the quantity of energy h·f as a function of a time interval (Emax/Emin = Tmax/Tmin). The return of energy balance per minimum time interval explained the wave motion at the highest speed. If the maximum quantity Epl (= 49.038 ×10^8 J) corresponds to 1sec then the minimum quantity h·Hz corresponds to the minimum time Tpl = 0.135120 ×10^-42 sec.

· Within the structure of matter there is an increased delay in restoring the energy balance.

· As long as the power conservation equation Emin / Tmin = Emax / Tmax = h·fmin / tmin = h·fmax / tmax = P is valid

the time to return to equilibrium is the minimum and the speed of the e/m waves the maximum c. The equilibration time is not the minimum for the presence of the particles within the structure of matter. Passing the average frequency value, the recovery time for the elementary quantity h is longer than the propagation period of the waves. This means that a period of time is offered as an opportunity for the energy balance to be delayed and perhaps never to be restored.

· While the period of repetition (of fluctuation) shortens, another time, which is the total time of repetition, increases. We notice that these two times come close to equaling the equivalent energy of an electron. At the equivalent energy of a proton, the times are reversed: The total time of the repetition (t = E·tmin / Emin = h·f / Pmax) exceeds the period time of the equivalent energy.

· The subtle decrease in velocity from the maximum velocity value that the e/m fluctuations have and the increased inertia h·f/c^2 are associated with a delay in rebalancing the shared energy of free space. The period of a wave to the mean value (starting from the lowest frequencies) is slower than the time interval for re-

equilibration.

· Exceeding the average frequency f0, the time for the energy to return to equilibrium (E0 / t0 → t0 = E0·tmin / Emin) is slower than the time of the period when the wave energy is changed or transferred. This means that more energy can be transmitted, or stored, before it returns to equilibrium, before returning its full amount back to the point of disturbance.

· On one side is the shared amount of energy and the maximum force that brings it back into balance. On the other side are elementary quantities of energy that oscillate and interact with each other with weaker forces. The average values of these two extremes are the result of a dynamic equilibrium that gives the structure of the simplest atom of matter. The number of more particles within the structure of an atom can be explained by extremely subtle and repeated deviations in the average values of the minimum and maximum limits.

The first revealing calculations were with the minimum and maximum limits of magnitudes, with calculations of magnitudes in function of each other, such as an increase in correspondence with an increase of other magnitudes or with a decrease of opposite magnitudes (mainly in energy, inertia, rate of change, time and length, speed). A little later we were able to calculate magnitudes as a function of average values and now we have introduced a ratio to the quantity of energy as a function of time limits. All these simple calculations assume the physical constants c,h and G and give results that do not violate them. The results of the calculations are investigated and used to look for relationships with measured quantities in the structure of matter. Thus we saw, beyond all expectation, how the average values of the quantities are related to opposing motions and forces and to characteristics of the basic particles of matter. We have now extended the investigation to the closer relation of particles to e/m phenomena and to the rela-

tion of the e/m force to the nuclear and the nuclear to a maximum gravitational force (which is related to the simultaneous presence of the Universe) and we continue loosely.

Image: standing_wave_

Description: Stationary waves in a moving gif image. The blue and green waves have opposite directions and equal amplitude of oscillation. Their meeting creates the red wave called a "standing" wave. Its motion as shown is limited to an oscillation and the energy is not transferred in the directions that the other waves were. The oscillation of the standing wave is represented by the white cavities

90. A universal force of shared energy is a force of concentration and rebalancing. Within the structure of matter it appears as nuclear

Here are some posts that are revealing about the correctness of interpreting the structural elements as energy oscillations at extremely high rates and with the exchange of elementary quantities in extremely short time intervals with the disembodied presence of a shared amount of energy (presented as space). First, the most probable minimum and maximum limits on the physical magnitudes (mainly energy, inertia, rate of change, time and length, speed) were determined according to the physical constants c, h and G. Then these physical constants c, h and G were analyzed and equations were formulated, where a physical constant comes out of the other constants. Equations were later formulated for the same result with each constant (relating to the observation of a different force in nature). The results were investigated under assumptions for another numerical value of the physical constants. The relations of the limits and physical constants to the quantities measured for the fundamental particles of an atom of matter were sought. Many relationships and simple calculations were recorded without proving anything and these spoiled the relevance of the theory. Somehow the interpretation of “a complete Universe that appears absent as space and with the structural elements as the beginning of its creation” has developed up to this point. Many of the conclusions presented have been arrived at by applying the fundamental relations of physics and with school calculations. The calculations give the limits that agree with the universal physical constants and provide us with simple equations and functions, that confirm the interpretation of the structural elements as oscillations of a shared amount of energy in more detail. Also new questions are created about the wave structure of matter and space which have an answer and reveal peculiar processes.

The following excerpts and thoughts will be of interest to researchers and not

to all readers. They reveal more details on the structure of matter as oscillations of a shared amount of energy with simple mathematics. The description of matter in terms of wave effects and as a process of a few fundamental physical phenomena fits like a glove with calculations and its structure can be fully elucidated. The calculations and mathematical formulas applied are simple for a professor, but consider that this interpretation of the wave structure of matter and space and the relationship of a simultaneous universe through a shared amount of energy began as a philosophical theory with rational considerations and developed without no formulas and calculations. During this long time (and during many years of waiting for such help) no one could either have time to understand it, or even help to introduce the known physics, even a single mathematical relation.

<·> The whole problem in a few words: "A shared amount of energy is presented on the contrary as if it were a complete lack of energy, and matter is presented as the beginning of the world, while the world is complete in a maximum period of time. We seek the explanation of the contrast between of nuclear and gravitational force according to this rational interpretation of the Universe as a complete whole and as a minimal part". (365) An opposition that emerges rationally because the whole coexists with the least part of the whole and they are dynamically linked.

We were not misled when we saw the large sizes of the force using simple equations of e / m energy ($h \cdot f/\lambda$) and masses of particles ($M \cdot c \cdot f$). We thought that these force sizes are instantaneous for the respective times and that the force periodically is applied.

Apart from that, as the force comes out of the equations with the gravitational constant G it appears as a centripetal force. Now the interpretation is clarified and we conclude that a periodically applied force relates to energy balance restoration processes. In this process, when the energy equilibrium is disturbed then a

counterbalancing force for the equilibrium is created. By the periodic change of these forces corresponding rotational motion and momentum phenomena are created. The rotational inertia (I=L/ω) in rotational motion has units of measurement in mass multiplied by radius squared (M·r^2). Paradoxically again, if the rotational inertia (or angular mass) is applied to calculate the corresponding inertia of a particle, then the result gives the angular momentum of constant h. That is, M·λ^2 / Tm = h. In this simplified case, the wavelength appears as a rotation axis, and we imagine (...) In simple equations we can still see that the physical forces contained in the phenomena of electromagnetism and gravity are always associated with a minimum length. (370-371)

· We have equations that give the result with the constant of gravity G and equations that give the same result with the constant h of electromagnetic phenomena, without the constant G. We achieved this with the equation Mpl / M = c / V and according to limit of maximum inertia M =√(h·c/G). The newer relations M·c^2 = h·f according to this correspondence between velocity and inertia give the same result, as the relation G Mpl Mpl / λ.

"We have found: M·λ^2 / T = h and V^2·λ / M = c^2·V^2 / F = G. The fundamental relations which we use to describe electromagnetic phenomena:

h·c = E·λ = h·f·λ = M·c^2 ·λ = 19.8644 ×10^-26 kg·m^3 /s^2

They are equivalent to the following relations, which we use to describe changes, motions or forces in the gravitational field:

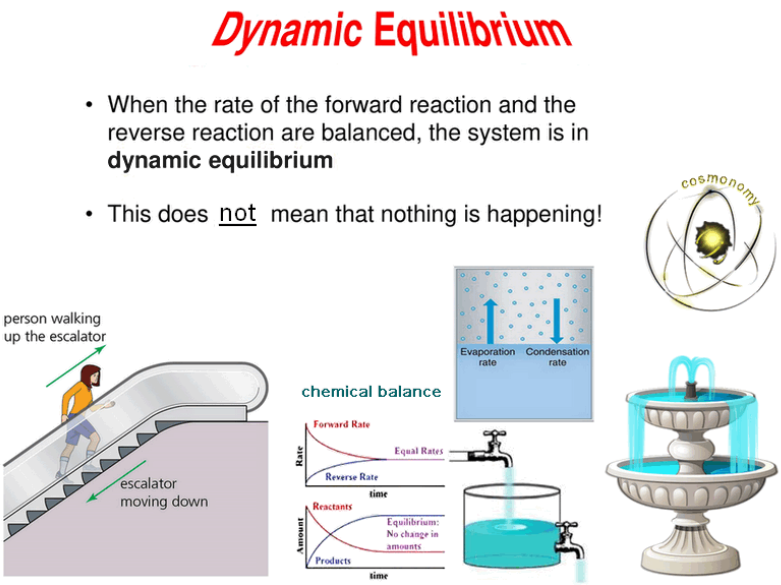
G·Mpl^2=F·λ^2 =M·a·λ^2 =Mpl·c·V·λ=19.8644 ×10^-26 kg·m^3/s^2 " (357-8)

So when we see in numbers what changes in physical phenomena when they are described with the constant G of gravity and what changes with the constant h of electromagnetism for the same mathematical result, then we clearly see opposite and periodic forces within the structure of matter, opposite changes, repetitions and fluctuations, generally wave effects and a strong force that does not come from the masses of the particles.

"All other respective phenomena, which accompany the change in energy of free space, change periodically. Even the force F is among these phenomena, which are changed periodically" (357)

"The maximum force Fmax is not applied for long periods of time and continuously, but momentary". (357)

Image: Dynamic+Equilibrium-800x600 (Examples of dynamic equilibrium)



91-2. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

“In simple equations we have found (at §16) that electromagnetic phenomena and particles begin with a deceleration of the maximum speed c. If visible light has an inappreciably reduced speed than the maximum c (almost c), we wondered what physical phenomenon exactly has maximum speed c? Prior to the mathematical investigation of the boundaries of nature, it was concluded from the rational interpretation that the reduction of maximum speed occurs in a shared amount of energy that appears to us as free space. What physical phenomenon is happening to the structure of space exactly at maximum speed and we do not observe this motion?” (p373)

* [M = mo /√1 - (V^2 / c^2) = mo c/√(c^2 – V^2) according to the limit of maximum inertia √(hc/G) and Mplanck / M = c / V and -V = c M / Mplanck = √(GM/λ)]

“When we concluded that the maximum speed c decreases in proportion to the increase of inertia [investigating the ratio c/V = Mpl /M and the velocity V=√(GM/λ)] then we did not know what change was taking place to the common energy of space. We were generally thinking about a reduction in speed from the maximum c and we were calculating how much the reduction is, but we could not say for what movement of the space the maximum speed c was. After a more detailed description of the energy disturbance and observing how the physical quantities decrease and increase, we see that the maximum speed c is related to a force that restores balance. A universal force keeps the energy of space in balance and generates waves in direction where the energy is concentrating and at maximum speed c. Any disruption of this universal force generates the e/m waves where are propagate in opposite direction (of decentralization), because the shared energy is immediately concentrated at maximum speed c until it returns to equilibrium.

<·> A quantity of energy h·1Hz returns to equilibrium at the minimum time tmin ≈10^-42 sec for a disturbance of 1Hz and this minimum quantity of energy corresponds to a minimum inertia of Mmin ≈10^-50 kg. An amount of energy h·10^20 Hz returns to equilibrium at a time te ≈10^-23 sec for a disturbance of 10^20 Hz and this amount of energy corresponds to an inertia of M≈10^-31 kg (about one electron)". (p380-381)

<·> Any disturbance of energy in the shared quantity of space stimulates a transfer of energy to restore the balance in the shortest possible time. The nuclear force and the preservation of particles in the structure of matter is achieved by a re-balancing force (to the perturbation of universal space energy). This increased force applied by a concentrated wave direction has the maximum speed. "We have interpreted the e/m waves as a result of a disturbance that slows down the maximum speed at which free space returns to its equilibrium state." (p373) The increased deceleration of the maximum velocity is related to the mass of the particles as we have calculated. E/m waves and particles are due to this re-balancing effect and a restoring force of the shared amount of energy.

Image: tumblr_688b4ff72d1c24ffa1e3684fafbb0000_4b0e66be_480-txt (black waves)

Description: Bright waves on a black surface. Above is noted: Dynamic Equilibrium and waves. Below is noted: Any disturbance of energy in the shared amount of space stimulates energy transfer to restore equilibrium in the shortest time.

92-3. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

*[The scale of inertia Mmax =√(hc/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

*[The average value of energy and corresponding inertia: E0 = 1.802582 ×10^-12J and M0 = 2.00564 ×10^-29kg]

*[The minimum time to return to equilibrium of a minimum quantity h·Hz corresponds to Tpl = 0.135120 ×10^-42 sec and the inertia is 0.73725 ×10^-50 kg

Time Tmax = 1sec and inertia is Mmax = 5.45624 ×10^-8 kg corresponds for the maximum amount of energy Epl (= 49.038 ×10^8 J)]

“ We achieve the simple explanation of many natural phenomena and the observation of mathematical proportions by interpreting natural processes as a result of increases and corresponding reductions in physical sizes and in relation to minimum and maximum limits. The beginning of an energy change creates a transfer of energy and the transfer of energy again creates a new change and in the end comes the equilibrium. In this process of fluctuation, opposite forces and synchronized changes are created”. (p370)

“ The maximum force is periodic at the maximum rate and to a minimum length according to the relations Fmax = h·fmax^2 /c = h /c·Tmin^2 = Emax / λmin = h·fmax/c·Tmin. The maximum force in microscopic dimensions is related to the force which is called "nuclear force" and "strong interaction". But this maximum force is presented as a constituent force from opposite directions. It is not a force steadily applied, but it is periodically fluctuated and presented as a restoration force of equilibrium and together as a force that has disturbed the equilibrium”. (p421 - 422)

“ With maximum speed c and maximum force F, bodies could not be made of "coarse" matter and their mass and volume could not increase. Only particles, fields and radiations can resist or escape...” (p381)

“ A maximum force restores the energy balance and this force is applied with waves that are concentrated in microscopic lengths of the structure of matter at the maximum speed c. The delay in restoring equilibrium creates e/m fluctuations and decentralization of e/m energy. The delay in restoring equilibrium is related to the creation of the electric and magnetic field and to the angle that these fields have with each other as they alternate and to the impedance z0 = √(μ0 / ε0) that they present. The delay is increased close to the average values of the fluctuations [f0=√(f·fup)]. The electric charge and the fundamental particles as they separate into the structure of an atom of matter are retained with increased delay [according to t=h·f/Pmax]. Electric and magnetic fields [c=1/√(μ0•ε0)] alternate at extreme rates in a tiny area of space where is disturbed. These fields [μ0 =1/c2·ε0 and ε0 =1/c2·μ0] have opposite behavior and when an impedance is increased for the rate of change of one field, the resistance is reduced for the other field (for the same rate of change). The energy fluctuation seems to be divided into two phases by two opposite processes (concentration and decentralization) and by countervailing forces, which are connected to the two fields, electric and magnetic / nuclear [E=Cb^2·2π·137,0344·f /4π·ε0·c = Cb^2·137,0344·c·μ0·f /2]. (p381 – 382)

Electric charge (remember a close relation of electric force to energy: c · h / k · Cb^2 = 861.02151 = 2π ·137.0344 = 2π/α) and fundamental particles such as these separate into the structure of an atom of matter are maintained with an increased delay in restoring the energy balance [t=h·f / Pmax] around the mean values of the fluctuations [f0=√(f·fup)].

“ For every quantity of deceleration of the maximum speed which is -V = M·c/Mpl = λmin·f = √(GM/λm) this kinetic energy is present as quantity hf of an e/m fluctuation. The reduced velocity -V divided by the minimum length λmin gives the frequency f of wave, the same as the maximum speed c divided by the normal wavelength (-V/λmin = c/λ). The reduced velocity -V creates the corresponding inertia M = -V·Mpl/c. The minimum reduced of velocity corresponds to the minimum inertia Mmin and then a minimum quantity of energy Mmin·c·λmax = Mpl· -V·λ = h is created in correspondence to the minimum inertia. When the maximum speed is reduced, then the inertia and the corresponding energy h·f also are increased. The h·f energy has the constant ratio to the reduced speed: h·f / -V = 16.3574 and this constant ratio is related to the constant momentum = Mpl ·c = h / λpl = p(pl). The reduced speed -V has a proportion to wavelength and gives the constant (λm ·Vm) = 1.2143 ×10^-26). The reduced speed -V divided by the corresponding frequency of e/m fluctuation gives the constant of the minimum length λpl=0.40508 ×10^-34 m (that is -V/f=λpl). The wavelength “accompanies” the speed of a wave. The reduction of the maximum speed (as the frequency increases) is “accompanied” by the minimum length λmin and the minimum time in which this length is changes (giving the maximum speed c)”. (p374)

“ The time t at which a quantity of energy h·f is compensated or transmitted according to the conservation of power is t = h·f/P = E/P. The decreased speed -V which corresponds to the inertia of the energy quantity (according to the equation -V = M·c/Mpl = λmin·f = √(GM/λ) per this time t gives the maximum speed c. That is λmin·f·P / h·f = c”. (p293)

The proportions: P = h · fmin / tmin = h · fmax / tmax

If they are equated with the equivalent relations:

P = h · c / tmin λmax = h · c / tmax λmin

We will observe even certain relations such as:

momentum ($p = h / \lambda$),

change of speed ($a = c / t$) and speed $c = P \cdot \lambda \cdot t / h$ (p292)

Image: Dynamic+Equilibrium-4

Description: Blue waves are decentralized. Above is noted: Dynamic balance, waves, counteracting forces, feedback and repetitions

93-4. A universal force of shared energy is a force of concentration and re-balancing. [F(restore) and F(disturbance)]

Few calculations with simple relations confirm the wave relationship of a shared amount of energy to the structural elements. The structural elements have been explained as oscillations in a shared amount of energy presented as a space after weakening forces. Calculations can be expanded with more difficult mathematics, but resolving more difficult problems assumes that we have solutions to individual problems contained in the complex problem. The structure of matter includes phenomena from a combination of movements that are synchronized with each other and interactions in extremely short times and extremely short lengths. So if we do not think of the simplest moves that achieve this combination of many movements with extremely subtle divergences that create extreme results, then the structure of matter is the most intractable puzzle of nature, as it has been so far. The structure of matter had not been rationally interpreted in world research, so the simplest relationships in physical processes were ignored. The phenomena within the structure of matter by accident and fragmentary are observed and explained heterogeneously by the effects of their action, which are varied and different within certain observation conditions. Here we show the first relationships of movement and force. They have been adjusted so that calculations easily give results as a function with the rest of the sizes and the physical constants, according to the minimum and the maximum limits, as they have been specified. That is, the value of one size (eg energy, inertia, speed, etc.) to what value of another size corresponds. These simple relations are like resting attitudes in the passage of rational thought for the complete explanation of the tiny phenomena that exist in the foundations of nature.

“ The force E/λ is linked to the maximum force Fmax (which the maximum quantity of energy Emax has to the minimum length λmin). The quantity of energy E=hf divided by the minimum length λmin gives the same force as the maximum

quantity of energy Emax divided by the wavelength λ of the quantity hf. That is,

F = E/λmin = Emax /λ

The same force results from the following relations with the constant of gravity G:

F = G·Mpl·M / λpl^2 = G·Mpl·Mpl / λpl·λ" (p368)

" If a force of restoration is created as a reaction to a force of disturbance, then we can find the constants h of electromagnetism and G of gravity from these forces. Indeed, the physical constants come out after we have calculated these forces according to the known formulas and according to the limits of variations. We can solve the equations for the result with units of the physical constants.

G = F·λpl^2 / Mpl ·M = F·λ· λpl / Mpl^2

From the above equations according to the constant G of gravity, the force F is the E/λmin = Emax /λ that is related to the force of energy restoration to equilibrium (Fre). This force Fre multiplied by the wavelength λ gives the maximum energy Epl. This force Fre multiplied by the minimum wavelength λpl gives the corresponding energy E (energy of disturbance) of the mass M. We observe in the equations the following relations:

F·λ = Epl and F·λpl = E

F / Mpl = c^2 /λ and F / M = c^2 /λmin

F· λpl / M = c^2 and F· λ / Mpl = c^2

The equation solved so that the reduced mass M comes out when we insert a size for the force of restoration:

M = F·λpl^2 / G·Mpl " (p369 – 370)

The force of restoration Fre multiplied by the corresponding period of energy h·f gives the following constant momentum:

Fre ·T = h / λpl = Mpl·c = 16.3574 kg·m/s (where T = h/E)

“The force to restore balance Fre = E/λmin = Emax /λ divided by the force E/λ gives the ratio of the maximum force divided by the force of restoration to equilibrium, that is

(E/λmin) / (E/λ) = (Emax/λmin) / (E/λmin) = Fre / F = Fmax / Fre

The force of restoration Fre = E/λmin = Emax/λ raised to the square divided by the force of disturbance F=E/λ gives the maximum force Fpl = Emax / λmin. That is,

Fre^2 = Fmax ·F →

Fre^2 / F = Fpl = (E/λpl)^2 / (E/λ) = Fpl = h /c·Tmin^2 = Epl / λpl ≈ 1.210586 ×10^44 N

The force of restoration Fre seems to be approaching an average value √(Fmin·Fpl) according to the quantities of energy of the necessary particles of matter”. (p422)

“The maximum quantity of energy Epl to the maximum wavelength λ gives a minimum force of restoration about 16.3574 N (...)

The minimum quantity of energy Emin to the minimum length again gives a minimum force of restoration 16.3574 N. We can easily find the following equality seeing the sizes at their minimum and maximum values on the table:

F0 = Emax /λmax = Emin / λmin = 16.3574 N → Emax · λmin = Emin · λmax = h·c

The average force of restoration 16.3574 N multiplied by 10^42 times gives the maximum force Fmax. The minimum force of disturbance 2.210216 ×10^-42 N multiplied by 10^42 times gives a mean size of disturbance force F0 = E0/λ0 (equal to the minimum force of restoration 16.3574 N)”. (p422) That is, the ratio of the maximum force to the average value that is close to the structure of the matter (not the core) is ~10^42 times, which is approximately what the minimum force is theoretically.

“The average force (of the equality as we have found Emax / λmax = Emin / λmin) according to the corresponding equations containing the gravity constant is:

F0 = G·Mpl·Mmin / λpl^2 = G·Mpl·Mpl / λpl·λmax” (p423)

*[For the maximum and minimal inertia: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

*[For the length λ = c/f = h/M·c]

*[The disturbance force F(dis) ≈ 2.210216 ×10^-42 N and the force of restoration F(re-max) ≈ 16.3574 N corresponds to the minimum quantity of energy Emin ≈ 6.62606 ×10^-34 J

The disturbance force F(dis) ≈ 16.3574 N and the maximum force of restoration F(re-max) ≈ 4.4499407 ×10^22 N corresponds to the average quantity of energy e E0 ≈ 1.802582 ×10^-12 J

The force of restoration F(re) = E/λmin = Emax/λ is ≈ 10^42 times more powerful than the minimum force F(dis) = E/λ.

But the force of restoration F(re) comes out ≈ 10^21 times more powerful for the force F(dis) average size.

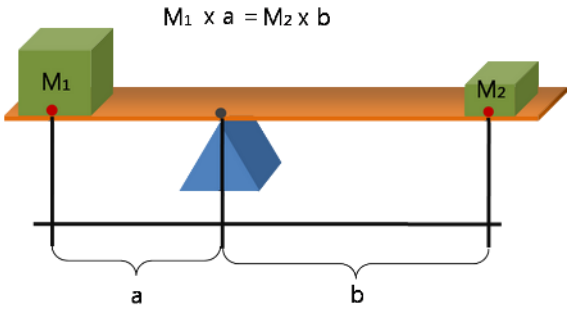
The force of restoration F(re) for the energy disturbance from Emin to E0 escalates ≈ 10^21 ie 4.4499407 ×10^22 / 16.3574 = 2.720445 ×10^21

The corresponding disturbance force escalates 16.3574 / 2.210216 ×10^-42 = 7.4008 ×10^42]

Image: dynamic equilibrium/Dynamic+Equilibrium-5

Image with the note: How things can change positions and how they can act and react with each other on a surface has limits, set by the surface. The maintenance of the surface and its own equilibrium are necessary and decisive for the

things that rest on it. So too, matter has its dynamic structure and properties on one condition: that the movements within it occur with the maintenance of a universal equilibrium that exists prior to any changes occurring between material bodies. The universal equilibrium that grounds matter is in something that exists everywhere and always and is indistinguishable as a body. It has the properties of space...



94-5. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (For all readers)

The force from the explanation of the structural elements as oscillations on a shared amount of energy appears as a changing. We have set a minimum and maximum limit to the size of the force, as in all other sizes of nature. We did not hesitate to associate force to time, as well as the length that comes out of the general formulas. The timing of the action within a dynamic phenomenon such as the structure of matter is decisive for the result. The periodic change in the application of force is also decisive, but in addition it maintains constant effects and feedback effects. The angle is also decisive in the application of force. Functions of angle with forces will certainly bring more details to the knowledge of the structure of matter. But here we go from the simplest relations and these are already a lot for a man's mind. The introduction of a constituent force where is in contrast to that preceding, as well as a movement in the opposite direction, is also an important thought for researching the physical forces associated within a structure of atom. We have seen in the visible world, an opposite force that occurs when a material quantity receives action and is deformed, but this quantity resists and returns to its previous state. So we thought that somehow happened in the disturbance of the shared amount of energy, as betrayed by the known physical forces. Since this quantity (as space) is constantly returning to its balance we assume that it has a constituent force with its synchronized movement and we explain the confirmed contradictions between gravitational and e/m force. The force that restores equilibrium (the force of restoration or re-balancing force) and wave motion in the opposite direction to a center explains the gravitational field, the presence of e/m waves and their attenuation with increasing distance, and the short-lived existence of the increased quantities of energy where appear as particles. The same force is presented in the opposite direction to the structure of matter in a certain procedure and in repeated ways.

Thus the force of the shared quantity is shown with different characteristics and as a separate force and is accompanied by different phenomena. Any disturbance of the shared energy is limited by the resistance of the opposite force presented for the restoration of balance. That is why a function is needed to calculate the size that the return force can have (in the completely opposite direction). Previous proportions with the disturbance force and the force of resetting to balance prepare this function.

The calculations give a few first results for the size of the force without this size exceeding the minimum and maximum limit, which we have determined in relation to the boundaries of other physical changes. Now, so simplified, the physical forces will look even more clearly united and dependent. Their contrasts are explained because a process is repeated at a very fast pace and according to maximum and minimum limits. A shared amount of energy is distributed in smaller quantities with a process that the strong reset force weakens, but among the quantities weakened forces are presented so that these smaller quantities can act between them, without being cut off by the common whole. With the introduction of "the return force to balance" we still have a connection of the structural elements to the shared amount of energy with the ability to calculate and investigate. With the simple functions of physical sizes we can seek more relationships of the characteristics of the structure of matter with the physical forces and the shared amount of energy.

These fundamental relationships for the change in physical sizes into interdependence and with minimal and maximum boundaries (agreeing with physical constants) seem difficult for those who remember little of school mathematics. On the contrary, these are the simplest relationships for physics professors and could not imagine how useful they are for cosmological research. The mind of the unprepared reader is reminiscent of the weak gravitational force and the mind of

a physicist is reminiscent nuclear force. But the physicist also has an unprepared mind on other issues. Nuclear and gravitational force coexist, such as space and matter, the complete Whole and the elementary part, as ability and weakness of thinking. Readers who are unprepared overestimate the difficulty of mathematics presented here, while most physicists probably underestimate them. They both exaggerate, the former are positive and the latter negative. It is emphasized that all mathematical relations published have come from the calculated constants c, h, G, pi (with accuracy achieved or necessary) and with the sample of a few measurements for matter. Therefore, they give results in agreement to the measurements and thus controlled or adapted to give the known results and according to some of course physics. Formulas can be more complex in language of mathematics and presented as they will seem more clearly how they came out. But the most important thing, which no one can ignore - and is a method in this rational research - is when simple calculations produce results for sizes and quantities that have been laboratory measured. Sizes and quantities for the structure of matter come out with simplified proportions and correspondences of the sizes according to the specified boundaries in the familiar fundamental phenomena of nature through a few physical constants, summarized in the concept of movement and balance. This rational approach shows that the explanation of the structural elements as oscillations on a shared amount of energy is correct and productive. We have not forgotten the astronomical world. It is intertwined with the shared amount of energy, which with its balanced distribution has, - among other properties -, the property of capacity. The sizes and quantities we calculate for the microscopic structure of matter (and include the constant G of gravity) will be incredibly useful in calculating the sizes of the global space.

Image: dynamic equilibrium/3e00fcd19ae30d832f03f0a25cd764fa

Description: Animated gif image. Waves start and spread out from the head of a man who is standing and looking at them

95-6. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

The calculations according to the minimum and maximum limits as we have determined them (in function of each other and after analysis and correlation of the physical constants c,G,h) give the correct results. When we use results to calculate another quantity, then they give the expected result and one "sends" to the other. The calculations according to the inertia scale Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg and in function of the same size as the rest of the physical sizes give numbers of nature (that is, quantities and sizes which at some point have this numerical value of a random calculation), even when the result does not explain anything or reveal some new process. Therefore, the investigation of the structure of matter as energy oscillations in a shared quantity has such a future that an encyclopedia will need to be written and of course by new minds and physicists who enjoy research. It is extremely important for physics to explain exactly how the nuclear force decays, how the electric charge is created between nucleus and electron cloud, and how the nuclear force eventually decays according to the gravitational constant G with the time delays achieved in the energy oscillations.

Research specifically on physical forces is not that important to most of us. But it continues more thoroughly because we have simplified the explanation of the structure of matter, we have several functions and formulas, which bring out important relationships and information that will probably be extremely useful for many other investigations and for technology. The interpretation of "a complete and stabilized Universe that appears absent as space and is constantly being recreated from its structural elements, existing as oscillations of a shared energy that we see as space" will be confirmed. All will admit how recklessly and irrationally (indulgently) they began to interpret nature as a whole of bodies, parti-

cles, and mechanical movements, and had as much indifference and arrogance as those who feel above suspicion and abuse their social image, or as those who have unshakable confidence in their abilities and one day they become victims due to their excessive relaxation. This is the goal for the persistent expansion of cosmological research published here, not an award of a discovery. Otherwise, the cosmological interpretation with the few fundamental physical phenomena and with the general concepts (which guided the calculations) is already 100% reliable, amazing, beautiful, productive and satisfying and as no other theory of nature ever was.

A title and some excerpts from the treatise follow: “26.4. A maximum force is degraded by periodic procedures in the structure of matter.

Our explanation of the natural phenomena and of the beginning of the creation of things began with this definition: The whole Universe is 100% present and always as a common superset before every separate body. We concluded that the free space is a reality in advance in all possible ways (within the limits of a maximum common time). But this reality is presented as a universal amount of energy for the possibility of all which can happen a posteriori and indirectly by the physical carriers/particles, which exist as oscillations of this balanced quantity. Even the application of laws to nature was explained in this way. After the investigation of the boundaries of physical changes, we conclude by the equations the existence of a maximum force that exceeds the sizes that have been measured for the fundamental particles of the structure of an atom”. (p353)

A force towards the minimum radius which is within the core of the structure of matter appears to be extremely strong. An e/m perturbation occurs at extremely high rates along with a weakening of the nuclear force, so that eventually around the atom there remains a weakened force that is detected by the gravitational field of larger bodies. We have explained that the most powerful force is a rebal-

ancing force that occurs in the shared energy amount (of space) when it is disturbed. “We see the force of concentration and re-balancing (Fpl = G·Mpl ·Mpl / λpl^2) in the equations which have the constant of gravity G, but it is not the weak force of the gravitational field, as we observe at astronomical bodies (externally of matter)”. (p373)

“We have calculated an extremely strong force according to the relations F= h·fmax/λmin = c^2·c^2 /G = G·Mpl^2/λpl^2 and according to the limits as introduced by the connection of physical constants h·c/G. We did not calculate such a strong force for the sun with our planet and paradoxically this force is greater with tiny quantities of mass at extremely tiny lengths. This is a restoring force that a shared amount of energy in equilibrium has and occurs in moments of imbalance. It is a negative force -F that does not exist between bodies, but instead the e / m fields, particles and matter of bodies are created when this force is weakened or disturbed. Also the maximum mass / inertia Mpl=√(h·c/G) is a negative mass -M since in theory the particles of matter are calculated in proportion to the reduction of the maximum inertia -Mpl and to the reduction of a velocity -Vg from the maximum speed c. Therefore, the force, which occurs within a core and between a core and a particle in its orbit, is the universal force that the Whole Universe has in advance and permanently, from a minimum radius and with its total amount of energy. But the total amount of energy is in equilibrium and so this balanced amount seems like empty and global space and has reduced force in longer distance than an atomic radius. The gravitational force is a remnant of a maximum force, which has been called “nuclear”. (p371-372)

“Nuclear force does not appear to be created from the outer space of atoms, nor it is one of the known forces of greater distances. But from this force begins a process of reduction from which the fundamental particles, the characteristics of the structure of an atom, the electromagnetic force and ultimately the gravitation-

al field are created”. (p376)

“All what happen to the quantities of matter in the free space are the slowest processes and take advantage of the kinetic energy of the structural elements. Physical space is free for atoms which are in balance because certain quantities of energy have been stabilized by a process of restoration and feedback. The force of restoration in equilibrium is presented be weaken as a gravitational field and as free space to matter”. (p377)

“The waves of restoration in equilibrium are fundamental quantities of energy within the structure of matter and a very small part of them are detected in the form of fundamental particles. (...) The frequencies from 10^42 Hz to the mean of 10^21 Hz are for waves having the opposite direction and propagation speed and are concentrated having the limit of a minimum radius. The decomposition process from which the fundamental particles are created starts at a maximum frequency fmax = 10^42 Hz and the question raises: What else can happen until the rate is reduced to ~10^23 Hz”. (p377-378)

“The fundamental particles of an atom are these quantities of energies which are created at the average values of energy fluctuations. Two opposite motions in opposite direction are appear to have equal rate of change and be counterbalanced in these fluctuations”. (p376)

“We also observe that the force of the electric charge occurs by a slight attenuation of a concentration force around of the mean values and that the force is presented in the microscopic space at a radius by a periodic process as shown by the constant pi”. (p353)

<·> According to the specified lower and upper limits, we have calculated the

average values and the average force is close to the force we calculate as electric. As the masses of the two main particles approach the average values. If the electric force occurs around the average value, then this explains that the electric charge is positive (+) and negative (-). Because the average values come from the two opposite processes of nature as we have established (concentration and decentralization of energy), which include the two extremes of changes, the minimum and maximum values.

Below are a few calculations that lead to the full explanation of the relationship of the structure of matter to a shared energy, which appears to us as space.

Image: dynamic equilibrium/atomic-equilibrium/atW9tdI

Description: Animated gif image. From a bright spot on a dark surface there are rays in all directions around it and they ripple

96-7. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

[The limits of maximum and minimum inertia in physical processes: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

<·> Average force and electric force.

F0 = Emax /λmax = Emin / λmin =√(Fmin·Fpl)= E0/λ0 = c·h/λ0^2 =16.3574 N

F0 = G ·Mpl ·Mmin / λpl^2 = G ·Mpl ·Mpl / λpl ·λmax = G ·Mpl ·Mpl / λ0^2

A radius r = 0.2817937 ×10^-14 m calculated according to 1/4π·εo (e^2 / Me·c^2) = k·(e^2 / Me·c^2):

The electric force for radius r = 0.2817937 ×10^-14 m

Fel = h·fe / re = E / re = Me·c^2 / re = 8.18710 ×10^-14 / 0.281793 ×10^-14 = 29.05359 N = k·e^2 / r^2

When the speed c is reduced c/137.036 as in the case of angular momentum (M·V·r) then the same equation r= k·(e^2 / Me·c^2) give the Bohr radius r:

r = k·(e^2 / Me·V^2 = 5,291824 ×10^-11 m) για V = 2.18768 ×10^6 m/s.

(The electric force at this longer length comes out weaker 8,238718 ×10^-8 N).

A first comparison: Fel / F0 = 29.05359 / 16.3574 = 1.776174 (≈√π)

We see that the average force F0 corresponding to the average length λ0 is almost the electric force taken from extreme limits of variation:

[Equivalent energy scale Emax = h·fmax = 4.903827 ×10^9 J - Emin = h·1Hz = 6.62606 ×10^-34 J]

* If in the equation Fel = k·e^2 / r^2 we insert the mean length λ0 as the radius,

then Fel = 0.0189977. We can calculate another radius from the average length λ0.

Now that we are looking for motions at a different angle within the structure of matter (by the introduction of a radius) note one more omission, which was necessary for the sake of convenience and was not from ignorance. From the beginning of the introduction of limits to physical quantities we generally speak of a length λ meaning the wavelength. Because we calculated inertia as equivalent to a quantity of energy according to the known relationship h·f of e/m phenomena. The amounts of this energy correspond to such a length and we can easily calculate it. Advancing the investigation of the wave structure of matter we need to think how from wavelengths λ to quantities of energy, which oscillate and are transported as waves, the structure of matter is formed at radius lengths. Of course, we already have in mind the phenomenon of energy concentration with the limit of a minimum radius and the decentering movement of e/m waves. We didn't have to think about the exact length of this radius, and it was no problem if we insert a wavelength λ as a radius. We have avoided this separation of wavelength from radius length (or other length) in order to extend correspondences of sizes and to the processes of nature more generally. From any wavelength λ we can easily calculate a radius length. Electron energy levels have distances from the nucleus calculated by the constant angular momentum h divided by 2π. When we use the number π of the circle, then the length changes relatively little, as the length of the perimeter to the radius of the circle. Such a discrepancy in length when the numbers have a large ratio between them is negligible, as long as we were looking to relate the smallest numbers to the largest. When the ratio of two numbers is a number many times larger or smaller, (e.g. 6×10^12 / 4 = 1.5×10^12) and indeed in irrational numbers, then the number π in the calculations disappears and not the required result.

Subtractions and additions with such numbers are fleas in the hay and are sometimes more difficult to calculate with high accuracy than to solve an equation. As we have seen, the ratios that give the minimum and maximum limits to physical changes are extremely large in terms of unity or extremely small and close to zero. And as we have seen for the maximum speed we attribute to light, such an extremely small deviation in microscopic dimensions (which we still cannot measure) creates new physical phenomena. An insignificant deviation even in astronomical space can lead to a significant effect when the subtle deviation is multiplied by extremely large numbers measuring distance or time. Calculations with such series of numbers that change the last digit or give a large ratio are of mathematical interest. But if we do not proceed with temporary disregard and indifference then they will hinder and delay the investigation. Such subtle deviations were often measured or observed by chance and helped the research, but we here have rationally started a research and are not looking at chance. The rational explanation of the structure of matter and how nature is creative and maintains its laws imposes on thought other priorities than the accuracy of calculations or the confirmation of some theories. That's why, initially, there was no need for the fine separation of phenomena as described in physics books, such as e.g. the separation of kinetic energy from potential energy and the difference of energy into quantities of photons. However, when there are discrepancies and particular phenomena that have not been explained, then the explanation seems inadequate and can easily be questioned. Then the explanation needs to include the deviations and special phenomena or show how these do not negate the explanation.

<·> We see how close the values of the basic particles of matter are to the average values, as we have calculated them.

[for the scale of inertia: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg].

The average mass value is M0 = 2.0056443×10^-29 kg.

M0 / 22.0173 = Me = 9.1094 ×10^-31 kg

M0 · 83.3956 = Mp = 1.67262 ×10^-27 kg

The mean length λ0 is: h/M0·c = E0/F0 = c/f0 = 1.101998 ×10^-13 m and approaches the core. A deviation of 22.01735 and 83.39569 times gives the wavelength of the equivalent energy of an electron and respectively a proton.

λe = 1.101998 ×10^-13 m · 22.0173 = 0.2426308 ×10^-11 m

λp = 1.101998 ×10^-13 m / 83.3956 = 1.321411 ×10^-15 m

The mean frequency f0 is: 2.7204444 ×10^21 Hz

fe = 2.720444 ×10^21 / 22.0173 = 1.23559 ×10^20 Hz

fp = 2.720444 ×10^21 · 83.3956 = 2.26873 ×10^23 Hz

The average force F0 = 16.3574 N

16.3574 / 22.0173^2 = 0.033743 = Ee / λe = Fe

16.3574 · 83.3956^2 = 113763 = Ep / λp = Fp

We all see in numbers taken from extreme limits of variation, that we have almost found the amounts corresponding to an electron and a proton with simple calculations for school. And **not only did we find these amounts of nature starting from the three physical constants h·c/G but it turned out that these amounts are around average values**. This is one of the greatest discoveries for the explanation of the structure of matter and anyone without being a professor can see it. This result alone is like an avalanche in the mind of a physicist and reveals many mathematical features about the whole of nature. Therefore, we are now encouraged to look for a subtle deviation that gives the structure of matter with particles and dimensions in space. Electric charge is created by this subtle deviation. The

electric charge separates the nucleus from the periphery of an atom and at the same time has the force by which the balancing and dynamic coexistence of the particles is achieved. A subtle deviation in angle and wavelengths changes the e/m energy distribution and confines it to an atomic radius.

Apparently, this subtle discrepancy is associated with a change in angle in the oscillation of the shared amount of energy and in wavelengths, which ultimately trap the amounts of energy corresponding to the particles. The sizes and quantities we know or have calculated in this investigation will again prove useful when connected with electric charge and momentum effects, and calculations will be needed for energy presented in other forms, such as the kinetic energy of particles. As long as the calculations for the amount of energy and inertia have a correspondence with wavelengths λ then the results will be quantities that come out when the speed of the movement is the maximum c. But since the maximum speed is reduced and the particles within the structure of matter are presented as moving at other angles and radius lengths we need to find how such a distribution is imposed on the energy associated with a reduced speed and a change in the angle of transmission

Image: average-values-limits-en-

A summary of average value calculations and the fundamental equations of the limits as shown in the figure below

The average values according to the min-max limits and slight deviations (give the main particles of matter)

Inertia scale: $M_{max} = \sqrt{(h \cdot c/G)} = 5.45624 \cdot 10^{-8}$ kg - $M_{min} = h \cdot 1Hz/c^2 = 0.73725 \cdot 10^{-50}$ kg

FORMULA	For $M_{pl} = \sqrt{(c \cdot h/G)}$
$M_0 = h \cdot f_0 / c^2 =$	$2.0056443 \times 10^{-29}$ kg
$E_0 = M \cdot c^2 =$	$1.8025828 \times 10^{-12}$ J
$f_0 = E/h = M/M_{min} =$	2.7204444×10^{21} Hz
$\lambda_0 = h/M \cdot c = c/f =$	$1.1019978 \times 10^{-13}$ m
$T_0 = 1/f_0 =$	$3.6758700 \times 10^{-22}$ s
$F_0 = M_0 \cdot c \cdot f = E/\lambda =$	16.357408 N
$V^2 = GM/\lambda =$	$1.2144000 \times 10^{-26}$ m^2 /s^2
$V_0 = \sqrt{(GM/\lambda)} =$	
$= M \cdot c/M_{pl} =$	1.101998×10^{-13} m/s
$M_0 / M_e =$	22.01735
$M_p / M_0 =$	83.39569

Average inertia or equilibrium mass

$$M_0 = \sqrt{(M_{min} \cdot M_{max})} = h \cdot f_0 / c^2 = h/c \cdot \lambda_0$$

$$M_0 \; M_0 = M_{pl} \; M_{min}$$

$M_0 \simeq \sqrt{0.73725 \times 10^{-50} \times 5.45624 \times 10^{-8}}$

$M0 / 22.0173 = Me = 9.1094 \cdot 10^{-31}$ kg

$M0 \cdot 83.3956 = Mp = 1.67262 \cdot 10^{-27}$ kg

$\lambda e = \lambda 0 \cdot 22.0173 = 0.2426308 \cdot 10^{-11}$ m

$\lambda p = \lambda 0 / 83.3956 = 1.321411 \cdot 10^{-15}$ m

$fe = f0 / 22.0173 = 1.23559 \cdot 10^{20}$ Hz

$fp = f0 \cdot 83.3956 = 2.26873 \cdot 10^{23}$ Hz

$F0 / 22.0173^2 = 0.033743 = Ee / \lambda e = Fe$

$F0 \cdot 83.3956^2 = 113763 = Ep / \lambda p = Fp$

$22.0173 \cdot 83.3956 = 1836.15 = Mp / Me$

M_0 = Average mass, Me = Electron mass, Mp = Proton mass

THE RELATION WITH THE UPPER LIMIT (max)

$$\frac{M_{max}}{M} = \frac{E_{max}}{E} = \frac{V_{max}}{V} = \frac{f_{max}}{f} = \frac{a_{max}}{a} = \frac{\lambda}{\lambda_{min}} = \frac{F_{max}}{F} = f_{up}\uparrow$$

THE RELATION WITH THE LOWER LIMIT (min)

$$\frac{M}{M_{min}} = \frac{E}{E_{min}} = \frac{V}{V_{min}} = \frac{f}{f_{min}} = \frac{a}{a_{min}} = \frac{\lambda_{max}}{\lambda} = \frac{F}{F_{min}} = f_{down}\downarrow$$

$$f \times f_{up}\uparrow = f_0^2$$

* The number f_{up} (or ratio d), which occurs as a frequency by the ratio of the sizes with the maximum (upper) limit, determines how much the minor amount can be increased (in order not to surpass the maximum).

$d = f_0 / f_{up} = f_m / f_0 = \sqrt{(f_m / f_{up})} = M / M_0$ | $f \cdot f_{up} = f_{max} \rightarrow f = f_{max} / f_{up} \rightarrow f_{up} = f_{max} / f$

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97-8. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge and atomic radius)

<·> Electric force, charge and constant k.

We have calculated the force of the electric charge indicatively at certain lengths and have simplified the constant k. I remind: "The physical constant k is a combination, that facilitates our calculations, so as the physical constant G is for the gravitational field". (p323)

The constant k of the electromagnetic force within the structure of the atom:

k = 1/4π·εo = 8.98755 ×10^9 N·m^2 / Cb^2

This physical constant simplified by deleting the Cb units is:

k · (1.6021764 ×10^-19 Cb)^2 = 23.0707641 ×10^-29 N·m^2

The result has the same units as the product of the two constants c·h. We can make a comparison:

c·h / 23.0707641 ×10^-29 = 861.02151 = 2π·137.0344

c·h / 2π ·137.0344 = k · Cb^2 = J^2/N

k = c · h / Cb^2 · 2π ·137.0344

The constant k in other directly related equations:

k = 1/4π·εo = c^2·μ0 / 4π = c^2·10^-7

<·> The product of the two physical constants c·h has the same units as k·Cb^2 and their ratio is:

c·h / k·Cb^2 = 861.02151 = 2π·137.0344 = ε0·4π·c·h / Cb^2

Cb^2 = c·h / k · 2π · 137.0344 (where k = 1/4π·ε0)

That is, if c·h / k·Cb^2 = 1 and the ratio 2π·137.0344 did not exist then the

electric charge Cb would be stronger:

Cb^2 = c·h / k = 2.210215 ×10^-35 → √x = 4.701293 ×10^-18 Cb.

"By simplifying the constants of free space (εo μo) and the constant k, the units Cb =Amp·sec, which are related with the electric charge are avoided. Thus again we find the fundamental units of the known phenomena of motion and energy in general". (p327)

<·> The electric force from mass and with the constant G.

Because G ·Mpl ·Mpl = h·c therefore the calculation with equivalent masses gives the same force as the calculation with the quantity h of e/m effects (eg h·c/λ^2). If the electric force Fel = h·fe / re = h·c / re λe then the relation G ·Mpl ·Mpl /re λe gives the same result. [*The letter 'e' here in the formulas is usually a marker for the electron. The letter 'p' for the proton and 'pl' for the maximum inertia Mpl=√(h·c/G)]. When the force is calculated from the relationship G ·Mpl ·Mpl = h·c then it comes out a little stronger than the force we know in electric charges with the constant k. The force is stronger when calculated at shorter lengths than the average length λ0, i.e. at lengths shorter than an atomic nucleus (λ<10e-14m). But as we know, this force does not have the characteristics of electric charge, since protons have the same electric charge and repulsive force between them, but they are kept at such a short distance and form an atomic nucleus. The nuclear force, therefore, has the characteristic of a maximum concentrated force indifferent to the electric charge and that is why here we have identified it with a maximum gravitational force. Because the nuclear force comes out of the gravitational force equation (G ·Mpl ·Mpl / m^2) when we introduce the maximum inertia √(h·c/G) = 5.45624 ×10^-8 kg at extremely short lengths (λ<10e-14m) and as we have explained, the structure of matter is maintained by oscillations on a shared amount of energy that appears as space but exhibits a restoring force to equilibrium.

In addition, space has been explained from the beginning of interpretation as a "complete universe", which is within the limits of a maximum time interval and exists complete simultaneously with its structural elements and before the existence of individual bodies. The restoring force to equilibrium has a centripetal direction and magnitude from extremely weak (≈ 2.210216 ×10^-42 N) to extremely strong (≈ 4.4499407 ×10^22 N). The strongest force within the structure of matter degrades at extremely rapid rates and balances at average values, around which the particles of matter and the force of electric charge present themselves. Therefore, by these conclusions, the nuclear force can be identified with a maximum gravitational force, and the gravitational force (as we know it from large bodies) is the weakened nuclear force which is vertical and concentrated. Let no one think, even as a joke, that we equate the nuclear force with the gravitational force, meaning the gravitational force as a result of gravitational attraction between particles.

After this clarification it remains to look into the calculations to see how an extremely strong force as concentrated is degraded and what exactly happens with a ratio of 2π·137.0344 and the electric charge and energy decentralization phenomena are presented. The relation G ·Mpl ·Mpl / r^2 for a radius re = 0.2817937 ×10^-14 m gives a force of 25015.76 N as the relation c·h / re^2. But the relationship with electric charges gives a weaker force for the same radius [k·e^2 / r^2 = h·fe / re = E / re = 29.05359 N]. These two forces have a ratio between them: Fg / Fel = 25.01576 ×10^3 / 29.05356 = 861.02219 = 2π·137.0344 which shows their close relationship.

c·h / k·e^2 = 2π·137.0344 and c·h = G ·Mpl ·Mpl.

The average force with the introduction of the electric charge:

E0^2 / k·Cb^2 ·2π·137.0344 = 16.3574 N

The electric charge from the average values of energy and force:

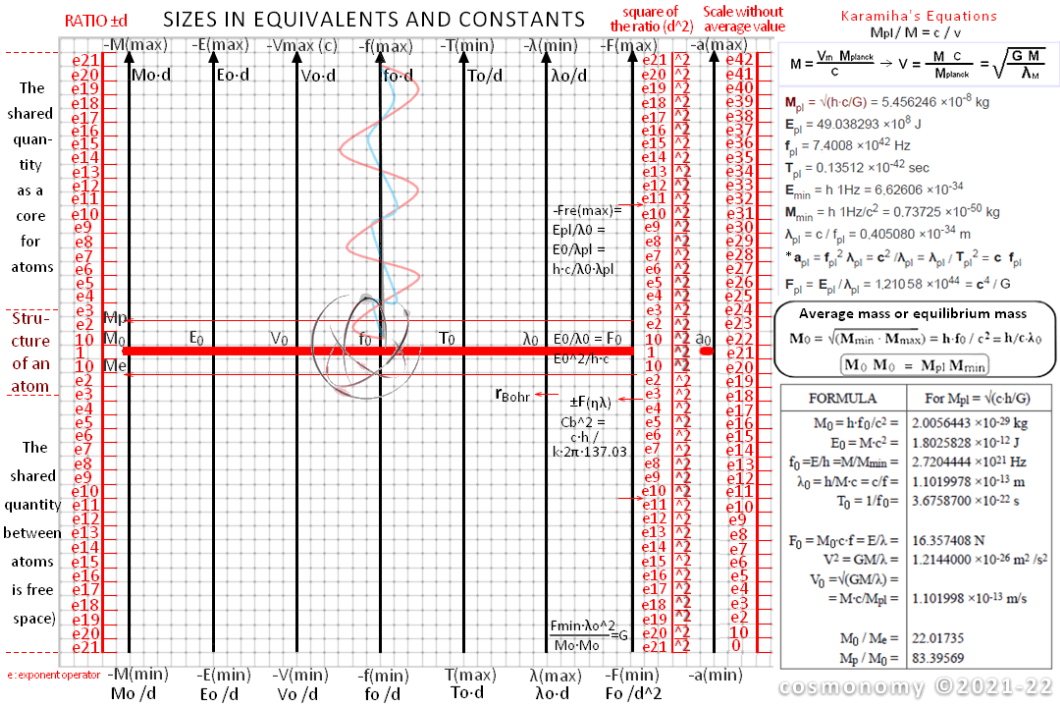
E0^2 / 16.3574 = c·h → E0^2 / 16.3574·2π·137.0344 = k·Cb^2

The relation of F0·λ0^2 = E0·λ0 has units N·m^3 = J·m^2 as also have the relations c·h and k·Cb^2. We can insert the electric charge in the denominator and see a constant such as is the k:

F0·λ0^2 / Cb^2 = 7,738472 ×10^12. This result is equal to the k·2π·137,0344. That is F0·λ0^2 / Cb^2·2π·137,035 = k. So the average force F0 is closely related to the electric force constant k. At the same time the average force F0 is closely related to the constant G of gravity:

c^2·V0^2 / F0 = G

Image: grid-lines-columns-data-demo



98-9. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge, atomic radius and angular momentum)

I apologize to readers who do not understand anything from physics and here would expect more philosophy and thoughts without calculations. Many important conclusions and subsequent posts will compensate you. The rational explanation of a space as a shared quantity of energy in equilibrium and of matter as rapid changes on this universal quantity of energy is confirmed and extended by physics. The calculations, equations and functions of this explanation are presented so simply that no one expected. Many of the conclusions already published and others you will read in subsequent posts have powerful thoughts, important observations and evidence. You don't waste your time with incomprehensible theories, which multiply unanswered questions and explain nothing, and you also witness an explosion in cosmological research. Let me continue with details of the physical processes that physicists require or need for their own investigations.

We calculate a quantity of energy h·f simplified as e/m waves and oscillations with speed c and with wavelengths λ smaller than < 10^-11 of a meter inside the structure of the atom. This quantity of energy h·f is presented at a certain radius with a dynamic distribution such as the structure of an atom. The electric charge ±e and the core-periphery contrast in the atom of matter are adjusted enough to have an energy balance. Matter has its structure with such dynamic balance and with the distribution of energy h·f in a certain radius length. That is, here in the interpretation of the structure of matter with waves and oscillations we observe, that the presence of the electric charge changes the distribution of the energy h·f. Instead of being radiation energy, it is distributed to other transmission angles as trapped and within a certain radius length and with the Bohr momentum L=M·V·r.

An extremely strong force restores the balance of disturbed energy but the balance is not the attenuation of oscillations and waves, as occurs in the propagation of radiation. Electronic engineers know feedback techniques by which energy oscillations are maintained, but of course more complex phenomena occur in the structure of matter and with processes that begin and end within it.

This dramatic change in the distribution of h·f energy by which the atoms of matter are maintained is achieved to a decentralizing direction of the waves with a strong force, which almost balances the restoring force to equilibrium, whose direction is centripetal. The imperfect balancing of two opposing forces is revealed by the extremely fine deviation in the mean values of the quantities. This interpretation of the "tug-of-war" is again reinforced by the close relationship that Bohr's atomic radius has with the wavelengths λ, which we calculated as if the atom of matter were simply radiations and electromagnetic energy h·f at maximum speed c. An electron orbital radius starts at a length r which is the wavelength λe of the electron's equivalent energy Ee increased by about 137.036 times, i.e. the Bohr radius: r(Bohr)= λe·137.036 /2π = 5.291 ×10^-11m . The calculation of this radius comes from several other equations, such as r(Bohr)= ε0·h^2 / Me·π·Cb^2 = h·137.036 / Me·c·2π = 4π·ε0·h(bar)^2 / Me·Cb^2 = h(bar)^2 / k·Me·Cb^2. The circumference of the atom is approximately at this radius r and extends a little further according to the quantum number n = 1,2,3... which multiplies the length of the radius by r·n^2. The radius r(Bohr) of the atom to the wavelength of the equivalent energy of an electron λe gives the ratio: r(Bohr)·2π /λe = 137.036.

In short, the radius of an atom is not just generally fixed, but appears to be closely related to the wavelength of energy that an electron would have as radiation. Phenomena of angular momentum are also described, as well as the so-called electron spin in the periphery of this radius. The radius of the atom has a

mathematical connection to the wavelengths, and therefore to angular momentum and any motions detected at sliced time intervals. Therefore, the calculations of particles as equivalent radiation energy, with speed c and with wavelengths λ were by no means wasted time and pointless work. We see that the atomic radius is determined as a function of wavelengths and thus the whole structure of an atom, which is an unexplained distribution of h·f energy. As we roughly said again, the presence of motions at different angles and in parallel with effects of wave interference, amplification or attenuation and absorption or emission of energy complicate the calculations. But these calculations of motions at different angles on the circumference of the atom explain what happens between atoms and are useful in technology and in the development of physics and chemistry. They do not explain how the atom is maintained and has its properties and how it is connected to the same physical world (and the same laws), independently of its external connections with other atoms or particles. This explanation of the structure of matter is that of physics with physical phenomena combined with each other and with the world present as a whole and until now has been missing from cosmology. It remains to find exactly how an extremely subtle deviation in the mean values or in the lowering of a maximum force causes such a change in the energy distribution, which gives the dynamical structure of an atom. The quantum number n which determines the radius of the circumference and the energy levels is obviously closely related to the finer deviation in the mean values around which the necessary particles of matter and the force of the electric charge occur. Even more subtle variations in deviation from average values are associated with energy levels and more generally with the distribution of energy along the length of an atom's radius.

Some useful relationships and comparisons:

$Me \cdot V(orbit) \cdot r(Bohr) = h/2\pi \rightarrow Me \cdot V(orbit) \cdot r(Bohr) \cdot 2\pi = h.$

Me·c·λe = h. In general the relation M·c·λm gives the constant h because the length λ is calculated by the equivalent energy h·f of the mass M [ie λ=h/M·c = c/(M·c^2/h)] . The relationship M·λ = h/c, that is, it is a constant.

But the constant h and the angular momentum also come out of the maximum inertia calculation: Mpl·-V·λ = h. The velocity is not the maximum c for the maximum inertia in the equation, but is the velocity of decrease from the maximum c corresponding to an inertia according to the ratio M=V·Mpl/c.

The relation -V·λ = 1.2144 ×10^-26 (=G·M/λ) is a constant, as is M·λ. Then the wavelength λ surprisingly also comes from the relation G·M/V^2 when V=M·c/Mpl

A relation of the average energy E0 to the r(Bohr) radius:

E0 / r(Bohr) = 1/√(2π·137.036) → r(Bohr) = E0·√(2π·137.036)

Image: M-c-λ-(2)

Description: An animated gif image. On a dark background, light trails are seen moving in orbits and orbits are formed that do not meet. Below is the following note:

99-10. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge, atomic radius and angular momentum)

Some thoughts related to the quantum number n and the distribution of energy towards the circumference of the atom:

“ One or more wavelengths may be contained in the length of a radius. A number of wavelengths, i.e. N = r / λ, correspond to a distance r from the source. If the length λ is small and the rate f is large, then more N wavelengths are spread over the same radius r. While if λ is long and the rate f is low, then less number of wavelengths (N) are spread out. For each wavelength there is a radius length where a single wave is spread out, ie r / λ = 1. At a radius length, a wavelength may not extend entirely, but only a part of it and then r / λ <1. Therefore, the number of lengths N increases for higher frequencies f and for shorter wavelengths λ...

The number of N wavelengths corresponds to elementary amounts of energy h which pass or fluctuate in a proportion to rate f. At each full wavelength, a period of fluctuation has been completed. If the rate of change is increased, then the minimum amounts of energy are distributed at shorter distances between them and the energy density increases, ie ρ = N·h·f / V = N·h·f 3/4·π·r^3 for a three-dimensional spherical region and ρ = N·h·f / 4·π·r^2 for a surface. If the rate of change is reduced, then the minimum amounts of energy h are more spaced and the energy density is reduced. The slower energy changes have longer lengths in the transformation of the fields. Therefore, for higher rates of change or transfer of energy, its density is increased, a larger number of wavelengths corresponds to a certain radius length and a greater amount of energy fluctuates”. (p396)

The deviation (±) from the mean values directly by the ratio 137.036 is:

The average values (with multiplication) give the electron sizes with a ratio of

6.224

The average values (by division) give the proton sizes with a ratio of 1.643202

The radius of a simple atom is at least ≈ 21.807 greater than the corresponding length λ of the electron.

r(Bohr)·2π / 137.036 = λe → r(Bohr)= λe·137.036/2π

We see that the subtle deviation from the average values does not leave more area in the structure of the atom for more wavelengths λe to repeat and a correspondingly larger number of energy quantities h·fe corresponding to electron particles. Up to 92 electrons are available in the chemical element Uranium. Engineers who described the atom of matter as a composition of particles were roughly saying that the atom is empty and that it occupies an excess volume... Just as astronomers said the same about astronomical space. But if they had understood matter as oscillations in a shared quantity of energy and described it in terms of wave physics, then they would have noticed their illusion.

Image: Nhf-

Another animated gif image related to waves, where waves start from the oscillation of a point in the center. Below the following note: One or more wavelengths can be contained in the length of a radius. A number of wavelengths correspond to a distance r from the source, i.e. N = r / λ

100-11. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Atomic radius, angular momentum, counterforces and e/m field)

In the following extract from the treatise some of the first thoughts have been recorded, and perhaps with some error, in order to match the phenomenon of electric charge with the rest of the fundamental phenomena, to which we have set lower and upper limits. It is useful to introduce the quantities we know from measurements of the electric and magnetic fields and the Coulomb force into our calculations and see how this force can appear between oscillations of energy. Waves to the direction of decentralization and to the opposite direction of concentration at rates around the mean value ≈10^21 Hz show their power, with the nuclear (restoring) force decaying until the e/m force equilibrates around the mean force F0 = 16.3574 N. From the beginning of this investigation on the limits to physical quantities and the explanation of the structure of matter as extremely rapid changes in a shared quantity of energy, the electric and magnetic fields were investigated as phenomena of more fundamental phenomena, such as wave movements at certain angles, their change in speed, inequality in energy distribution and feedback. The success of this interpretation of the structural elements (matter) is not just the explanation of a physical phenomenon and some important conclusions. Its greatest success is in simplifying the variety of physical phenomena that are observed as different and described separately, since it explains their variety by rates of change, by wave motions, and by angles. The applied forces are also reduced to a single force, which is the restoration of equilibrium to a perturbed shared quantity.

“ A maximum force restores the energy balance and this force is applied with waves that are concentrated in microscopic lengths of the structure of matter at the maximum speed c. The delay in restoring equilibrium creates e/m fluctuations

and decentralization of e/m energy. The delay in restoring equilibrium is related to the creation of the electric and magnetic field and to the angle that these fields have with each other as they alternate and to the impedance z0 = √(μ0 / ε0) that they present. The delay is increased close to the average values of the fluctuations [f0=√(f·fup)]. The electric charge and the fundamental particles as they separate into the structure of an atom of matter are retained with increased delay [according to t=h·f/Pmax]. Electric and magnetic fields [c=1/√(μ0·ε0)] alternate at extreme rates in a tiny area of space where is disturbed. These fields [μ0 =1/c^2·ε0 and ε0 =1/c^2·μ0] have opposite behavior and when an impedance is increased for the rate of change of one field, the resistance is reduced for the other field (for the same rate of change). The energy fluctuation seems to be divided into two phases by two opposite processes (concentration and decentralization) and by countervailing forces, which are connected to the two fields, electric and magnetic / nuclear [E=Cb^2·2π·137.0344·f /4π·ε0·c = Cb^2·137.0344·c·μ0·f /2]. The increased delay in restoring equilibrium close to the mean values of the fluctuations is associated with a further reduction of the maximum velocity c [according to the equations -V = √(GM/λ) = M·c / Mpl = f·λpl = h / Mpl·λ]...” (p381-382)

“In the equation c0 = 1 /√(μ0·ε0) the speed will be reduced when the values in the denominator increase. But then these values cease to be of the free space. (...) The maximum speed is c-V. The electric and magnetic fields, which alternate at such extreme rates, will also lose the vertical angle in which they propagate into the free space. In such a disturbed area of the microscopic space, where energy has increased density, the refraction and the reflection of the waves will also be another phenomenon for trapping quantities of energy and particle formation”. (p344-345)

Some useful relationships and comparisons:

A relation of electric charge to the quantity h/2π

μ0·c·Cb^2·137.036 / 4π = h/2π

Some more relations of the radius r(Bohr)

Cb^2·137.036 / ε0·c·4π·Me·V(orbit) = r(Bohr)

μ0·c·Cb^2·137.036 / 4π·Me·V(orbit) = r(Bohr) →

μ0·c·Cb^2·137.036 / 4π·Me·V(orbit)·r(Bohr)=1 →

μ0·c·Cb^2 / 4π·Me·V(orbit)·r(Bohr) = 1/137.036 = α

k·Cb^2 / Me·V(orbit)^2 = r(Bohr)

The previous equation with velocity c instead of V:

k·Cb^2 / Me·c^2 = 0.2817936 ×10^-14m = r(Bohr)/137.036^2

V(orbit) =√[k·Cb^2/Me·r(Bohr)]

√[k·Cb^2/Me·re] = c (for re=0.2817936 ×10^-14m) → k·Cb^2/re = Ee = Me·c^2

An hypothetical radius r(p) with proton mass and for maximum speed c:

r(p) = k·Cb^2 / Mp·c^2 = 1.534697 ×10^-18m = λp/137.036·2π

Wavelengths and radii around 10^-18m - according to the equations and functions as handled here for high school students' level of education- give the so-called "bosons" such as W, Z and Higgs. The correspondence of magnitudes after the introduction of upper and lower limits and according to physical constants is a mathematical multi-tool, which if used for calculations on a computer together with the possibility of calculations of small deviations on the limits, then immediately a treasure of information and unknown details of the structure of matter will be extracted.

Image: ch-kCb- (Electric charge alternating creates two fields that propagate)

101-12. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter (=fluctuations of the shared quantity) it appears as nuclear (Conclusions and explanations strengthened after calculations)

We approach questions about the limits of astronomical space, and we are prepared with the knowledge of nature as it is at the minimum limits. Images from the Universe and what you have learned from telescope research is not the knowledge you would like. Knowledge or information about the astronomical world increases ignorance. That is, they add astronomical bodies to the space map and increase the geometric size of the universe as an incomprehensible order of groups of astronomical bodies. Think how much we still learn after many centuries about our own little planet on which we live and move. Imagine how much we would have to learn about every other planet and every other astronomical body and the gravitational relationship between them. This knowledge will never be complete, not by closer exploration, not by distant observation, not even a small percentage of knowledge will be!

We have explained what happens to the fundamental phenomena in the shortest timescales of nature and that they change as a function of each other. The fundamental phenomena in the shortest times of nature are located in microscopic dimensions, within the structure of matter and have characteristics of periodic change. We have been able to investigate and confirm them more easily because matter and its structure are located close to us and on our very bodies. By correctly interpreting the structural elements as fluctuations of energy in a shared amount of energy (which appears balanced as space), now the passage of the investigation of the astronomical limits of the universe is easier. Because, according to our interpretation, space is not simply a geometrical capacity for astronomical bodies, and bodies are not simply contained within space. Space according to our interpretation is a shared quantity of energy in a state of equilibrium, and the

quantity of energy changes within the structural elements is dependent on the shared quantity. The amount of matter within astronomical space also depends not only on capacity, but also on the properties that space has as a shared quantity of energy. Conversely, the shared quantity of energy seen as space has such characteristics and boundaries, which determine energy fluctuations at the shortest times and shortest lengths (within the structure of matter). In short, we do not think about the limits of the universe as a container, whose only property is to have distance and an inexplicable force of attraction for the contents of the container. As we have dynamically linked space to matter, describing physical phenomena of high speeds and rates, we draw information and conclusions about the limits of space from some of its other properties and from physical processes, which explain the structure of the astronomical world and the global balance. Therefore pay attention to the following conclusions drawn from the explanation of the structural elements as fluctuations of energy in a shared quantity. This explanation is confirmed and extended, rather than leading to absurd conclusions.

“The average values of the complete Universe are maintained by fine fluctuations that produce the basic particles of matter as separate from each other and their kinetic energy”. (p425)

“When we calculate an average frequency from the minimum and maximum limits of physical magnitudes, then we see that this average frequency f0 is around 10^21 Hz. This finding of average values for changes agrees with the structure of matter and reminds us one of the first thoughts and an important observation in the physical interpretation for the formation of the structural elements by the fluctuations of the free space: Decentralized waves and concentrated waves. The former are called electromagnetic (and have the characteristic of expansion), while the second are detected as a gravitational field (and have the characteristic of contraction and accumulation). Thus, it is revealed that the rates

at which energy is transmitted by centralized waves are almost the same as those caused by electromagnetic phenomena. Rates of fluctuations up to ≈10^21 Hz meet fluctuations in rates up to ≈10^21 Hz but in the opposite direction. How would be a Universe complete in all possible ways? It would be stabilized and same, see the astronomical space. How does the Universe begin? Look at the nuclear and e / m phenomena and the structure of matter". (p425)

"The complete Universe is present with all its energy in two related ways: It is complete in the minimum time (?) in the minimum distance and with a dynamic process where the motion is at the limit of the maximum speed of light. At the same time, the Universe is not complete and is absent for a maximum time, and is displayed with the limit of a maximum length for its structural elements and for those changes that can be made at the slowest intervals. The maximum length and relative immobility of the absent Universe is the empty/free space. The dynamic process with which the complete Universe appears in a minimum of time is at the same time a process by which the Universe is retained as absent for a maximum time, that is, as a void and free space. The dynamic process by which the Universe with all its energy appears in a minimal time (with the phenomena such as those observed in the atomic nucleus) is at the same time a process by which the Universe maintains and creates the free space with its fixed limit of the maximum length". (p360 – 361)

"We can also say more specifically in the terms of physics, what we immediately thought (as philosophers) when we started from the general principle of "a complete and stabilized Universe within a maximum period of time": That is, the Universe has a relative beginning by the structural elements (from minimal intervals), since this is pre-completed. Now we can complement this initial interpretation, since this relative beginning of the Universe is at the same time a process to keep itself absent. The atoms of matter are points of encounter of beginning and

end in the process that preserves the Universe". (p361)

"The stabilized structure of the atom is a process wherein a wave disturbance of the overall energy of the Universe culminates and restores rapidly the balance". (p286)

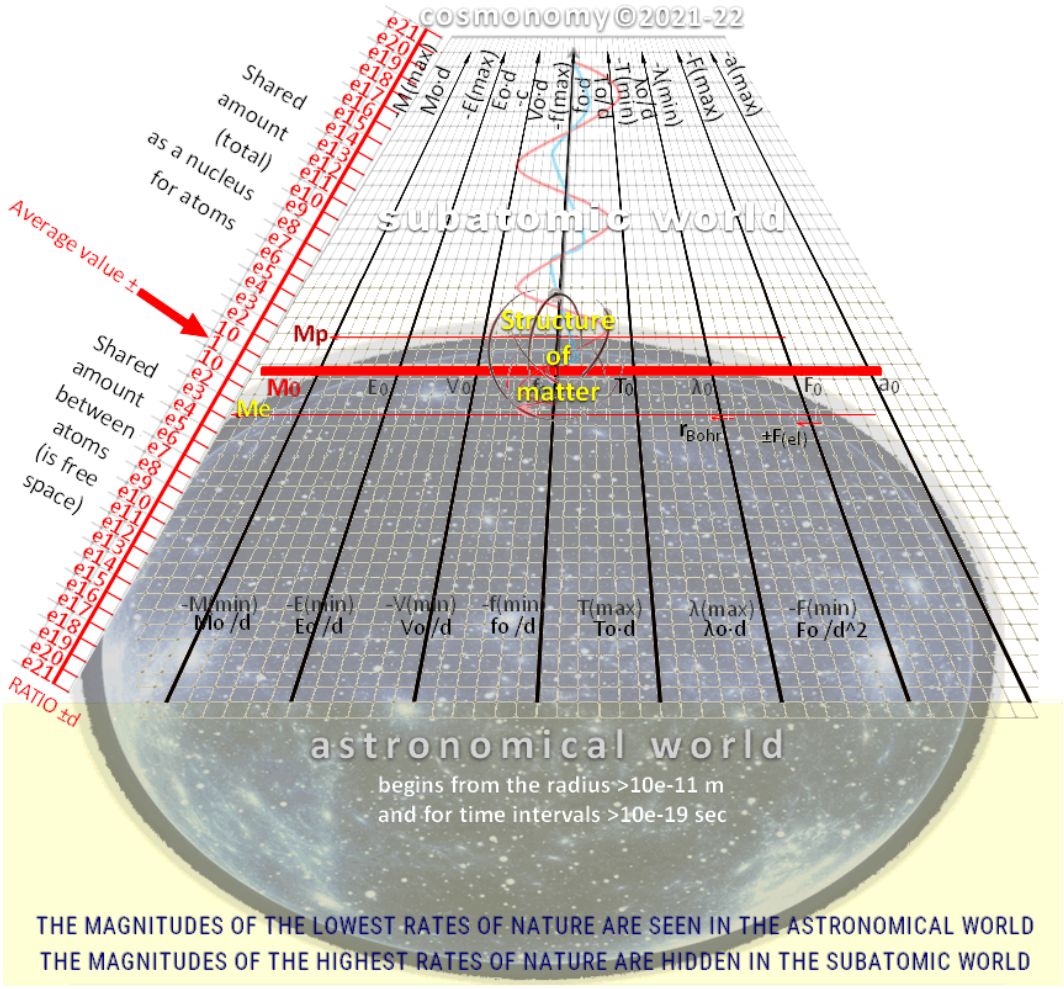
"The process of attenuation of maximum force, the restoration of equilibrium and the delay have to be repeated so as the fundamental particles of matter to preserve. The process of attenuation is completed by restoring the balance of shared energy. We see the complete process (with a periodic delay and a repeated process of concentration and decentralization) as a nucleus with shells of electrons". (p378)

"The properties of the particles, as well as the particles themselves, originate from a changing state, at short moments and recurrently. If some particles or some properties are stable, this is again achieved by phenomena of rapid and periodic change and by synchronization / resonance phenomena". (135) "The rhythmic motion is the most simple and productive phenomenon explaining the forms and properties of the particles". (p139) Motion is directly and rapidly regulated by forces which appear when it occurs as a wave on a quantity, which tends to return to its original state as soon as possible.

Image: vectors-in-space

Description: The division of quantities starting from the maximum limit up to the mean value and backwards from the minimum value to the mean value on a chart. The physical magnitudes are marked horizontally on the rows and the division of magnitudes vertically on the columns. The structure of an atom of matter is shown in the middle horizontal line where the average values of the magnitudes are marked. The diagram is narrowed up towards the side where the magnitudes are in the sub-

atomic world region. On the lower side the columns diverge and the diagram is wider. On this side it is shown in an oval shape that the magnitudes extend into the region of the astronomical world.



102-13. The global space (=shared amount of energy) pulsates at a tiny radius (around ≈10^-13m and the average period of 10^-21 sec) with a force of concentration and rebalancing

“We have no doubt about the space as a shared quantity that is dynamically involved in the maintenance and formation of the structural elements. A number of high-speed phenomena of nature have been explained. We have said about the equivalence and isotropy of free space, and how it has the prerequisites for creating the same structural elements in time, at each distance and with the same processes. We also solved the problem of how this total quantity is balanced and presented as an empty space, while it is at the same time presented as energy in microscopic dimensions and when it is disrupted. The free space has a structure of stationary waves and with such a structure the total energy is shared and available. However, reasonable questions arise according to common experience. Standing waves are created when two waves from opposing directions meet each other. In addition, the wave frequency must be the same and the waves should have the same amplitude. What is the source of these waves?

The answer to the last question is easier. We have begun with the logical thought that the beginning of the world has always been the same without the whole cosmos to be missing. The whole Universe is uncreated, so the space is uncreated, since this is nothing other than the complete and stabilized Universe, as it is shown in the molecules and the things between them”. (p401)

“1) Given that the total amount of energy exists as a free space and that the structural elements exist as rhythmic fluctuations of this quantity.

2) Given that the structural elements over long distances still have the same properties and the same values in their physical sizes. (The structural elements are retained with the same characteristics and dynamic processes as the rest in

every direction and distance).

3) Given that the structural elements are repeated with the same features and procedures that start at extremely high speeds rather than an (absolute) lack of motion.

4) And this is to explain how astronomical worlds are kept synchronized over extremely long distances and for extremely long periods of time. (Obviously this is due to the close connection of the structural elements with the global amount of space energy in tiny lengths and dynamic processes).

The structural elements have an instantaneous interaction with something shared, while they are divided into distances, where electromagnetic forces and gravitational forces are slow to pass. Something, which happens in extremely short periods of time with an excellent fineness and accuracy in the repetition rate occurs almost simultaneously for all the structural elements of the world, while the time that separates them into the space can be extremely large. (...)

Since the source of tiny space fluctuations is not located within the space, at some distance and in a position defined by coordinate lines. This is, given that tiny variations of space are repeated with the same characteristics, regardless of distance and direction and allow the same rhythmic processes to occur. By these conclusions and by reductio ad absurdum, the structure of free space as distributed energy in stationary waves is a physical phenomenon that happens in an extremely short time and for the wholeness of the world. Since the same fluctuations occurs in every direction and despite the extremely long distances of the astronomical world, the fluctuation of shared energy begins from a central point for the whole free space" (without it being located within space). (p402-403)

"After our description of the fundamental phenomena as fluctuations in a constant amount of energy, as process of restoring equilibrium and oscillations at ex-

tremely fast rates and by corresponding changes in lengths and angles, now we have not hesitation to conclude: The global space is pulsating. But space does not pulsate slowly and in astronomical lengths, as if it were created in the distant past and from zero dimensions. The global space is pulsating because it is a total quantity that has always been balanced. However, local disturbances occur and it is maintained by rapid procedures that restore equilibrium". (p401)

"Therefore, the whole space pulses at a tiny length (of radius) and in an extremely short period and the total amount of energy has momentary fluctuations. (...) The most familiar phenomenon which resembles more closely the microscopic behavior of free space and explains the creative process of nature, is the modulation of a radio frequency signal. It is not the collision of an amount of accelerated particles" (p403)

Note: Looking for a source of waves external to the structural elements to explain how waves in two opposite directions (concentrative and decentrative) contribute to each other leads to ineptitude. So the concept of oscillation was quickly chosen to explain this microscopic phenomenon, where energy disturbance and rebalancing are maintained without looking for a source of waves, which start at a distance and outside the space of an atom. Waves are concentrated and decentralized extremely rapidly, and a constitutive force is instantaneously reduced. The shared amount of energy is by definition and always fluctuating, and its balance is achieved dynamically, without movement being completely absent. The waves of extremely high rates at which the structural elements are created do not go away and rapidly return to their source and this process is repeated endlessly.

In comment:

1×10e−12 m is one trillionth of the meter (1/1000000000000). 1×10e−12 m is one picometer (1pm). Atoms of matter are larger than 60 pm in diameter. Modern

processors are manufactured with miniaturization technology that has reached somewhere around 5nm. 1nm is 1000 times larger than 1pm. The average radius length ~ 1×10e−13m around which global space "trembles" is ~10 times smaller than 1pm. The atomic nucleus is ~1000 times smaller in radius than 1pm and ~100 times smaller than the average radius of 1×10e−13m. As already seen, the variation of the space around the mean values (±) is probably from ~1×10e−16m up to the Bohr radius ~0.5×10e−10m i.e. on a scale up to 1000 000 times the maximum. At present, the most likely prediction is for a variation in the radius of space quite a bit smaller, somewhere in the order of a few thousand times. The rate of variation is also extremely short around the mean period value of ~3×10e −22 sec and with deviations (±) from this value. A processor takes advantage of fluctuations in electrical current. Nature creates with the structural elements utilizing fluctuations and oscillations in more microscopic lengths and in shorter time intervals...

Image: Dynamic+Equilibrium-7

Description: An animated gif image with bright orbits and a bright fluctuating core. Above is noted: Global space pulsates at a microscopic radius (around 10^-13 meters and an average period of 10^-21 sec)

103. The force to restore balance within the structure of matter appears as nuclear, while between bodies it is gravitational. Nuclear perturbations are e/m forces. (Conclusions and explanations confirmed by calculations)

“Free space is useful and necessary not only in the sense of capacity (for storage), as some people have hypothesized according to a view for the bodies and the bodily origin of the world (as if nature were emulated with a mechanism of gears). The free space is permanently and dynamically connected to the structural elements as constant amount of energy. Fluctuations of this constant amount of energy are maintained and detected as fields and structural elements”. (p427)

“The absence of light is not the absence of any change in the energy of the free space. Still do not forget that the presence of matter is always accompanied by an electromagnetic noise that is detected as a phenomenon of "heat". The energy of waves of light or any other electromagnetic frequency corresponds to a minor percentage of the constant amount of energy Emax which the free space "represents"”. (p399)

“The e/m field is the direct result of any deceleration and delay in the process of restoring to equilibrium of the shared energy quantity. Perhaps the term "electro-nuclear field" may be more enlightening and more accurate”. (p374)

“In a first attempt to understand what is particularly magnetic field, beyond the descriptions and behavior of certain bodies, this familiar phenomenon hides another fundamental phenomenon in subatomic dimensions”. (p373-4)

“Nuclear force does not appear to be created from the outer space of atoms,

nor it is one of the known forces of greater distances. But from this force begins a process of reduction from which the fundamental particles, the characteristics of the structure of an atom, the electromagnetic force and ultimately the gravitational field are created". (p376) "The structural elements are natural switches and attenuators of extremely high rates" as revealed. (p381)

"The relegation moments of the maximum force and the moments of fluctuation of energy give the opportunity to segmental amounts of energy to be exchanged and interchanged. Thus, the total amount of energy is interrupted momently and succeeds to exist as a free space. (...) A maximum force Fmax and a maximum acceleration / deceleration ± amax are associated with the phenomenon of so-called "nuclear force" Fnucl. The maximum force Fmax is not applied for long periods of time and continuously, but momentary". (p357)

"Matter is the signs of a delay in neutralizing this world force". (p411)

"the complete, absolute balance is never achieved. Or at least, it is not achieved immediately, here and now that we are moving... Another process prevents the immediate, momentary restoration of balance and leaves time for unbalanced energy changes. Otherwise, there would not be the amount of structural elements and the material world which we perceive in such a large area of space". (p383-4)

"The radius within the structural elements is maintained by periodic processes and by balancing a large force that has been disturbed. Structural elements are maintained and have their mass and radius by energy that they remove from the common quantity and constantly restore it". (p417-8)

"By balancing forces within the structure of matter, matter is not cut off from

the shared amount of energy. The structural elements are accompanied by a weakened field which is detected amplified by the approach to each other and by the increase of their quantity. The direction of the gravitational force is always towards the same center (...) The gravitational force between celestial bodies and the field where centralizes their matter were not created by chemical compounds and molecules of matter. The gravitational field has been created beforehand within the structural elements and by a process by which the structural elements have their own radius. (...) The gravity constant G is result of this process to the shared energy of the space which includes attenuation of the maximum force and deceleration of the maximum velocity in perturbing waves. (p417-8) That is why the constant G still comes out as a result of the quantities we calculate for the structure of matter, from the minimum and maximum values of physical quantities, as well as from the average values (G= Fpl·λpl^2 / Mpl·Mpl = Fmin·λpl^2 / Mmin·Mmin = F0·λpl^2 / Mpl·Mmin = Fmin·λmax^2 / Mpl·Mpl). If it were foreign to microscopic processes, if the gravitational field were entirely unrelated to the most powerful force —which we have explained as the rebalancing force— then its numerical value could not be connected with quantities of subatomic matter and calculations they would give results unrelated to the structure of matter. As we said again with common sense, “Larger bodies can only be created when there are the structural elements with their nuclear force (which is the strongest) and whereupon, the gravitational field may appear (with its weak force)”. (p374)

Image: matiere-all

Description: Three images in one line: In the first image, waves are concentrated in the center, in the second image, waves are decentralized towards the periphery and added, and in the third image, we see the result of their confluence as standing waves (From https://www.collectionscanada.gc.ca/)

104-2. What happens between the structural elements delays the rebalancing of the shared amount of energy. (Conclusions and explanations confirmed by calculations)

“Nuclear force - which is the maximum gravitational force for the total amount of energy of the Universe - is a force that the Universe has as a simultaneous and total amount. But this strongest force is not applied somewhere steadily in space and appears at tiny lengths when energy is disturbed and oscillated. The universal nucleus is a quantity of energy that is kept balanced by a restoring force that this quantity has as a whole”. (p431)

“The entire Universe within a maximum of time exists as a total amount of energy and serves as a free space for material things. Things outwardly to each other and as separated (ie in dimensions larger than their structural elements) detect this total amount as free space”. (p405)

“This total amount of energy is relatively absent for the longest period” (p405) for the structural elements between them, whereas in reality it is present for an extremely short time and periodically interrupted. (p470)

“Nature is almost completely absent (as an absolute void) and at the same time it is almost all present (as complete in all possible ways). A minimum force and a maximum force "meet" at the same time in the structural elements...” (p474)

“The total world/universe (appearing as an empty space) has a maximum amount of energy and a strongest force that mathematically appears within the structural elements. The maximum force is applied as if the total amount of en-

ergy were an equivalent amount of mass. We do not expect to see this amount of mass as a compact astronomical body. At the same time, the bodies of the physical world are not externally connected to this maximum force and, on the contrary, they detect it as attenuated. The structural elements are retained with the total amount of energy, which exists as an empty space for their external movement. However and thus externally, the total amount of energy has the minimum force to the structural elements and this force is only detected by the approximation between them*". (p471)

"The global concentration force (of the simultaneous Universe) appears weakened as a gravitational field..." (p514)

"Weakening of the maximum force displays the free space with a capacity of a maximum radius" (heading 31.8.)

"Nuclear force has properties that come from the Universe as a complete and simultaneous whole and this force is timeless" (p497)

"Therefore, nuclear force is a property of global space and total time" that is, of the complete Universe that is in all possible ways. (p497)

"space is maintained as a nucleus of a shared amount of energy and at the same time is maintained as free space". (p509)

"Distance, delay and radius are three fundamental properties of the free space, which regulate the time for the transfer of each energy". (p396)

"The mass presented in bodies has a bound amount of energy that is missing

from the common amount and the shared energy is presented as a space of a certain radius”. (p491)

“The structural elements and complex things wherever they exist, are connected to the same space in tiny lengths, and so the free space is a common core for the material things. But at same time the things between them have long distances and weak forces”. (p405)

“What happens between the structural elements takes advantage of the energy loss and delays the restoration of balance”. (p362)

“Total energy is a fixed amount in advance and directly, but at the same time it is thus kept constant with dynamic processes. The wear of bodies and the energy lost as heat and radiation is due to the restoration in balance of the total amount of energy. What we perceive as energy loss is the return of energy to its original quantity, which we perceive as a free space”. (p361)

“work stops exactly because the shared energy returns to its equilibrium. Work is needed so as the restoration of balance to delay and to keep energy reduced. We need work to delay energy restoration and conserve its reduction!” (p362)

Image: Dynamic+Equilibrium-8-txt

Description: An animated gif image with bright orbits and a bright fluctuating core. Above is noted: One of nature's greatest "secrets". Dynamic balance, waves, countervailing forces, feedback and repetition.

105-3. Conclusions and explanations confirmed by calculations

<·> This cosmological theory has begun with the thought of the Universe as a complete Whole (in all possible ways) within a maximum period of time presented simultaneously as space. The global space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. Thus the global space has the utility of a shared amount of energy in addition to capacity. Then the structural elements (matter) are revealed as energy oscillations of this shared amount which remains in equilibrium and their structure is interpreted by wave and rapid changes. A shared amount of energy appears as empty space, while with it the structural elements are preserved as its fluctuations. Space has properties and behavior of a shared amount of energy and the structural elements are closely connected with it as pico-bangs in wave phenomena.

Summarizing after the investigation and calculations of the minimum and maximum limits on the physical changes according to the physical constants:

The Universe as simultaneous closely relates to a shared amount of energy and to a maximal force to restore balance that appears as "nuclear". The Universe and the shared amount of energy are isolated from the structural elements by periodic processes and presented as their space. Thus the structural elements between them apply a weakened nuclear force which at a larger radius from their structure appears as "gravitational". Between the maximum restoring force and the lack of force between structural elements there are intermediate values. The structural elements are held by forces that have intermediate values and are seen as "electromagnetic". Fluctuations in mean values are related to energy oscillations, to e/m interactions and to the distribution of energy within the structure of matter. The forces at average values are reproduced between 1) the minimum time when the Universe is simultaneous and the maximum force is applied and 2)

the time when the maximum force is not applied and has weakened to a minimum size. The Universe interrupted by the structural elements appears at a larger radius from their structure absent as space, while at a smaller radius within their structure it appears present as a shared core.

“The average amount of energy ~10^-13 J which we have calculated theoretically matches the density of the energy of the free space, since the necessary particles of an atom have characteristics that are small deviations from the mean value”. (p402)

“In a short time a strongest force is applied that we have detected as nuclear. The expression "nuclear" remains correct in the sense of a generic and total amount that acts as an empty space and therefore serves as a core for the structural elements that exist with the fast fluctuations of this generic quantity. Also in a short period of time, we assume that the maximum force is not applied since it is periodically intermittent, pulsating and reproduced. Therefore, in the minimum time interval of the Tmin^2 ~10^-42 seconds, two phenomena occur inseparably: For ~10^-21 s the strongest force is applied and for ~10^-21 s is not applied or it is weakened. The first time interval is associated with a force of attraction and we detect it as nuclear. The second time interval of attenuation is associated with a phenomenon of repulsive / diastolic force and this is detected as electromagnetic. For each of these phenomena a quantity of energy ~10^21·h is attributable and an inertia of ~10^21·h / c^2 corresponds to them”. (p432)

“The two rates of fluctuation (decentralization and concentration of energy) are a phenomenon of energy imbalance and restoration”. (p426)

“The total amount of energy is maintained at the same time as the energy missing and the energy balance is always maintained. The total amount of ener-

gy is kept constant through changes and rhythmic processes: if this phenomenon be assessed as failing of equilibrium and unstable, then the material world owes its existence to an inherent violation of the principle of conservation of energy. But just as the concept of balance and stability would not have a meaning without the concept of change, also the concept of conservation of energy would not have a meaning without its violation. The missing energy is kept constant, and what appears to be changing is nothing more than permanent equilibrium processes. These procedures are extremely short and occur in microscopic lengths (around from the ~10^-13m). The fluctuations of the shared amount of energy are extremely short and the space fluctuates in microscopic lengths'. (p401-402)

If, after what we have explained rationally and with the first calculations, someone cites Hubble's observation and law as an explanation for the expansion of the universe and for its creation in the distant past, we will see again: 1) How the repetition of a view in time and its repetition by a majority of people create a habit and unshakable certainty. 2) How habit and over-certainty hinder human thought and research. Anyone who has not understood the interpretation as we have summarized it may be an engineer, a meteorologist, a nuclear physicist, an astrophysicist, but is not a cosmologist. The difference between specialists can be as great as that of a dentist and a heart surgeon. It will be indulgently funny if anyone still believes that Hubble's law is related to the expansion of space and a Big Bang when we have thoroughly explained how the structural elements are connected as oscillations of energy on a shared quantity and by wave phenomena of concentration and decentralization. From our thorough interpretation already the mind of every physicist must think of the relation of Hubble's law to space as a shared quantity of energy, to oscillations and to wave effects, (which are created together with a rebalancing force, as in every dynamic quantity that quickly returns to equilibrium).

In the image below, the set remains the same and does not change. The moving points between them will notice movements and say that "everything changes".

Image: agifcolossalsphere2

Description: An animated gif image. A sphere of moving bright spots more dense and bright towards the poles, thinner and darker in the middle circle

106. Explanation and first calculations of the astronomical limits of the universe and the amount of matter

“The explanation of the boundaries of the astronomical world is still missing from our explanation of structural elements as energy fluctuations at extremely fast rhythms of the constant amount of total energy”. (p437) Our thoughts will now extend to this explanation.

“The phenomenon of large quantities of matter that are concentrated in astronomical bodies with multiple masses remains patently inexplicable. We probably need to think about space as a larger amount of energy and explain the amount of matter in the macroscopic and astronomical world. The amount of matter spreads and is distributed into the space, and the astronomical world exists with this amount of matter. But this more quantity of matter has not yet been seen by the investigation of the tiny phenomena with the three physical constants. We have drawn precious proportions and boundaries for the fundamental phenomena of nature, but the world spreads far into space and at longer times of astronomical phenomena. We would like to explain how the total amount of energy (appearing as free space) offers to the astronomical world all this amount of matter. The explanation of the boundaries of the astronomical world is still missing from our explanation of structural elements as energy fluctuations at extremely fast rhythms of the constant amount of total energy. This explanation is necessary for any cosmological theory. (...) The delay in restoring energy balance is a crucial finding for this explanation”. (p436-7)

“Certain common phenomena and processes enforce movements at low speeds in nature (and to make things appear external and at different times). But the vast distances of the free space have also an explanation. At the highest speed and short lengths there would be no time for things to have a distance be-

tween them. The space with its large dimensions seems to despise the high speed of light. Nature is regulated at high speeds and rhythms, but high speeds are slow for astronomical distances so that nature has its variety. The phenomena, which reduce the speeds and rates in nature, include necessarily the phenomenon of inertia / mass". (p435)

"As long as we limit the investigation to the movement of electromagnetic waves, electromagnetic fields and the fluctuations in the energy of the free space (using the constants h and c), the equations give fast rhythms and short lengths. The fastest way of interacting things (at maximum speed or pace) is too slow for the huge length of the free space, which seems to separate things. The fastest way of interaction and the speed of light are insignificant movements for the large dimensions of such a free space (of astronomical world), which are so slow movements that the distant world of the sky is almost without direct consequence (as irrelevant) from the world of bodies here nearby to Earth". (p436)

"In nature, we see movements of bodies at low speeds, which not only do not reach the maximum speed of light, but their velocity decreases and stops instead. The speed may be low, but the rate at which the movement reaches this slow speed may be large. Conversely, the movement may reach the maximum speed c with a minimum rate of increase in speed. The appearance of light and overall the e / m waves show the fastest start..." (p360)

"Thus, the slow acceleration takes a long time Tmax to reach the higher speed c while the high amax acceleration takes a very short Tmin time. The speed of light c expresses the limit that acceleration/deceleration can reach and consequently the minimum and maximum time interval in which acceleration / deceleration can occur. This simple relation, which results rationally from the first thoughts about the limit of speed change ± a, will prove to be a fundamental relation of

motion by which all natural phenomena are regulated. This relation is summarized as follows: Vmax = amax Tmin = amin Tmax” (p339)

“This relation is fundamental and introduces the meaning of inertia in the simple motion and in the change of energy. The speed c can remain constant and only the acceleration and the deceleration vary, that is to say, the time margin in which the speed Vc reaches the maximum. (...) The speed can decrease and increase periodically. Thus, it is possible that a speed is constant (on average), because changes are periodical. In the shortest time intervals, if the rate of change is faster and alternating, we will not see this change in speed easily. But, the fast rate in change of speed causes some other, most obvious effects. ”. (p341)

“From these thoughts a first conjecture of seeking a slow pace of change in nature followed. It will be necessary to calculate the slowest rate of change of speed, that is the slowest accelerations and decelerations”. (p436)

Image: 09a7ed2c28f241ade1cc80c63d395f43 or space-distance-re-gifx3-bl-tr

Description: An animated gif image. It shows a dark and curved surface with local concentrations of stars and galaxies, as if one is travelling through the universe at a high speed

107. If the astronomical observation of the redshift does not show expansion of space, then what does it show?

“Anyone can challenge the phenomenon that has been called " expansion of free space ". Because this is not an expansion as it is observed for a material body. And of course, many times during the 20th century, it was attempted to interpret otherwise this observation, but without success. All " wise " scientists, the best physicists and the teachers have copied the simplest interpretation which even an unskilled man would gave with the " mechanistic view ” of the world. However, a physical interpretation, which explains clearly the creation of structural elements by energy fluctuations of the free space has never been unfolded. Here, we have achieved to unfold the interpretation for a complete Universe with dynamic space easily and in the language of numbers by the first calculations, the proportions of the fundamental phenomena and the analysis of physical constants. After our interpretation of the structural elements has arrived up to here, we cannot leave unanswered this question, as many would ask of us: If the astronomical observation of the redshift does not show expansion of space, then what does it show?” (p442)

We have explained the particles by energy fluctuations of the free space, which occur at the highest rate and in moments of interaction. We have explained the structural elements as a result of the climax in the fluctuation and of the rapid exchange of energy, along with some other wave phenomena. We have the theory that the structural elements are maintained by electromagnetic fluctuations of empty space, that empty space is dynamic energy (in a state of equilibrium) and that amounts of energy are transferred as waves, which are concentrated in the material bodies. We have concluded, that the maintenance of the structural elements is achieved by variations in the sizes of the fundamental phenomena, which have a minimum and a maximum limit (i.e., is achieved dynamically). We

have also concluded that universal physical constants derive from these limits, but all phenomena change rapidly in microscopic dimensions. According to our cosmological theory, it does not seem strange to us, that the astrophysicists observe something like an expansion of free space and surely they are not crazy or stupid. By this observation (for redshift) the irrational thought of the creation of the Universe was quickly supported and spread.

They have written or rather have copied innumerable books, we have seen impressive representations at computers and educational TV programs and the researchers, who have been awarded, are known. It is a great challenge if this interpretation of space expansion is proven to be wrong. Of course, the observation for the redshift does not support their own theory for the overall initiation of the Universe by an amount of energy, that existed before the Universe. This phenomenon confirms the formation of the structural elements with the electromagnetic and gravitational fluctuations of the free space and the continuous re-creating of nature! Its explanation is simpler and rational, and the imagination is just needed to save a fantastic event such as the one that all galaxies were once be merged into one (abnormal) point.”. (p443)

Image: anim_dopplereffect01

Description: An animated gif image. A sketch of a man looking at a galaxy going away. A wave of light reaching his eyes from the galaxy expands

108. Introductory thoughts on the phenomenon of pseudo-expansion of space

“A motion of space and its role as a carrier or mediator without the meaning of a wave transforms the notion of the free space in something fluid, such as a liquid matter or a rubber surface. Such a notion of the free space as fluid and rubber cannot withstand much analysis. First of all, it would be impossible to maintain its isotropy and to achieve a balanced distribution of forces that are manifested in vast range in various ways. Local distortions and movements could evolve uncontrollably and devastate the most distant parts of the world. Also the world, with its developments in the farthest districts, could not "take into account" the extent, intensity and amount of forces disturbing the free space locally somewhere neighborly. Changes and distortions would be chaotic in every region of the world, without any measure and timing. Rapid adjustment in the distribution of spatial forces can only be imposed by the periodic mode of creation and transmission (if we do not want to remove motion and dynamic capacity from the free space). Thus the rapid attenuation of random disruptions and their "absorption" are also achieved. The periodic way of changing energy and transferring energy, the rate of movement, even in the application of force, is motion measured by nature itself.(...)

But it is not only the speed of light that motivates us to think of the free space as a constant quantity that is disturbed. It is not only the high speed of light that motivates us to think that the rapid transmission of the disorder does not start in a sole quantity, but in a quantity which remains stable with tiny variations. Apart from the speed we wonder for the possibility of many disturbances at the same time in many areas of the free space, with impressive details. Many disorders coexist in the same area without necessarily being neutralized (or canceled). The results from the encounter of all disorders are also defined in detail and mathematically from point to point. By this observation of the simultaneous encounter

and coexistence of a number of disturbances with their details, we conclude again that **the free space comes back extremely quickly to its state of balance**.* Its energy disturbances are not permanent deviations and static deformations (as in solid bodies), but they are deviations and dynamic forms with extremely fast movements and rhythms". (p398-9)

(...)

"When space is disturbed and is free, it returns unhampered (regularly) to its state of balance and the amount of energy per minimum time is offset. This process ceases to be regular when the energy being carried can not come back in the minimum time in order to return to its original balance and if the energy returns at a slower pace. This irregular situation presupposes that space is not free. When and where is the space not free? It is not free wherever a quantity of structural elements exists or extreme strong fields exist". (p399)

* Note: Emax/Emin = Tmax/Tmin. The minimum time for the restoration of the minimal quantity h·Hz to balance corresponds to the time Tpl = 0.135120 ×10^-42 sec and the inertia is Mmin = 0.73725 ×10^-50 kg

Image: moving-formation-txt

Description: An area of rotating light trails in a dark space and in the center is a dark sphere. Below is noted: a movement of space and its role as a carrier or mediator without the concept of a wave transforms the concept of free space into something fluid, such as liquid matter or an elastic surface. Such a concept of free space as liquid or rubber cannot stand up to much analysis

109-2. Introductory thoughts on the phenomenon of pseudo-expansion of space

“The motion of a body and its speed is a effect which a child can perceive. When we describe however, the phenomenon of motion or its change without the existence of a concrete material thing, then in that case the term of speed is possibly not a well-defined term. It is a much devious view of the space, when we handle the term "speed" in order to describe a phenomenon of displacement amongst the galaxies, which happens without their own motion into space, but with the inflation of space; it is as if the space were a material body or a case of a bubble. We would await from a scientist to think more intelligently and at least, to suspect the phenomenon of a wave change and the measurement of motion with the term of "frequency" and not "speed". We call “electromagnetic phenomenon” a phenomenon (of periodic change), which we know well that exists in the substructure of nature, without the existence of some concrete material body”. (p452)

The shifting of the wavelengths of light coming from the farthest distances of the space does not happen at random, as it is shown by the Hubble law. It has an analogy to increasing distance. Still, the same analogy is detected in every direction. That is why it cannot be explained by local events or local anomalies when light passes. This is not due to nebulae or gravitational fields. It is not due to the reduction of the light intensity, otherwise we would observe this shift even at short distances. Colors have an impressive stability even when the light intensity is weakened”. (p452)

The thoughts that will follow are conclusions and new thoughts to think about the correct explanation for Hubble's astronomical observation, according to which the distance of galaxies is related to a shift in the frequencies of light they emit (to lower e/m spectrum). For the first time, a clear interpretation is formulated for the close relationship of matter with space as a shared quantity of energy, with fun-

damental and dynamic phenomena (such as rate of change, time, length, speed, mass, energy, force, the angle and wave effects). The interpretation of the dynamic structure of matter and its close relationship with a shared quantity of energy that as distributed in equilibrium appears as space did not remain in rational thought. Advanced is confirmed by easy calculations according to universal physical constants. These theoretical supplies were missing from (mechanistic) cosmology, which interprets everything - even life - in terms of moving particles. The theory of a "Big Bang" is one of the most failed theories in the history of science and a long-standing fallacy (100 years of irrational persistence and deception). The misinterpretation of astronomical redshift was not the only failure of this inverted conception of the world as a collection of bodies, which is rooted in the anthropocentric conception of matter as the principle that creates the Universe. The explanation for the astronomical redshift comes from the conclusions summarized below, and we will see in simple calculations how this phenomenon is connected to the wave processes that maintain the structure of matter. We will still see from theoretical calculations according to our own rational interpretation that the rate of the Hubble constant - which has been corrected many times - has a larger error than they calculate according to their measurements and is quite a bit lower.

Image: Redshift-Doppler/Doppler-effect

Description: The "Doppler" effect in two merged images. Above an ambulance is moving towards someone on the right, while moving away from another standing on the left side. The waves on the right side are closer together. The bottom image shows the Earth and a red wave coming to Earth from a galaxy

110. A reminder of the relationship of the gravitational field to a shared quantity of energy and to matter. (From a microscopic point of view)

· The gravitational field has been rationally interpreted as a wave process of returning energy to the region of concentrated matter, while matter has been interpreted as points of diminishing and fluctuating shared energy (maintained at extremely high rates around average values, as we inferred).

· The conclusion of wave motion to direction of a center (as a first interpretation for the gravitational field) immediately appeared to be of great importance for the interpretation of the structural elements.

· A force towards the minimum radius where is within the core of the structure of matter appears as extremely strong. The nuclear force decays at extremely high rates and there remains around the atom as a weakened force that is detected by the gravitational field of larger bodies. The restoring force to equilibrium and the wave motion in the opposite direction to a center explain the nuclear force and the gravitational field.

· The strongest force is a rebalancing force that occurs in the shared amount of energy (of space) when it is disturbed. The shared amount of energy is the simultaneous Universe that appears externally as free space.

· "Structural elements are maintained and have their mass and radius in the space by energy that they remove from the shared amount and constantly restore it." (418) The gravitational field is created within the structural elements by a process of lowering the stronger force, by which the structural elements have their own radius. The gravitational constant G is a result of this process in the shared

energy of space, which includes the attenuation of a maximum force and the slowing down of the maximum speed c in the perturbed waves. "The constant G in microscopic changes adjusts the ratio according to which the maximum and centripetal velocity c decreases" (248) The introduction of the gravitational constant G to the calculation of mass in microscopic dimensions does not introduce the gravitational force into the structure of matter. This constant is associated with deceleration processes, which give finally the gravitational field. (285)

· Particles, electromagnetic radiation, gravitational field and nuclear field are fundamental phenomena of differentiation of the same amount of energy, by a process of reduction and delay in restoring equilibrium.

· These conclusions were clarified and confirmed after investigating the velocity $V = c \cdot M / Mplanck = \sqrt{(G \cdot M / \lambda m)} = Vg$ according to the equations $(Mplanck / M = c / V$ and $M = Mplanck\ V / c$ if $Mplanck = \sqrt{(h \cdot c/G)}$.

· The radius of the structural elements is maintained by periodic processes and by the rapid balancing of a large disturbed force. The total amount of energy fluctuates instantaneously, and global space pulsates at extremely high rates and at a tiny radius length (around the mean length ≈1×10e−13m). Two rates of fluctuation in two opposite directions (decentralization and concentration of energy) is a phenomenon of disturbance and restoration of the energy balance. The inward direction of energy concentration is associated with the nuclear field and the outward direction is associated with the e/m field. This perturbation and rebalancing phenomenon that occurs in the structural elements has been misinterpreted by the astronomical observation of redshift as a possible contraction and as an actual expansion of the entire astronomical world. We are looking for exactly how it relates to astronomical observation.

Image: Universe/file-20210810-19-1wvpgiq

Description: A dark grid resembles space with its hidden structure. The grid is compressed towards the center, where there is a hole and waves flowing into it. The image is static

111-2. The relation of the gravitational field to a shared quantity of energy and to matter. (From a macroscopic point of view)

The interpretation of space as a shared amount of energy and of matter as fluctuations immediately leads to many conclusions and improbable solutions to problems of cosmology without calculations. We have seen how calculations of physical sizes and quantities for structural elements as fluctuations give an even more dynamic picture of matter and correct results. Calculations according to the minimum and maximum limits on the change of physical quantities (inertia, energy, rate of change, time interval and length, speed, force, etc.) confirm the wave principle of the structural elements. About gravity, simplistic thoughts are still expressed as they were 100 years ago. With the wave interpretation of matter we imagine the gravitational field as a tornado at the speed of light. For the first time we can interpret the gravitational field and not just think of it as a force or an inexplicable behavior of space. The astronomical observation of the "escape of galaxies" (according to Hubble's law) is connected to the microscopic process by which the structural elements are maintained as oscillations of a shared amount of energy (= ie space). With this new description of matter and the gravitational field the connection is not hidden and we now look for the explanation.

“The gravitational field can be considered to be the spherical (or radial) space from which spatial energy derives isotropically and concentrically to maintain and create matter”. (p165-6)

“The mass presented in bodies has a bound amount of energy that is missing from the shared amount and the shared energy is presented as a space of a certain radius”. (p491)

“Physical space exists as free with the presence of bodies and bodies with the presence of free space”. (p500)

“The motion of astronomical bodies is the result of the concentration of energy with which they are maintained... For this reason astronomical bodies remain synchronized in their movements, they do not lose their orbit, they do not move away without returning and they do not collide with each other, as if they had information about the movements of all the other astronomical bodies. Energy is always concentrated where its reductions occur to restore balance”. (p431)

“When the energy flow of the space (the gravitational field) increases to an amount of material carriers, then the time and space in which the interactions of these material carriers occur is more limited. The possible ways of interaction are more limited and the material carriers approach as much as possible. On the contrary, moving away from the center of attraction is the surface in which the masses interact more loosely, in slower ways and changes and in longer lengths”. (p153)

“The cause of concentration of material carriers is the wave flow of the energy of the free space for the compensation of its deficiencies, which are presented as material carriers and as local variations in space energy. The gravitational field restricts (what does it mean that it “deforms”) the space and time into which the simpler elements interact with each other, while it also restrains their movement (within the gravitational field)”. (p165)

“The cause of the concentration of material carriers is the same that limits it: The energy of the free space that offsets the points in which the energy is reduced or the compensation is delayed. Since the concentration of matter cannot be increased boundlessly, the consequence of this limit (for the amount of matter,

which can be gathered) is the cause of the simultaneous concentration of matter around many separate centers within the free space and not just around one center (for all the celestial bodies of nature)!" (p153)

"Einstein thought to explain the gravitational force as distortion of the space-time geometry, because this force is anywhere in space and does not stand out of it. Here we will come to the end of this thought: Space is a balanced and shared amount of energy and its own flow is detected as a gravitational field. Even when physical bodies are missing, free space is a form of energy that has the minimum flow and the weakest gravitational field. By the limit of a maximum distance, we encounter again the minimum curvature of the free space. This minimal curvature signifies again a change in the direction of each moving body as if a minimum force caused deviation to each motion from linear motion after a long period of time. According to these thoughts we wonder if such a free space is something different from the gravitational field". (p405)

*Note: From the first thoughts it was seen, that the minimum flow of energy concentration and the weakest gravitational field are closely related to space being free (with more capacity), with its minimum curvature and with a minimum amount of inertia. The presence of matter "causes" space, and the wave interpretation of matter presents space as a shared quantity.

Image: Universe/gravitational-fields (BzT9Jaxr7ceVLY9HVWNvTj-970-80)

Description: Bright shapes of curved blue discs on a dark surface

112. Investigation of the relationship that the astronomical observation of redshift has with space and matter

We have explained the structural elements extremely simply as energy fluctuations around average values. The average values were derived from calculations with lower and upper limits on the change of certain sizes of nature. The lower and upper limits on the change of physical sizes we derived in agreement with the universal constants c, h and G. The dynamic structure of matter is confirmed by its inseparable relation to a shared amount of energy, with periodic and extremely fine fluctuations. The full Universe is related to a shared amount of energy that at a radius greater than the structure of matter is isotropically presented as space and with a force that restores balance. Instead, the shared amount of energy at a smaller radius within the structure of matter exists as a core and carrier of particle and wave forces. The shared amount of energy is also dynamically kept in balance (along with matter). The universal space as a shared amount of energy has its own motion towards each body, whether small or of astronomical dimensions and as we explained with the maximum speed c exactly. Here our research was transferred to the shared amount of energy presented as a geometrical capacity and separating bodies by distance (ie in astronomical space). We focus it on Hubble's constant and its law to find out what microscopic process this astronomical phenomenon begins with, and whether it indicates an expansion of space or some other process by which space remains in equilibrium.

The Hubble's law and some initial calculations for the size of astronomical space and a universal time.

The Hubble's law: $V=H\cdot D$

The constant is: $H \approx 70.1$ km/s /Mpc and means:

The speed of galaxies increases approximately V=70.1km/s for every 1Mpc distance.

*(1pc= 3.2615 ly = 3.086 ×10^16 m → 1 Mpc = 3.086 ×10^22 m)

• If the maximum receding velocity is set to 299792 km/s (v=c) then we find a maximum distance Dmax for the universe:

Dmax = c / H → Dmax = (2.99792 ×10^5 km/s) /70.1 km/s = 4276.633 Mpc

In meters: 4.276633 ×10^9 pc × 3.086 ×10^16 m = 1.319768 ×10^26 m.

• From the formula T= Dmax/Vmax we calculate a maximum time interval T(H) after which the velocity would be the maximum c and the distance of the galaxies the farthest.

T(H) = 1.3197 ×10^26 / 2.99792 ×10^8 = 4.40205 ×10^17 s = 13.949989 ×10^9 years.

• The same time interval T(H) is calculated from the relation T = D/V.

T(H) = 3.086 ×10^19 km / 70.1 = 4.402282 ×10^17 s.

In this time interval of T = 4.40205 ×10^17 sec the distance D is the maximum and the receding speed of galaxies is the maximum speed c that we set as a limit.

• If we know the maximum distance Dmax of the galaxies then we calculate the speed that increases per given distance from the following formula :

V(H) = c ×3.086 ×10^22 m / Dmax

• From the following formula we calculate the rate of change (a) of the speed increasing as a function of distance. From the speed of the Hubble's constant = 70.1 km/s we find the following rate:

c·V(H) / 1Mp → (2.99792 ×10^8 m/s)×(7.01 ×10^4 m/s) / 3.086 ×10^22 =

6.80993 ×10^-10 m/s^2

• The Hubble's constant say to us about a velocity V that is increased in each distance of 1 Mpc. How much speed is obtained per the distance of 1sec of light?

If the speed is maximum c at a maximum distance Dmax

then what is the velocity V at the distance D=2.997924 ×10^8 m?

V(H) = c × 2.997924 ×10^8 / Dmax → 8.98755 ×10^16 / 1.319768 ×10^26 →

V(H) = 6.809946 ×10^-10 (m/s) /1 light s → That is, it increases with the rate of acceleration c ·V(H) / D(1Mpc).

The speed of increase 6.809946 ×10^-10 (m/s) /1 light s = 70.1km/s /Mpc

Image: elastic-surface/tumblr_nxp1fbhbkl1twrbr9o1_r1_540

Description: An animated gif image. A black surface with bright spots forming waves and leaving from a center. Simultaneously waves coming from different angles penetrate the first ones and reach the center

113-2. Investigation of the relationship that the astronomical observation of redshift has with space and matter. The Hubble's constant for distance 1m away and for shorter length than this

Since the Hubble's constant is interpreted as the speed of expansion of space, we couldn't help but ask how much this speed is at distances smaller than 1 Mpc. Here we have explained the structure of matter from energy fluctuations in a shared amount (= of space) and our calculations have given results for microscopic sizes and quantities. We want to see if the speed of "expansion of space" has any connection with our calculations of microscopic sizes. The astronomical length of 1 Mpc = 3.086 × 10^22 m does not help this connection with the structure of matter.

• The Hubble's constant says to us about a speed V that is increased in each distance of 1 Mpc. What speed results for distance of 1m only (for a smooth rate of change)? It needs a simple transformation in the units.

a) The distance would be maximum Dmax for maximum expansion velocity c

What is the speed V at a distance of D=1m?

V(H) = c ·1m / Dmax →

V(H) = 2.997924 ×10^8 ×1m / 1.319768 ×10^26 →

V(H) = 2.271553 ×10^-18 (m/s) /m = 1 / T(H)

Hubble = 7.01 ×10^4 / 3.086^22 = c / Dmax in meters

b) If the speed increases 7.01 ×10^4 m/s every D=3.086 ×10^22 m

then what is the speed V at distance of D=1m?

V(H) = 7.01 ×10^4 ×1m / 3.086 ×10^22 = 2.27155 ×10^-18 (m/s) /m

We find an extremely low speed per meter.

The Hubble speed per meter 2.271553 ×10^-18 (m/s) /m = 70.1 km/s / Mpc.

We also find that the speed (of expansion) per meter 2.271553 ×10^-18 m/s is the inverse of the maximum time 1/T(H) = 1/4.402282 ×10^17 s which we calculated from the equations:

T = D(1Mpc) / V(H) = Dmax / Vmax = 3.086 ×10^19 km / 70.1 km/s.

That is, the Hubble's speed per 1m distance is the inverse of a maximum time interval in which the maximum distance Dmax theoretically takes place. (*Because Dmax / c = 1m / 2.271553 ×10^-18 m/s). The total time T(H) comes out as the velocity V(H) when inverted to 1/x.

• Lower speeds (V) correspond to shorter distances (D), which are minimum at minimum lengths.

V(H) = c D / dmax = D / T(H)

For D = Dmax the speed approaches V= c

For D = Dmin the speed approaches V= Vmin

Note: The speed V(H) is smaller or larger depending on whether the length D of the retreat distance is shorter or longer. But if finally all bodies have a maximum distance to the respective extreme points of an astronomical space which has always been the same - as we have explained universal space - then the speed of "expansion" will always be the maximum c for all bodies . Free space everywhere is at its maximum distance. Whether we think of space 1) as a total amount of energy, or 2) geometrically corresponding to a maximum period of time in which the Universe is complete, space is a property of the universal whole and is available to all structural elements. If we again think of space as a field where 3) the nuclear force has weakened, then again the conclusion is drawn for a maximum distance of free space, since the concentration force will be minimal even for the largest astronomical body at the farthest distance from it .

• How much retreat velocity occurs per distance equal to the average length λ0=h/M0·c = c/f0 = 1.101998 ×10^-13 m. The speed is extremely low:

2.271553 ×10^-18 m/s per 1 m

How much speed V per length λ0 ?

V → 2.271553 ×10^-18 × 1.101998 ×10^-13 /1m = 2.503247 ×10^-31 m/s

We have shown in earlier posts how the production of e/m fluctuations and particles is associated with an extremely subtle decrease from the maximum speed c. It is recalled that according to the relations Mpl / M = c / V → M = V·Mpl /c the speed reduction corresponding to the inertia of an electron is only 5.0052×10^-15m/s. For violet light it corresponds elementally to inertia from a decrease in speed of ≈3.038103 ×10^-20m/s. If we had not developed this interpretation of matter and if we had not introduced the limits of change of physical quantities for microscopic processes (according to the universal constants c,h,G,pi) then we would not have paid any attention to such a low speed of "expansion", as we calculated it for a distance of one meter and for shorter distances. Now, the extremely low speed of "expansion" for distances smaller than a meter does not go unnoticed. We see that the astronomical "expansion" speed calculated at microscopic lengths gives velocities, which are still within the scale with the lower speed limit of ≈10^-34 m/s.

The "expansion" speed approaches close to the minimum speed limit Vmin (for a distance of about mean length λ0 ≈ 10^-13 m). The minimum speed -Vmin theoretically is the one corresponding to the minimum inertia h·Hz/c^2 = Mmin according to the equations -Vm = M·c/Mpl = √(G·M/λm)= λmin·f and is subtracted from the maximum speed c=2.997924 ×10^8 m/s. We are surprised to see that the Hubble's speed (≈70.1 km/s / Mpc) calculated from the astronomical observation of the redshift is close to the minimum speed of nature, which we have been looking for since we associated inertia with a decrease in speed from the maxi-

mum c (according to Mpl / M = c / V). And as we have seen, this rate of decrease is calculated by introducing the gravitational constant G, which is manifested by all astronomical bodies. The maximum speed c is presented by the minimum inertia of the space, in e/m effects and by a minimum reduction of the maximum speed. The -V deceleration increases and occurs at increased masses, such as of astronomical bodies, and is apparently related to gravitational acceleration. With this first and amateur investigation of the Hubble's constant we see that the speed of "expansion of space" is probably not a phenomenon related only to galaxies and to the greatest distances in astronomical space. It is associated with a slowing down process that preserves the structure of matter. How exactly these two effects are connected we are looking for.

Image: Universe/ef62159fccabc474c22cdc6c73d36736

Description: An animated gif image in a simplified design. An explosion creates a galaxy

114-3. Investigation of the relationship that the astronomical observation of redshift has with space and matter. Hubble's constant and its relation to the G constant

We have moved on to the investigation of the shared amount of energy outside the structure of matter, which appears as space for matter and bodies. Space is a balanced and shared amount of energy and its own flow to the structural elements is detected as a gravitational field. From calculations of the force at microscopic sizes of space and by the interpretation of matter as fluctuations about average values we have deduced the existence of a universal force of re-equilibration (Fres). This universal rebalancing force of the shared amount of energy has characteristics of a maximum attractive force, but we have called it "nuclear force" tracing its constant application within the structure of matter. The gravitational field has been explained by the weakening of the nuclear force, that is, the strong restoring force to equilibrium that the shared amount of energy exhibits when it is perturbed. The concentration of energy from the periphery to the structure of matter is detected as a gravitational field. The concentration of space starts at the maximum velocity c of nature and slows down radially approaching the minimum length within the structure of matter. The slowdown in energy concentration is associated with an increased delay in restoring equilibrium, and with this delay particles gain increased time to transmit energy and trap it. The bodies are formed by the structural elements approaching at lengths longer than the mean length ($\lambda 0 \approx 10^{-13}$ m) and with the weak synergy of the gravitational field. Astronomical bodies have an increased amount of matter collected by their gravitational field, and the space in these areas of concentration does not appear to return to full equilibrium as free. The delay in re-equilibration appears to be multiplied by the number of structural elements and so bodies of every shape are formed.

With this interpretation of the structure of matter as fluctuations on a shared amount of energy presented as space, and with space as reverse waves, concentrated at an extremely high rate around the structural elements and bodies, we have come here to investigate the behavior of the active space in astronomical proportions. This is the comprehensible picture we have of how nature maintains matter, how the same laws apply, and how space is something shared, which is also dynamically held in balance, just like matter. Space and matter are inseparable as is a balanced quantity and its fluctuations. We have explained from the beginning that there is no total creation of the nature and that instead the universe is complete in a maximum period of time and stabilized and therefore appears absent as space! The cosmological interpretation could be presented more briefly and give more amazing and subversive views. But this cosmological theory is rational and simplistic (of natural phenomena), it proceeds with the right questions and moreover it is claimed that the presentation is accompanied by calculations that agree with the descriptions and explanations.

We recently considered astronomical redshift and looked at Hubble's law to give the correct explanation and to see the possibilities of extending this newer interpretation of nature. In the previous post we calculated a rate of increase in the "expansion" velocity adjusted to the lengths we are familiar with, to see if this velocity is related to the structure of matter as energy fluctuations and to space as a shared amount. In our interpretation so far we used other more certain constants, such as c,h,G,π,±e,k,α and saw that they come from minimum and maximum values. Hubble's constant was completely foreign until now and irrelevant. Hubble's constant after conversion to common metric units and over short distances was shown to be relative to the other constants. A low rate of increase in velocity was revealed by the conversion of its units which particularly links it to the gravitational constant G, as you will see more clearly in the next post. An extremely slow and subtle process that we have established for the presence of matter particles and their preservation is revealed by the astronomical magni-

tudes with the redshift effect. Like the gravitational field, which also begins from the structure of matter with the weakening of the nuclear force and with lowering the rates to the highest energy fluctuations.

Finding an extremely low rate of change in physical processes is just as important as finding extremely high rates. The extremely high rates are within the structure of matter and microscopic processes that occur at extremely high speeds and are associated with the constants c,h and e·k. An extremely low rate of change is expected to explain the delay in restoring the balance of space and the presence of the astronomical world with the most increased amounts of matter. The calculations of inertia and energy so far in our interpretation of the structure of matter have left the astronomical world and space as a total amount of energy out of the interpretation. We also need to explain the amount of matter. A minimum rate of increase (or decrease) of speed in nature (amin) is associated with the gravitational constant G. If the minimum rate of acceleration/deceleration amin is expressed by the constant G (defined by spherical masses M of one kilogram where they are attracted by force F when they are at a distance D = 1m), then we already have the result of a calculation. The gravitational force F on two masses of one kilogram when they are one meter apart is 6.6725 ×10^-11 N and the speed of these bodies at this rate would increase. Gravitational force is the weakest force but also permanent in nature and gives the slowest rate of increase or decrease of velocity. The slower rate of change of velocity, i.e. slower accelerations and decelerations, is clearly associated with astronomical bodies and with the gravitational force between bodies of increased mass. But the gravitational force is also associated with effects that are extremely slow in time when bodies have little mass or when they accept the gravitational force without being able to move due to the resistance of other bodies and masses.

Image: andromeda_animated (A rotating galaxy)

115-4. Investigation. Hubble's constant and its relation to the G constant as shown in the first calculations. (A few calculations are a thousand words!)

We have shown how the principle of e/m fluctuations and particles is associated with an extremely fine decrease from the maximum speed c according to the relations Mpl / M = c / V → M = V·Mpl /c → -V = M·c /Mpl. The minimum speed -Vmin ≈ 0.405080 ×10^-34 m/s subtracted from the maximum speed c=2.997924 ×10^8 m/s corresponds to the minimum inertia h·Hz/c^2 = Mmin ≈ 0.73725 ×10^-50 kg according to the equations -Vm = M·c/Mpl = √(G·M/λm)= λmin·f, if Mmax = Mpl = √(h·c/G). Larger inertia values correspond to more reduction from the maximum speed c. This ratio (decreasing maximum speed and increasing inertia) was discovered theoretically from the relationship of the constant G to velocity at microscopic sizes: -Vm = M·c/Mpl = √(G·M/λ) and has revealed to us the upper and lower limits on shared energy fluctuations. Now we will see with the simplest calculations how Hubble's constant is connected to this effect of the decrease from the maximum speed c and to the constant of gravity G. Paraphrasing "a picture is worth a thousand words", here a few calculations will reveal what is not we easily understand from the extended explanation.

• The rate of increase of speed (a) according to the constant H(0) and the velocity V per Mpc:

If we know the rate (a) of increase in speed (expansion) then the speed V at a distance D with a limit of the maximum speed c is: V(D)= a·D /c.

We found that the rate of increase in velocity that gives the Hubble velocity at a distance of 1Mpc is 6.809946 ×10^-10 (m/s^2) / 2.997924 ×10^8 m.

That is: 6.809946 ×10^-10 (m/s^2) /1sec of light = 7.01 ×10^4(m/s) / 3.086 ×10^22 m = 70.1km/s / 3.086 ×10^19 km (where 3.086 ×10^19 km = 1Mpc).

• The rate of increase of velocity (a) according to the constant G and the velocity V per Mpc:

If the rate of increase in velocity (expansion) is a= 6.6725 ×10^-11 m/s^2 according to the constant G of gravity, then the velocity V at the same distance D as the limit of maximum speed c is:

V(D)= a·D /c → V(D)= 6.6725 ×10^-11 · 3.086 ×10^22 / 2.997924 ×10^8 = 6868.531357 m/s = 6.868 km/s.

That is: 6.6725 ×10^-11 (m/s^2) /1 sec of light = 6868.53(m/s) / 3.086 ×10^22 m = 6.868km/s / 3.086 ×10^19 km (where 3.086 ×10^19km = 1Mpc).

One observation: We see that the average accretion rate of 6.809946 ×10^-10 m/s^2 that gives the Hubble velocity at a distance of 1Mpc is close to the accretion rate of 6.6725 ×10^-11 m/s^2 that comes from the constant of gravity G. Their ratio is only: 6.809946 ×10^-10 / 6.6725 ×10^-11 = 10.2 as is the ratio of velocities at a distance D=1Mpc: 70.1 / 6,868. In other words the average rate of increase in velocity (expansion) we calculated from Hubble's constant H(0) per meter distance could be the gravitational constant G.

• The maximum distance Dmax according to the constant H(0) and the maximum speed limit c:

If we calculate the maximum expansion distance of space according to Hubble's constant ~70.1 km/s and with the limit of the maximum speed c we will find:

Dmax = c / H → Dmax = (2.99792 ×10^5 km/s) /70.1 km/s = 4276.633 Mpc = 4.276633 ×10^9 pc = 1.319768 ×10^26 m (where 1Mpc = 3.086 ×10^22m).

The same Dmax result from c·D/V(H) → 2.997924 ×10^8 · 3.086 ×10^22m / 7.01 ×10^4 = 1.319769 ×10^26 m.

• The maximum distance Dmax according to the constant G and the maximum

speed limit c:

If we calculate the maximum distance of space expansion according to the speed per Mpc ~6.868km/s that comes out of the constant of gravity G and with the limit of the maximum speed c then we find:

Dmax = c / H → Dmax = (2.99792 ×10^5 km/s) /6.86853km/s = 43647.24 Mpc = 4.364724 ×10^10 pc = 1.346954 ×10^27 m (where 1Mpc = 3.086 ×10^22m).

The same Dmax result from c·D/V(H).

• The “age” of the universe according to the constant H(0):

The time interval T(H) that comes out as the age of the universe from the relation T = D/V(H) according to the Hubble expansion rate is:

T(H) = 3.086 ×10^19 km / 70.1 = 4.402282 ×10^17 s.

Same result as T = Dmax / Vmax = 4.402282 ×10^17 s = 13.949989 ×10^9 years. (1 earth year ≈ 31.5576 × 10^6 sec).

• The “age” of the universe according to the gravitational constant H(G):

The time interval T(uni) that comes out as the age of the universe from the relation T = D/V if the expansion velocity is V=6.868km/s according to the constant of gravity is:

T(G) = 3.086 ×10^19 km / 6.86853 = 4.492955 ×10^18 s. Same result as T = Dmax / Vmax = 4.492955 ×10^18 s = 142.373152 ×10^9 years.

Some observations: 1.346954 ×10^27m / 1.319769 ×10^26m = 10.205. → 4.492955 ×10^18 s / 4.402282 ×10^17 s = 10.205. The difference of Hubble's speed (70.1 km/s) from the speed we calculated according to the gravitational force (6.86853 km/s) is not so great if we consider how Hubble's constant was derived and how the gravitational constant. Hubble's expansion velocity of ~70.1 km/s / 1Mpc was derived from the observation of distant galaxies, with the most

modern technical equipment, and from the detection of the redshift of light. It is suspiciously close to the speed resulting from the acceleration of gravity according to the known constant G. The results of the calculations could be completely irrelevant and prohibitive to think about a connection of the constant H with G. And let's not forget that the constant G of gravity in the interpretation of matter as energy fluctuations with minimum and maximum values is not only connected to the gravitational field of planets. The constant G is even associated with a process of decreasing the maximum speed by which the inertia of space increases and e/m radiations and particles are created.

Some useful notes: The rate (a) of increase in speed (expansion) is an average value. If we insert the limit of the maximum speed c on the speed increase rate then the rate should decrease when the speed approaches its maximum value. That is why if we calculate in what time t will be the distance of length D according to the relation t =√(2D/a) and then what will be the speed in this time (V = a·t) and the distance D = (a·t^2) then the result will deviate from the correct one. The rate (a) of increase in speed (expansion) must be calculated according to the limit of maximum speed (expansion) and the calculations take into account the maximum time Tuni (or Ttotal) and the maximum distance Dmax.

• In the first calculations, the rate of increase (a) is calculated from the relationship c·V/D. With this relationship apply:

a = c·V/D = c·c/Dmax = c/Tuni. The following still apply: D/c = t(D) → D/V = Tuni → Dmax / c = Tuni → c^2 / Dmax = a → Tuni = D/V = Dmax / c

• The distance D = c·V/a. With this relationship apply: c/a = Tuni → V/a = t(D) → t(D) = (D/a) / Tuni = D/c → a·Tuni = c → a·t(D) = V(D).

V(t) = a·t^2 / Tuni = a·D/c = a·t (where t = D/c)

The following apply: t^2 / Tuni = D/c

• The velocity V(D) when we know the time (t) and the total time T(uni): V(D)=a·t^2 / T(uni)

• The velocity V(D) when we know the distance D: V(D)=a·D/c

• The velocity V(D) when we know the time (t) and the rate of increase (a) of the velocity: V(D)=a·t

• The time (t) when we know the distance D: t=D/c

• The distance D when we know the time (t) and the rate of increase (a) of the speed: D=a·t^2

A reminder. We achieve calculations by introducing upper bounds on magnitudes of astronomical space and the results of the calculations are consistent, as we did (in earlier posts) for the sizes of microscopic changes, by introducing a limit on inertia as a function of speed (Mpl / M = c / V).

Below we see that the average accretion rate of 6.809946 ×10^-10 m/s^2 that gives the Hubble velocity at a distance of 1Mpc is close to the accretion rate of 6.6725 ×10^-11 m/s^2 that comes from the constant of gravity G. The results of the calculations could be completely irrelevant and prohibitive to think about the connection between the constants H and G

HUBBLE'S CONSTANT 70.1 km/sec / Mpc with limit of the speed c	**THE HUBBLE'S CONSTANT AS IT WOULD BE** 6.8685 km/sec / Mpc
≈	≈
Time interval T= 4.402282 ×10^{17} sec	**Time interval T=** 4.492954 ×10^{18} sec
Maximum length S= 4.276633 ×10^{3} Mpc = 1.319768 ×10^{26} m	**Maximum length S=** 4.36424 ×10^{4} Mpc = 1.34696 ×10^{27} m
Pace of change ±a = 6.80993 ×10^{-10} m/s^2	**Pace of change ±a** = 6.6725 ×10^{-11} m/s^2

Now anyone can play with small deviations in the constants and calculate the universe in distance and age, out of research interest!

An animated gif image: 5888d-table-crop2-540. A multitude of bright spots moving in one direction in space.

116-5. Investigation. Hubble's constant, its relation to the G constant and both to average values in the energy fluctuations of space

The principle of electromagnetic fluctuations and particles is associated with an extremely fine decrease from the maximum speed c according to the relations Mpl / M = c / V → M = V·Mpl /c → -V = M·c/Mpl = √(G·M/λ). “Investigating the gravity constant G and its relation to velocity and mass, we have determined that even light is the result of a reduction of maximum speed like particles. There is however the this difference that the reduction is extremely small for these frequencies of light”. (p454) Structural elements have been explained as energy fluctuations around average values. We have calculated the minimum and maximum limits of physical quantities according to the physical constants h,c and G.

*[The inertia scale derived from the physical constants is: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

*[The average value of energy and corresponding inertia: E0 = 1.802582 ×10^-12 J και M0 = 2.00564 ×10^-29 kg]

We have calculated an average speed of 1.1019978 ×10^-13 m/s and this speed per sec is close to the Hubble and gravitational acceleration rates. This average velocity corresponds to the average values of the other physical sizes and the average inertia of 2.0056443 ×10^-29 kg. Therefore, any velocity around this average value (of ≈10^-13 m/s) corresponds to an inertia (according to Mpl / M = c / V) that approaches the inertia of the fundamental particles of matter (≈10^-29 kg). Conversely, the inertia of the fundamental particles (the electron ≈10^-31 kg and the proton ≈10^-27 kg) corresponds to velocities approaching the mean velocity (of ≈10^-13 m/s).

• The acceleration rate of 6.809946 ×10^-10 m/s^2 derived from Hubble's con-

stant is proportional to the gravitational constant G: 6.809946 ×10^-10 / 6.6725 ×10^-11 = 10.206. Therefore, if the acceleration rate of 6.809946 ×10^-10 m/s^2 was the gravitational constant G then the gravitational force would be 10.206 times stronger. (It is interesting to look for deviations of the constant G). According to the relations Mpl / M = c / V → M = V·Mpl /c → -V = M·c/Mpl the rate of increase of 6.809946 ×10^-10 m/s^2 of the redshift corresponds to inertia M =1.2394 ×10^-25 kg, a quantity that accounts for any atom of matter. That is, the corresponding inertia of the acceleration 6.809946 ×10^-10 m/s^2 is greater than that of an electron and is about 74 times greater than the inertia of a proton: 1.2394 ×10^-25 / 1.672621 ×10 ^-27 kg = 74.099. We do not draw any conclusion and simply observe these coincidences/approximations.

• The rate of increase of 6.6725 ×10^-11 m/s^2 of the gravitational force also corresponds to inertia approaching the mean value M0≈10^-29 kg. "According to the fundamental equation M=V·Mpl /c we calculate that a quantity of mass (or inertia) of 1.2143999 ×10^-26 kg corresponds to a rate of 6.6725 ×10^-11 m/s^2. “Coincidentally this amount of inertia is what is needed for a simple atom of matter" as recorded in the treatise. (p451)

• The speed that increases at each meter (of redshift) is extremely low. The Hubble speed per meter 2.271553 ×10^-18 (m/s) /m = 70.1 km/s / 3.086 ×10^19 km. According to the rate a of gravity the redshift speed per meter is: 2.225706 ×10^-19 (m/s) /m = 6.868530 km/s / 3.086 ×10^19 km. The Hubble velocities per meter and the corresponding velocity of G correspond to extremely low inertia (smaller than the electron): 4.134243 ×10^-34 kg and 4.049626 ×10^-35 kg.

• The proton has a slightly larger mass than the average amount M0≈10^-29 kg. The velocity subtracted -Vp from the maximum velocity c for a proton according to the relation V=M·c/Mpl corresponds exactly to 9.1908416 ×10^-12 m/s. Co-

incidentally, this speed (close to the average value of ≈10^-13 m/s) as a rate of increase in velocity approaches the rates of redshift and gravitational acceleration.

Some examples:

The maximum time interval for c/a if we insert the rate of decrease -Vp corresponding to the inertia of the proton as the average rate of increase of the velocity:

T(total) = 2.9979245 ×10^8 / 9.1908416 ×10^-12 = 3.2618606 ×10^19 s [Same result c/a = D/V = T(total)]

Maximum distance Dmax = 1/2 · a · T^2 :

Dmax = ½ × (9.1908416 ×10^-12) × (3.2618606 ×10^19)^2 = 9.7784841 ×10^27 m

When we calculate a maximum receding length Dmax or a maximum period T(total) then we can calculate what the average "expansion" rate of space would be, and what the Hubble constant would be, according to the following simplified equations:

V(H) = c·D / Dmax = D / T(H)

For D = Dmax the velocity is V = c.

For D = Dmin the velocity is V = Vmin.

We find the following "expansion" rate of free space per distance 3.086 ×10^22 m (1Mpc) for the maximum distance 9.7784841 ×10^27 m :

V(H) = c ×3.086 ×10^22 / 9.7784841 ×10^27 = 946.11735 m/s ≈ 1km /Mpc.

The results are not much beyond the expansion rate which has been measured, if the fact is taken into account that we make “childish” calculations and use the numbers of the microcosm. Consider that initial calculations are made with the simplest relations that are not considered enough to calculate a distance

even within our home. (...) As unbelievable as it may seem for a level of knowledge of a physics teacher, the limits which we find by taking into account the tiny sizes, have an accuracy that we cannot achieve even for the distance between Earth and Sun. In the calculation we make to find the maximum time and maximum distance of free space we start from tiny lengths (that are not zero), while we can reach the last detail of length and time using the known limit of maximum speed c! (p462)

<•> We have assigned certain rates of "expansion" of space to a quantity of inertia. Those ignorant of interpretation will wonder about the usefulness of this mapping. With this mapping we saw that "expansion" velocities are associated with inertial amounts which are around the inertia of matter particles (M0≈10^-29 kg) and photons of a higher frequency than light (≈10^16 Hz). **We are looking for how the rate of "expansion" of space is related to variations on the shared amount of space and to the structure of matter (which is maintained around average values)**. We are prepared to assign space itself as a shared amount of energy per unit volume and in equivalent inertia. In future posts we will marvel at such a volume-energy ratio and see how the universal Whole is present for all structural elements.

<•> Calculations with velocities around the mean value (V0=1.1019978 ×10^-13 m/s) give a total time interval and a maximum distance that approach first guesses at the Hubble expansion rate H and gravitational acceleration of G. We still don't know if this means anything and how a rate of increase or decrease of the maximum speed c is related to the Hubble's constant. From the rational explanation of space as a shared amount of energy and matter as fluctuations in this balanced amount we have understood that space has a dynamic behavior and is itself a carrier of force with wave movements. The simplest calculations confirm such a relationship, and we look for the correct interpretation of the astro-

nomical redshift with functions and equations that were missing from physics.

We calculated some velocities from physical processes happening here locally which are likely connected and explain the expansion velocity (redshift). The rate of increase in velocity derived from the gravitational constant G and the corresponding expansion velocity of space per Mpc (6.8685 km/s / 3.086 ×10^19 km) are closer to the known redshift velocity per Mpc (70.1 km/s / 3.086 ×10^19 km), which research centers have calculated from observations of the most distant galaxies.

Image: elastic-surface/2ac0d2-expansion-txt

Description: An animated gif image. It looks like a droplet falling from a height and a wave swells and spreads across a dark space. Below is noted: We can perceive the wave disturbance of a balanced quantity as an expansion. The restoration of equilibrium can be thought of as a contraction. Don't let words mislead us.

Notes

Velocity ratios: 1) of rate H (V =6.809943×10^-10 m/s^2) with rate of increase 6.6725 ×10^-11 m/s^2, 2) with average speed V0 = 1.101998 ×10^-13 m/s, 3) and with the corresponding speed -Vp (9.1908416 ×10^-12 m/s) for the inertia of a proton.

1) V(H) / V(G) = 10.206

2) V(H) / V0 = 6179.632812

3) V(H) / Vp = 74.094879

4) Vp / V0 = 83.401617

5) V(G) / Vp = 7.259944

Notes

• The redshift velocity per meter

2.271553 ×10^-18 (m/s) /m = 70.1 km/s / 3.086 ×10^19 km (Mpc)

• The redshift speed per meter

2.225706 ×10^-19 (m/s) /m = 6.868530 km/s / 3.086 ×10^19 km

• The accretion rate

6.809946 ×10^-10 m/s^2 = 70.1 km/s /t of Mpc (where t(D) = D/c = (D/a)/Tuni = 1.029379 ×10^14 s)

• The accretion rate

6.6725 ×10^-11 m/s^2 = 6.868530 km/s /t of Mpc (where t(D) = 1.029379 ×10^14 s)

• The speed of increase

6.809946 ×10^-10 (m/s^2) × t for 1 meter of light = 6.809946 ×10^-10 (m/s) / m for 1 sec of light = 70.1 km /s / 3.086 ×10^19 km (Mpc)

• The speed of increase

6.6725 ×10^-11 (m/s^2) × t for 1 meter of light = 6.6725 ×10^-11 (m/s) / m for 1 sec of light = 6.868 km/s / 3.086 ×10^19 km

117-6. Investigating the astronomical redshift. An extremely subtle speed difference in radiation after extremely long time intervals

In the last posts we generally saw a relationship that the "expansion" speed of space has (according to the Hubble constant H≈70.1km/s /Mpc) with space as a shared amount of energy and with matter as fluctuations (around average values). We saw this relationship with the first calculations that give inertia and velocity reduction from maximum c according to the Mpl / M = c / V and -Vm = M·c/Mpl = √(G·M/λm) equations. **The gravitational constant G in these equations revealed a slowing process of the maximum velocity c**. Calculations confirmed the direct relationship of a shared amount of energy with structural elements and radiations as variations of it. But this close relationship of space and structural elements does not explain Hubble's law. However, it reveals wave processes at microscopic dimensions, with which the redshift phenomenon is associated. **We have not denied the movement of the space. We have rejected the movement of space as a body (like a rubber surface)**. Instead, we have explained space as a balanced quantity with oscillations of energy, and its motion was correctly described as wavelike rather than like the motion of a body. The concepts of expansion and contraction are misleading. The gravitational field was explained by wave motion of space with the highest speed in the direction of concentration of energy towards a microscopic radius. The shared amount of energy fluctuates and returns to equilibrium with such motion by waves, which are concentrated in the minimum radius of space and eventually slow down there. Therefore, we expect a different explanation of the astronomical redshift. Below we will see how the rate of "expansion" of space with Hubble's law is related to the curvature of space and to the subtle speed difference of radiation after extremely long time intervals. In any case, we will see how the most stable phenomena change and the subtlest deviations grow after extremely long periods of time, even when local forces are absent.

According to the relations Mpl / M = c / V and -Vm = M·c/Mpl = √(G·M/λm)= λpl·f even light is a result of a decrease in maximum speed c, as are particles. The reduction is extremely small for the frequencies of light (≈10^14 Hz) and up to the frequency of the equivalent energy of an electron (c^2·Me/h ≈10^20 Hz). The minimum velocity -Vmin ≈10^-34 m/s theoretically corresponds to the minimum inertia h·Hz/c^2 = Mmin = 0.73725 ×10^-50 kg. However, this slight difference in the speed of light relative to the maximum speed c is probably subversive to the research of the astronomical world. For astronomical distances, this small difference in the velocity of radiation in proportion to its frequency produces measurable results. (p454)

The frequency for the red color is ≈4.0 ×10^14 Hz and the deceleration from the maximum speed is 1.620321 ×10^-20 m/s. The corresponding inertia is 2.948995 ×10^-36 kg.

The frequency for the violet color is ≈7.5 ×10^14 Hz, the deceleration is 3.038103 ×10^-20 m/s, and the corresponding inertia is 5.529366 ×10^-36 kg.

The difference of the two reduced speeds for violet and red light is: 1.417782 ×10^-20 m/s. The difference in speed between colors of visible light is too subtle to be measured by humans in nature. If we do the same calculations with the speed more reduced, i.e. for higher frequencies of the e/m spectrum (as with the sample of the speed corresponding to the inertia of the electron ≈5×10^-15 m/s), then we will find deviations in more short time and for shorter distances. We will find more obvious and disruptive deviations only at frequencies h·f that exceed the corresponding frequency of the energy of an electron (f>10^20 Hz).

> With a slightly reduced speed of 2.997924 ×10^8 - 1.620321 ×10^-20 m/s a length of 2.997924 ×10^8 - 1.620321 ×10^-20 m is traveled in 1sec. Therefore, the length of exactly 2.997924 ×10^8 m is traveled in a minimally increased time of ≈1+5.404810 ×10^-29 sec.

> If, therefore, every 1sec a length of 1.620321 ×10^-20 m is left then after a total time T(H) = 4.402282 ×10^17 s the length will be left:

1.620321 ×10^-20 · 4.402282 ×10^17 / 1s = 0.007133110 m = 7.133 mm.

> If the delay is 5.404810 ×10^-29 sec every 2.997924 ×10^8 m of distance, then the delay at maximum distance D(H) = 1.319768 ×10^26 m will be:

5.404810 ×10^-29 · 1.319768 ×10^26 / 2.997924 ×10^8 = 2.379345 ×10^-11 s → 2.379345 ×10^-11 s = 23.79345 pico sec. We find that a velocity slightly reduced from the maximum velocity (c - 1.620321 ×10^-20 m/s as we calculate for the red color) after such a large astronomical distance (the entire universe) has an extremely fine lag 2.379345 ×10^-11 s compared to the maximum speed c.

The corresponding frequency for an electron is 1.2356 ×10^20 Hz, the deceleration from the maximum c is 5.0052 ×10^-15 m/s, and the corresponding inertia 9.1094 ×10^-31 kg.

> If a length of 5.0052 ×10^-15 m is missing every 1sec, then after a maximum time T(H) = 4.402282 ×10^17 s the length will be missing:

5.0052 ×10^-15 · 4.402282 ×10^17 / 1s = 2203.4301 m ≈ 2.2 km.

> If the delay is 1.669555 ×10^-23 sec every 2.997924 ×10^8 m of distance, then the delay at maximum distance D(H) = 1.319768 ×10^26 m will be:

1.669555 ×10^-23 · 1.319768 ×10^26 / 2.997924 ×10^8 = 7.349838 ×10^-6 s ≈ 7.35 µs.

> If the delay is 1.669555 ×10^-23 sec every 2.997924 ×10^8 m of distance, then the delay at a distance of 1Mpc = 3.086 ×10^22 m will be:

1.669555 ×10^-23 · 3.086 ×10^22 / 2.997924 ×10^8 = 1.718605 ×10^-9 s ≈

1.72 ns.

> If a length of 5.0052 ×10^-15 m is missing every 1sec, then after a time of 1.029378 ×10^14 s (of the distance 1Mpc) the length will be lost:

5.0052 ×10^-15 · 1.029378 ×10^14 / 1s = 0.5152242 m ≈ 51 cm. (Significant deviation for human dimensions).

We theoretically observe how such a subtle deviation in nature, which is difficult to calculate exactly with a common ten-digit palm calculator, takes a significant deviation within the extreme limits of nature and brings about results and phenomena change.

A reduction -V from the maximum speed c (-Vm = M·c/Mpl = √(G·M/λm)= λpl·f) for each frequency of a radiation h·f corresponds. The propagation of light through the same medium (such as a prism) shows that radiations of different frequencies are deflected at different angles. This phenomenon has been called "diffraction". The curvature of world space is not the same for the propagation of radiation at different frequencies. Higher frequencies correspond to greater quantities of h·f energy, and the global space as a total amount of energy will exert (gravitational) more force and cause a greater deviation from the straight line of propagation over time. Radiations in different directions will also not maintain straight distances from each other as they propagate. The increase in length of radius R of propagation per sec will curve and itself forms an arc. The sphere formed by the radial propagation of light in all directions will not be a perfect (three-dimensional) sphere with a rectilinear radius. The radius length R will curve with increasing distance and cease to be the radius of a normal circle and sphere. The circles of 2π·R propagation formed by the radiation will shift more as the radius they travel increases and will not be concentric to a straight line. And furthermore, these angular deviations will be of different degrees and at different

distances for different frequency radiations.

Light coming from extremely long distances does not arrive with exactly the same characteristics in frequency, wavelength, and phase of the component fields. In composite light the colors come with a difference in time and phase and thus pass through or are reflected by clouds of particles. **When we are talking about a universe with a maximum distance around ≈10^27m then the far distance of space up to ≈10^24m is only ≈1 degree** off the straight line. Therefore extremely far distances are those where the curvature of free space begins to exceed 1 degree and observation at these distances will be more imprecise.

Image: EM-Propagation-dual-bl-txt

Description: E/m waves coming out of an area where again waves seem to be concentrated circularly towards a point

118-7. Investigating the astronomical deviation of light (redshift). The relation of the velocity from the Hubble rate to the velocity V=√(G·M/R) and to a total mass

We would stop investigating Hubble's constant H(0) because in the new interpretation of a complete and stabilized universe existing as dynamic space, the universal space does not expand or contract. The universal space is a shared and balanced quantity with energy fluctuations, corresponding to structural elements and radiations. In these fluctuations within the structure of matter we have identified two wave motions that are opposite and resemble expansion and contraction. We are not stopping the investigation (of the expansion rate of space) for a second reason: We found that this constant H ≈ (70.1 km/s) / Mpc indeed has something to do with space and especially to the gravitational field and structure of matter, for which we calculated an average radius λ0 = 1.1019978 ×10^-13 m. We have concluded that the atomic radius is relative to the wavelength λ0 and has extremely fine fluctuations, depending on the fluctuations of the other physical sizes [for M0 = 2.00564 ×10^-29kg and E0 = 1.802582 ×10^- 12J]. **Therefore, there is indeed a radius fluctuation in space, but it is a microscopic fluctuation within the structure of matter and not the phenomenon as described for astronomical space**.

A multitude of physical phenomena have been simplified by this rational interpretation (of a complete and stabilized universe existing as dynamic space) and their closest connection has been clearly seen. Surprising conclusions have been drawn about the structure of matter and space, and the physics measurements we used (such as the physical constants c,h and G) proved to be reliable, without ruling out a small difference. For these reasons we have taken Hubble's constant (H) seriously and use it to draw conclusions according to our own rational explanation of the structure of matter, according to the complete universe as a stabi-

lized Whole.

We have simplistically calculated a maximum distance D for galaxies and a universal time interval T(H) by introducing the maximum expansion speed c according to the Hubble expansion rate. One of the logical considerations that follows is whether this expansion velocity is related to the centripetal velocity V=√(GM/R) derived for the gravitational field of astronomical bodies. We did not forget that with this relationship adapted to a wavelength λ instead of a radius R of a body, the fundamental function between velocity and inertia was revealed (Mpl / M = c / V → -Vm = M·c/Mpl = √(G·M/ λm), which turned out to be of paramount importance for the interpretation of matter. As we deduced, when a wavelength is introduced into the equation √(G·M/λm), then we find a velocity -V subtracted from the maximum velocity c and in this - V corresponds to a quantity of mass/inertia. We find the mass M corresponding to this velocity -V with the equation to calculate mass (M=-V^2·λ/G). But according to M=V^2·R /G we can calculate the mass of an astronomical body if we correctly input the radius R and the centripetal velocity V (or gravitational potential) corresponding to the height of its radius. The relation V=√(G·M/R) that the gravitational field of an astronomical body has with its mass and radius can be applied because the relation -Vm = √(G·M/λm) = M·c/Mpl which shows a decrease in velocity from maximum c to a wave motion of space is correct and quantities of energy h·f with more increased inertia (M=-V^2·λ/G = h·f/c^2) are trapped as particles in the structure of matter.

It is easy to insert the Hubble expansion velocity (70.1 km/s) / Mpc into the simple equation M=V^2·R/G and the corresponding distance R out of curiosity. Of course, the equation M=V^2·R/G applies to astronomical bodies and the calculation for a distance that does not start from any astronomical body is silly. But the calculation is simple and fast and we don't lose anything to see the result. The simplicity of thoughts and calculations in the development of this cosmological

theory was never underestimated and many times units of measurement were ignored in order to observe mathematical relations in the results. It was searched if there is such a relationship of speeds V(H) = c·D / Dmax = D / T(H) = V=√(G·M/R). To get the speed of the Hubble constant through the equation V=√(G·M/R) we can simply find how much mass gives this speed (for a radius of 1Mpc = 3.086 ×10^22m):

M = V^2·R/G = (7.01 ×10^4 m/s)^2 · 3.086 ×10^22 / G = 2.272706 ×10^42 kg.

Of course this is a large amount of mass for such a long radius (1Mpc ≈ 3 261 500 ly) and such an orbital speed. For comparison, our sun's radius is ≈6.96 ×10^8 m and its mass ≈1.99 ×10^30 kg. The sum of the mass of our galaxy is estimated to be about 890 billion times the mass of the sun, which is about ≈3.56 ×10^42 kg at a radius of ≈129000 light years from its center! How much mass will we find when we insert in M=V^2·R/G the maximum velocity V = c for the length of the maximum Hubble extension D(H) = c / H as a radius?

M(H) = c^2·R(H) / G = (2.997924 ×10^8)^2 · 1.319768 ×10^26 /G = 1.777666 ×10^53 kg.

The first thing we notice is that the centripetal velocity would be the maximum c to remain at such a large radius, if it were orbiting within the gravitational field of a body with a correspondingly large mass (≈10^53 kg). But of course such a body does not exist. Calculating such a mass with the simple equation applied for a planet is ridiculous. Surprisingly, this amount of mass could be the total mass of the universe and is not a random number. The investigation of the total amount of mass (of the Universe) by other calculations (by other researchers and also by me) has given an amount close to the one here of the order of 10^53 kg. Further investigation of this result of the total mass M(H)=1.777666 ×10^53 kg showed that **this total mass has some relation with the marginal inertia Mpl = √(h·c/G), such as has the expansion rate H with the gravitational constant G**. These coincidences were exploited to develop the cosmological theory (of a complete and

stabilized universe existing as dynamic space with energy fluctuations).

<•> You all see in simple calculations started according to the data of physics, that a multitude of phenomena (microscopic and astronomical) have a rational connection between them and a mathematical function with the same limits to changes. Natural phenomena share a common link with a shared amount that we have not called "god" or imagined, but have perceived statically and geometrically as "physical space." So everything stays synchronized and happens with physical laws, since the laws are not introduced mentally, but by a common force carrier (which appears as empty space). **Microscopic quantities are revealed in connection with astronomical magnitudes, and this connection was missing from cosmology, because the interpretation of physical laws and the correct interpretation of the structure of matter was also missing**. In general, how nature works and is the way it is has almost been answered and several more posts will follow.

The quest that remains to complete this interpretation (as purely cosmological) and never to be challenged by anyone is for the ultimate question: What exactly are the astronomical sizes of the world and **what is served by being so large**? I say in advance for specialized researchers (and for those who understand): The answer will come when it is explained, that the microscopic sizes and structure of matter could be what we measured and calculated, just because the total quantity has these maximum values and no others. Then we will have found exactly the astronomical limits, and we will have calculated more precisely certain physical constants (especially G), in agreement with other physical constants, which we now lack, and in function of certain sizes which we now ignore. Here we make use of some of the data of modern research without relying on them, when they are results of measurements which have not been enlightened by the physical process that produces them. We will not repeat possible models of the Universe based on Hubble's corrected H constant. There is the expectation, the constant H

to be calculated (theoretically) from the natural process from which it originates and in this case to correct or confirm it. Literally cosmology has come 100 years ahead, since our conclusions could have been preceded 100 years earlier if the physicists and engineers of the first decades of the 20th century had thought rationally like the ancient Greek philosophers.

Image: mass-of-galaxies-txt (A region of astronomical space)

119-8. A first investigation of astronomical magnitudes according to the Hubble rate of ≈70.1 km/s / Mpc and their relation to the structure of matter

It was searched if there is any relationship between the speeds V(H) = c·D / Dmax = D / T(H) = V=√(G·M/R). Thus tentatively a total mass from the relation M(H) = c^2·R(H) / G was calculated when we paradoxically entered the maximum expansion distance D(H) as radius R and according to the limit of the maximum expansion speed of space. The amount of mass of 1.777666 ×10^53 kg cannot be in any astronomical body, yet it is surprisingly close to the results of other more difficult calculations for the total mass of the astronomical world. The simplicity of the calculation can also be useful in investigating the relationship that the constant G has directly with the dynamic space. Some possible mathematical relationships with calculations for the structure of matter were sought.

“With our own interpretation of space as a total amount of energy in equilibrium and for the structural elements as fluctuations we would immediately make the attempt to calculate a total amount of energy using the Planck's constant h (as the elementary quantum of action and energy). We would divide a total amount of energy into minimal quantities, the small quantities of energy would be correlated with certain lengths and we would make calculations so that the total amount of energy would match a total volume of a maximum radius. However, the immediately preceding calculation with the constant G of gravity and centripetal velocity in engagement to the Hubble constant could not escape curiosity, and it took a few more pages to investigate the coincidences” as it was written. (p463-464)

This amount of total mass M(H) = c^2·R(H) / G has a mathematical connection with the maximum quantity of inertia Mpl = √(h·c/G), which proved necessary to calculate the physical changes in to the structure of matter and to the connection

of matter as fluctuations of energy into a shared quantity. Within the calculations of physical quantities for microscopic processes it was revealed that Mpl = √(h·c/G) = h·fpl/c^2 is a maximum inertia corresponding to a minimum time interval of 1s of an energy change. This observation will be useful for the relation of the marginal mass Mpl = √(h·c/G) to the masses of astronomical bodies, since these have a many times larger mass and an explanation is needed.

• If 1.777666 ×10^53 kg for Hubble time 4.402282 ×10^17 s

then how much mass kg corresponds for time Tpl = 0.13512 ×10^-42 s

M = 1.777666 ×10^53 · 0.13512 ×10^-42 / 4.402282 ×10^17 = 5.456221 ×10^-8 kg

What a surprise! This is exactly the mass resulting from the three universal constants Mpl = √(h·c/G). We found the mass √(h·c/G) from an unrelated calculation, in which we introduced the total expansion time of galaxies according to the Hubble constant (70.1 km/s) / Mpc and the maximum speed limit (about c) of light. The same mass √(h·c/G) would be found for the minimum time Tpl if we had thus calculated the total mass (Muni = c^2· Runi / G) in a different space expansion time (e.g. for Tuni = 4.492954 ×10^18s and Muni=1.814293 ×10^54kg). [*Because R(H) = c·T(H) and R(H)/T(H)= c therefore M(H) = c^2 · R(H) / G = c^2 · c ·T(H)/G]. According to this paradoxical calculation there is a ratio of the total mass Muni to the maximum distance Dmax and the total expansion time Tuni for this distance, always with the limit c to the increase in speed. The ratio exists at any average rate of expansion of space.

<•> According to these simple relations, the faster space expansion rate (a) gives a shorter maximum distance Dmax in a shorter Tuni expansion time and thus less total Muni mass. The ratio of Muni mass to the √(h·c/G) mass is conserved because the relation Muni / Tuni = constant. These observations on simple relations will prove extremely useful in this investigation.

• The following apply and we can equate by choosing...

Mpl / Tpl = M(H) / T(H) → Mpl · T(H) = M(H) · Tpl

We would say that the marginal inertia Mpl = √(h·c/G) per minimum time Tpl is equal to the total mass of the universe at its maximum "age".

• According to the previous correspondence, the following useful equations also come out:

M(H) = c^2·R(H) / G = c^2 ·c·T(H) / G = h·fpl^2 ·T(H) /c^2 = Mpl ·fpl ·T(H)

• We can generalize the previous formulas for limits that may not coincide with the limits as calculated by the Hubble's constant: (464)

Muni = c^2·Runi / G = c^2 ·c·Tuni / G = h·fmax^2 ·Tuni /c^2 = Mmax ·fmax ·Tuni

• Ratios: M(H)/Mpl = T(H)/Tpl ≈ 3.258053 ×10^60

• Note: The wavelength in the equations for the microcosm has been related to inertia and velocity (M=-V^2·λ/G = h·f/c^2). In the equations for astronomical bodies also their radius is related to mass according to the same physical constants (c, G). So there is still a ratio between the mass and the radius that the mass is distributed (as we observed by investigating the gravitational constant G = g·R^2/M = V^2·R/M), even for whole world:

√1.777666 ×10^53 kg = 4.216238 ×10^26 → 4.216238 ×10^26 / 1.319768 ×10^26 = 3.195 ratio [where 1.319768 ×10^26 is the maximum distance D(H)]. But the total mass of the world is not concentrated in one body, and this we will explain.

<•> Some more first and useful observations according to the Hubble expansion rate.

A free space which has the maximum Hubble length D(H) as a maximum radius R(H) = c / H = c / (7.01 ×10^4 m/s) / 3.086 ×10^22 m = 1.319768 ×10^26 m gives a global volume of three* dimensions:

Vglobal = 4·pi·(RH)3 / 3 ≈ 9.63 ×10^78 m^3

• Gives average mass density M0(global):

M(H) / Vglobal ≈ 1.84616 ×10^-26 kg / m^3

That is, this ratio gives an (average) mass density slightly higher than the one of the mass of a hydrogen atom, which is about ten protons for every 1m^3. The mass density of the free space approaches the amount of the balance mass:

M0 = √(Mmin · Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29.

• For mass of equilibrium according to the maximum mass, which is the Mpl = √(c·h/G) or frequency f0 = 2.7204444 ×10^21 Hz the ratio is:

M0(global) / M0 = 1.84616 ×10^-26 / 2.0056443 ×10^-29 ≈ 920.5

• The equation r = 2·G·M/c^2 gives the radius of a mass for which the escape velocity is equal to the speed of light. For an amount of mass 1.777666 ×10^53 kg this radius is: 2.639535 ×10^26 m that is 2·R(H)

• For maximum force Fpl = Epl / λpl = 1.210582 ×10^44 N in relation to the total mass M(H) we observe:

g=Fpl / M(H) = 6.80995 ×10^-10 m/s^2 [ie Fpl / M(H) = c·V(H) / D1Mpc = G·M(H)/R(H)] → Fpl / ±a = M(H)

• The average rate of increase of 6.809946 ×10^-10 m/s^2 with the total time

gives velocity: ±a·T(H)=c.

• Simply observing the relation of force (without angle and direction) with time and mass as we have calculated with certain minimum and maximum limits (F·T / M):

Fpl·Tpl / Mpl = c

Fpl·T(H) / M(H) = c → 1.210582 ×10^44 · T(H) / M(H) = c

(where T(H)=4.402282 ×10^17s, R(H)=c/H =1.319768 ×10^26m and M(H)=1.777666 ×10^53kg)

** The results of previous calculations about the limits of the universe are indicative and doubtful. But they will be taken into account for the theoretical investigation of limits by other methods. We are looking for mathematical relations that in nature apply universally and to all things. That is why we have removed the singularities of things and imagine the universe simplified, with its most general characteristics.

Image: stsci-h-p2034b-m-1786x2000_0-re (the galaxy cluster MACS J0416)

Description: A region of astronomical space where it is estimated to be billions of light years away and in an earlier era of the universe

120-1. The fundamental principles for the structure of the astronomical world

Possible guesses for the limits of the universe have been published since the Hubble constant and the expansion rate of space were calculated. The "expansion rate of space" entered our own thoughts and was exploited for some early calculations by an advantageous interpretation "of space as a total amount of energy in equilibrium and of the structural elements as its fluctuations." Thus in simple calculations we found a possible relation of this phenomenon of "expansion" to the constant G of gravity, and a fundamental thought of this newer cosmological interpretation was strengthened: That astronomical magnitudes have a dependence and function with sizes and phenomena within the structure of matter. We quickly showed by simplicity of calculations how much more easily we can research the limits of the universe and confirm them by relating them to what we know about the structure of matter. The investigation of the limits of astronomical space and its structure has now ceased for us to be random and based on astronomical observations. We have explained global processes for the structure of matter and for dynamic space, we have mathematical functions and simplified equations that were missing, and we expect astronomical magnitudes to agree with the structure of matter and wave phenomena as we have rationally explained them. Now the cosmological interpretation has to explain the process behind the astronomical redshift and which is related to the so-called expansion rate of space. We will achieve this explanation by what we have already explained and calculated about the structure of matter as fluctuations of energy of the shared amount seen as universal space.

The problem we are now looking to solve according to the interpretation of space as a shared amount with energy fluctuations is this: An oscillation of the radius within the microscopic structure of matter around average values and at ex-

tremely high rates somehow magnifies to astronomical distances and appears from radiation as an extension of universal space. So before we attempt new calculations, we will need to think more carefully about how we have interpreted space as a shared amount and with waves, concentrated as a gravitational field at a microscopic radius within the structure of matter.

· After ascertaining the mean values of the changes in sizes (min-max) with the presence of a shared amount of energy, a force F0 was manifested of average magnitude towards the average length λ ~10^-13m and at a radius relative to this length. The mean force towards smaller radius r < 10^-13m has an increased magnitude as nuclear while towards longer radius >10^-13m outside an atom it is attenuated and appears as e/m and as gravitational force. The two extremes on the theoretical scale of energy and corresponding force (×10^-42 - ×10^44 N) are not seen within the structure of an atom, yet we observe and measure the average values of these two invisible limits. The average values of the sizes explain the balancing of opposing forces and the electric charge (±e).

· Average values come from the two opposite processes of nature as we have seen (concentration and decentralization of energy), which include the two extremes of changes, the minimum and maximum values. Two opposing forces in opposing wave motions at an average radius of ~10^-13m compete with each other. The fundamental particles of matter are limited amounts of energy and oscillations around the mean values [M0 = 2.00564 ×10^-29kg and E0 = 1.802582 ×10^-12J] of a wave process according to minimum and maximum limits of change and with extremely subtle deviations from average values.

· A restoring force to balance (Fres = E/λmin = Emax /λ) occurs in every fluctuation of the shared energy and is associated with the creation of the electric and magnetic fields. The energy balance in e/m radiation returns to the minimum

time, but the time increases as the quantity of energy compensated increases (according to the principle of conservation of power Emax/Emin = Tmax/Tmin → Emin / Tmin = Epl / sec = P). This same restoring force within the structure of matter is the most powerful and is called "nuclear". The structural elements as switches of extremely high rates (10^21 Hz) keep this strong force attenuated and so the shared energy outside them at a larger radius (r > e-10m) exists with minimal effect as a "gravitational field".

· Exceeding the mean frequency f0, the total recovery time for the elementary quantity h is longer than the propagation period of the waves (t = E·tmin / Emin = h·f /Pmax) and this delay time is associated with the particles in the structure of matter. The delay in re-equilibration is increased near the mean values of the fluctuations [f0=√(f·fup)]. The electric charge ±e and the fundamental particles as they separate in the structure of a matter atom stabilize around the mean values of the (lower and upper) sizes and with the increased delay [t=h·f / Pmax]. The variation of shared energy appears to be divided into two phases by two opposite processes (concentration and decentralization) and with countervailing forces. Increased delay in re-equilibration near the mean values of fluctuations is associated with more reduction in peak velocity c. [According to the relations -V = √(GM/λ) = M·c / Mpl = f·λpl = h / Mpl·λ the maximum velocity appears to decrease to an average value of 1.1019978 ×10^-13 m/s at radius r ≈ ^-13m which is close to the atomic nucleus].

· Waves at rates of fluctuation up to f0≈10^21 Hz are decentralized and meet waves at rates of fluctuation up to f0↑ ≈10^21 Hz in the opposite direction (concentrated). The former we call electromagnetic (and have the characteristic of expansion), while the latter we detect as a gravitational field (and have the characteristic of contraction). The rates at which amounts of energy are transferred by concentrated waves are almost the same as the rates of electromagnetic phe-

nomena (for an average energy value of ≈10^-13 J). The Universe complete in all possible ways and stabilized exists as a shared amount of energy and with the rebalancing force associated with the nuclear force. The Universe at the beginning of its creation as incomplete are e/m phenomena, structural elements and free space (after the weakening of the nuclear force that has weakened to gravitational force).

· In short, the dynamic process by which the complete Universe appears in a minimum of time in microscopic dimensions and in extremely short time intervals (through the structural elements) is at the same time a process by which the Universe is kept absent for a maximum of time to the structural elements (outside them), i.e. as free space with minimal gravitational force. The Universe rapidly interrupted periodically by the structural elements appears at a larger radius from their structure absent as space, while at a smaller radius (r < e-13m) within their structure it appears present as a common core.

· The process of lowering maximum force, rebalancing and delaying are repeated at an extremely rapid rate. The complete process (with its periodic delay and repetition of energy concentration and decentralization at extremely high rates of ≈10^21 Hz) is observed as nuclei with electron shells and is called "matter" (around the mean inertia of 2, 0056443 ×10^-29 kg).

> The previous findings explain how the structure of matter isolates the shared amount of energy and the structural elements use it as free space with weakened forces.

Image: micro-macro—247854-16t-crop-res.

Description: Bright circles are created and move near the periphery of a dark sphere - which is supposed to be universal space - along with many bright spots,

which expand and contract as circles and eventually dissolve like soap bubbles.

Below the image is noted: How does quantum physics of the microcosm connect with Newtonian physics of the macrocosm? The building blocks are conserved as energy fluctuations by the total quantity as their core. At the same time this quantity is balanced and distributed as a dynamic space for their external motion with a minimum force. The nuclear force weakened by the dynamic structure of atoms is detected as gravitational from the concentration of atoms and as e/m when is perturbed

An excerpt of the post as it was shared:

120-(excerpt). The fundamental principles for the structure of the astronomical world

In short, the dynamic process by which the complete Universe appears in a minimum of time in microscopic dimensions and in extremely short time intervals (through the structural elements) is at the same time a process by which the Universe is kept absent for a maximum of time to the structural elements (outside them), i.e. as free space with minimal gravitational force. The Universe rapidly interrupted periodically by the structural elements appears at a larger radius from their structure absent as space, while at a smaller radius ($r < e\text{-}13m$) within their structure it appears present as a common core.

End of notification

121-2. The fundamental principles for the structure of the astronomical world

> The following findings continue the previous ones. They explain how free space is associated with an amount of energy and its distribution along a radius, which is greater the greater the mass of bodies (which have a proportional amount of energy bound to their own radius). Some corrections to the conclusions are still possible.

· The structural elements are maintained and have their radius r ≈^-10m with energy where they extract from the shared quantity and constantly restore it. So space is also dynamically maintained, like the atoms of matter. Conservation of matter is also conservation of free space. (Heading 28.8). One creates and sustains the other by a process initiated in atomic dimensions.

· The mass presented in bodies has bound an amount of energy where is missing from the shared quantity and the shared energy is presented as a space of a certain radius with an increased gravitational field intensity (g). The gravitational constant G applies from the principle of conservation of matter, as we have explained. The relation V=√(G·M/R) for the gravitational field of an astronomical body with its mass and radius applies because the modified relation -Vm = √(G·M/λ) = M·c/Mpl already applied to the speed reduction from the maximum c in a wave motion of space. This speed reduction corresponds to the inertia (M=-V^2·λ/G = h·f/c^2 = V·Mpl /c) and the corresponding quantities of energy h·f which at certain values trapped and oscillate as "particles" in the structure of matter. (Because the relation -V=√(G·M/λ) applies to the microscopic dimensions, therefore the average values still give the relation V0^2·λ0 / M0 = G).

· We do not expect to see the total amount of energy of the universe in the mass of an astronomical body. "Total energy in equilibrium by a process which prevents it from being concentrated" (it is heading 28.7 in the treatise).

· "The entire Universe within a maximum of time exists as a total amount of energy and serves as a free space for material things. Things outwardly to each other and as separated (ie in dimensions larger than their structural elements) detect this total amount as free space". (p405) This total amount of energy is relatively absent for the longest period of time (for the structural elements between them), when in fact it is present intermittently for extremely short periods of time. Therefore the total amount of energy is distributed as a function of time since a maximum quantity is proportional per unit of time. *[The minimum time to rebalance a minimal quantity of h·Hz corresponds to Tpl = 0.135120 ×10^-42 sec and the inertia is Mmin = 0.73725 ×10^-50 kg. For the limiting amount of energy Epl = h·fpl = (c^2·√(c·h/G)=49.038 ×10^8J) corresponds Tmax = 1sec and the inertia is the Mmax = 5.45624 ×10^-8 kg]. The function with time (due to the limit of the maximum transmission speed) in nature is also a function of the length of a radius.

· The rebalancing force is a property of the total amount of energy which is balanced and shared. A shared amount of energy is held as a nucleus for matter and at the same time is held as free and extended space. The rebalancing force (of the simultaneous Universe) appears in a centralized direction and weakened by the atoms of matter as gravitational field of bodies. Space appears free as capacity of a maximum radius with the attenuation of the maximum force (heading 31.8).

· In other words, the global space radius is mathematically directly related to the ratio of the maximum to minimum force as we have determined and their av-

erage value (Fmin ≈10^-42N, Fmax ≈10^44N, F0 ≈16, 3574). *[Scaling of restoring force F(re) for energy perturbation from Emin to E0 → 4.4499407 ×10^22 / 16.3574 = 2.720445 ×10^21. Scaling of the corresponding perturbation force: 16.3574 / 2.210216 ×10^-42 = 7.4008 ×10^42]. "The volume and maximum distance of the free space reveal how weakened the nuclear force can be" (p430), that is, how much weaker the gravitational field is, since universal space as a whole exists from the weakening of a maximum force, which within structure of matter is nuclear and externally degraded is gravitational.

· “After these conclusions we find that the capacity of the universe and the third dimension that gives the volume of physical space is due to this maximum force. The radius that appears in the structural elements of the world is the beginning (or end) of a radius where maximum edge is the circumference of the Universe. The maximum distance for displacement starting from tiny lengths is a maximum radius of the world. (...) Therefore, the radius of the Universe is not only a geometric / static length, but it is also a phenomenon analogous to the weakening of the maximum force up to a maximum possible weakening. For this reason, the calculation of this radius coincides with the calculation for the attenuation of the nuclear force” (they have a mathematical function). (p473) It is by no means self-evident that forces weaken with the square of the distance, and now we have the explanation. The distance of space is already associated with the attenuation of a maximum force beginning from the structural elements (as energy fluctuations of a shared quantity). All other forces are created by disturbing the energy balance and are excitations and diversions of the maximum force already applied to the universe.

· Distance, delay and radius are three fundamental properties of the free space. Time and displacement exist for matter because space is offered as free from the attenuation of the nuclear force into gravity. But "the time of counterbal-

ance at a long distance is not short." (Heading 29.4) The distance of space offers the most increased delay in motion, in contrast to the high rates and high velocities that we have calculated for the structure of matter.

· "The energy which is detached and transferred, is simultaneously almost rebounded and counterbalanced" (Heading 28.2) therefore the physical processes for the conservation of matter are almost completed locally (i.e. in the shortest time), without those occurring further away in the global space.

· The shared amount of energy is also dynamically kept in balance (and as global space). Conversely, the energy concentrated as a gravitational field in astronomical bodies leaves space free for a corresponding radius length. Space always extends to where the gravitational field is weakest, because the energy concentrated at the smallest radius of space is carried by its longer radius. The amount of energy concentrated in the smaller volume is removed from an increasingly larger surface area and volume, and so the decrease momentarily created along the radius to the periphery is eventually distributed over the larger volume and compensated by weaker perturbation.

· If small amounts of matter are preserved by extremely short delays in balancing the shared amount of energy, then the delay in balancing will be many times greater for astronomical bodies. Universal space as free is associated with another rate of change that is many times slower (than 1sec), unlike the rates of change we calculate for wave motions within the structure of matter. The delay in equilibration allows time for matter to accumulate and gravitational fields to expand to long radii...

From here we proceed to explain the structure of the astronomical world and to calculate the astronomical magnitudes, since the previous findings shed

enough light on the research. We don't need Hubble's constant, as you will see.

Image: galaxy-txt/galaxy-CEQu

Description: A moving GIF image. Bright spots rotate spirally around a bright center. Below is the note: Astronomical bodies rotate each other and all together are in subset, because the building blocks are maintained and have their radius with energy distracting from the shared quantity and constantly restore it. The space is also maintained dynamically, such as atoms of matter. The space everywhere acts as a gravitational field and syncs the building blocks

Shared Excerpt: The Fundamental Principles for the Structure of the Astronomical Universe (Excerpt from 121)

> The following findings explain how free space is related to the amount of energy and its distribution. Mass presented in the bodies has an amount of energy bound up where is missing from the shared amount, and the shared energy is presented as a space of a certain radius. The shared amount of energy is also dynamically kept in balance, like the atoms of matter. We do not expect to see the total amount of energy of the universe in the mass of an astronomical body...

End of notification

122. The Universe is not a sum of separate bodies. Maintaining natural balance presupposes a ready and shared Whole

The rational interpretation of the structure of matter as fluctuations of energy of a shared amount that exists as space is the simplest possible. A multitude of natural phenomena presented in microscopic dimensions have been explained with the most elementary and necessary phenomena for the preservation of nature and for its processes. By this rational interpretation nature is revealed simplified, and the variety of things is explained as existing by the same laws, by common processes, and by a few fundamental phenomena which repeat themselves in time. The universal physical constants facilitated our calculations and we were able to find the principle of physical laws which are motion with minimum and maximum limits together with the presence of a balanced quantity, where we perceive statically as space. Our calculations have become so simplified that mathematicians find it difficult to convince themselves that results for the universe as a whole and for the microscopic structure of matter come quickly and inexpensively.

But the simplicity we have here achieved in our calculations about the limits of the nature is explained by the simplicity in a few processes by which nature is maintained. This is how the preservation of natural balance and its laws is explained, despite the infinite deviations and variety of phenomena within the unimaginable expanse of space and throughout the time of centuries. If things were determined only by random effects and external circumstances, then it would be impossible to explain how the laws of nature apply to every part of the world and to its innumerable particles. It would be impossible to achieve balance and order and the creative connection of different things. By explaining matter as fluctuations in the shared quantity of space we have been able to avoid many mistakes that many physicists made and still make when they think of the Uni-

verse as a sum of separate bodies. For example, we did not fall into the trap of thinking about a total amount of mass under the illusion that this answer would explain the structure of the universe. The connection of physical forces has been revealed, and with this knowledge we can now calculate microscopic processes in connection with boundaries for the entire universe.

If we think that the creative connection of things is achieved because things have in their composition the same matter then we are deceiving ourselves. "Matter" also needs an explanation that is "the same" for the multitude of different things. That some particles have fixed properties and the same characteristics is not self-evident and also needs an explanation. If we characterize the particles as "fundamental" and as substances for perishable things, then we do not give a solution to the question of how these particles retain the same characteristics and how the particles repeat themselves in space and time. That is, we still need an explanation for the presence of particles and their properties, even if we leave out of our thinking the question of the creative connection of particles and of order in the physical world. It is not self-evident that these exist and have properties, or that they can exist over a longer period of time as constituents of perishable things. Therefore, those who explain nature with particles and with the principle of "matter" do not have such a strong certainty that they have solved the problem of how nature perpetuates itself and has its laws.

Engineers and physicists also do not have the prejudice that nature is maintained by the most difficult mathematics, which surpass in difficulty the problems they insert to solve on computers. The physical world with its infinite details of things and its impressive variety is not balanced by mathematical operations that happen from particle to particle and from fraction of time to fraction of time and by quantitative relationships that mathematicians find difficult to calculate. According to the explanation matter as fluctuations of a shared quantity which appears static

as space we have determined the fundamental phenomena, we have seen physical sizes in correspondence with each other, and we have prepared the first and simplest relations for calculating the limits of nature.

Image: 1 Eou_Tpeody_FWRPT9yPBPg-txt

Description: A fantastic representation of space, brighter and with large galaxies. Above is written: the picture is fantastic. But the "hidden" reality goes beyond our imagination! Below is written: the shared amount that appears (geometric and externally) as the absence of world has not only its large dimensions and the capacity in astronomical bodies as a trait. The shared and balanced amount that appears as a free space is not only externally and geometrically. It still appears with forces at distance and as a global common center in tiny dimensions.

123. The G constant regulates the microscopic and astronomical phenomena of all nature. It is related to an average rate of change

Our research has been extended to explain the structure of the astronomical world from the rational interpretation of the structure of matter as fluctuations of energy in a shared amount where exists as space. The cosmological theory has been formulated according to rules of logic (such as is the method by reductio ad absurdum and non-contradiction of concepts) and with fundamental concepts of thought, which apply to all things (because they do not describe any particular thing, but characteristics observed in all things). Our calculations have been guided by this rational interpretation starting from measurements of physical phenomena locked into a few physical constants (such as c, h, G, π, ±e and crucially h·c/G). We discovered a treasure trove of physics and cosmology after introducing minimum and maximum limits to physical changes and relating the magnitudes to each other (with a scale of inertia Mmax= 5.45624 ×10^-8kg and Mmin= 0.73725 ×10^-50kg) , which confirms the explanation of structural elements as fluctuations of energy in a shared quantity. The gravitational constant G turned out to be the most important of all the measurements and physical constants we used. The mathematical explanation of microscopic processes and the connection of these with physical phenomena of large dimensions of the universe would be extremely difficult if not impossible without the constant G. If we look again at the cosmological theory from its beginning we will find that the constant G of gravity - which needed in calculations for space applications - it hid from its "users" the most important and revealing physical phenomena. The cosmological theory (of a complete Universe as dynamic space) would not contain any discovery that could come out of calculations without this constant and would not serve to develop the theory of the structure of matter.

Reading the physical interpretation from its beginning we can say, that the ex-

planation of the structure of matter according to changes that have minimum and maximum limits is entirely taken from the relationship of the constant G of gravity with the magnitudes of other physical changes. However, if we think that the gravitational field of bodies is a common phenomenon that begins from the structure of matter, then it will not be at all paradoxical that the constant G is the key to the mathematical confirmation of such a wave process, by which nature it dynamically maintains matter at microscopic lengths and at extremely fast rates. The gravitational constant G has been determined from measurements of the gravitational force on planets and falling bodies. But the mathematical ratios that the constant G summarizes apply by nature to invisible and microscopic processes, because of the connection of these wave processes to space as a dynamic and shared quantity.

Now trying to formulate calculations for the limits of the Universe and for space as a total amount of energy we see no other number more valuable than the number, which is locked in the constant G. The precision of the constant G may not be the closest to the calculation of speed reduction from maximum c. I recall that the physical process that creates inertia and particles was explained according to the correspondence Mpl/M = c/v. Perhaps this constant needs corrections in calculations for galaxies, just like the equation that gives the limit inertia M^2=h·c/G. This research has not relied (blindly) on the accuracy of this constant. Yet this constant contains a certain mathematical proportion, which undoubtedly regulates the microscopic and astronomical phenomena of all nature. When the structure of the astronomical universe is further explained, then we expect to theoretically determine the constant G more precisely. Because the explanation of the structure of the astronomical world should agree with the explanation of the structure of matter, and in the calculations some identical constants of physical sizes are used.

We have found from analyzing the constant G and introducing the minimum and maximum limits (with the uniform inertia limit √(h·c/G)) that the constant G is associated with a minimum velocity and a maximum velocity:

G =-Vmin^2 ·λmax / Mmin = -c^2 ·λmin / Mmax = V0^2 ·λ0 / M0.

Therefore using the constant G we achieve the simplest calculations for the limits of the astronomical world and for space as a total amount and this can facilitate for even more conclusions. The average velocity V0=√(G·M0/λ0) = M0·c/Mpl = 1.101998 ×10^-13 m/s is related to the average values of the other physical changes, which give the average value of inertia (M0 = 2.00564 ×10^-29kg).The electron (≈10^-31kg) and the proton (≈10^-27kg) are extremely fine deviations from these averages values. So if in the shared amount of energy that gathers at the maximum speed c as a gravitational field around the matter a smooth deceleration occurs, which culminates within the structure of the matter (towards the minimum radius of space around ≈λpl), then the average velocity value is for a global process of nature. The dynamical space is locally balanced somewhere at this mean velocity V0 or at this mean value of reduction from the maximum velocity c where an atomic nucleus exists.

Image: 860-header-multiverse-txt

Description: Clusters of galaxies separated into bubbles. Below is written: the distribution of the astronomical world in space and time is regulated by the relationship of the shared energy that is concentrated in bodies and the free space, created in the corresponding radius from which the energy is decentralized. The universe is shared in subsets, but subdivision does not justify the phrase "multiverse". The subdivision of the astronomical world is regulated with the simultaneous presence of the common Whole and with the same universal laws

124-2. The G constant regulates the microscopic and astronomical phenomena of all nature. It is related to an average rate of change

The slowest rate -a is the rate that would take maximum time to uniformly approach the maximum speed c. Conversely, the maximum speed c would take maximum time to uniformly approach the minimum value at the slowest rate. “Since the increase of speed does not exceed a limit of Vmax in nature (and by the simple assumption that the maximum speed does not start with its maximum value), a maximum limit for the change of velocity (± amax) results also with this pure reasoning, ie how quickly the speed can increase or decrease and up to what value. In other words, there is a limit to acceleration and deceleration ±a. Acceleration cannot increase for an infinite time but up to the time when the speed is maximum (according to c = λ / T = a·T). Thus, the slow acceleration takes a long time Tmax to reach the higher speed c while the high amax acceleration takes a very short Tmin time. (...) This simple relation, which results rationally from the first thoughts about the limit of speed change ±a, will prove to be a fundamental relation of motion by which all natural phenomena are regulated. This relation is summarized as follows:

Vmax = amax·Tmin = amin·Tmax” (p339)

An extremely high rate of change amax (= c/Tmin) is associated with the extremely strong restoring force (nuclear Fnucl) and at microscopic lengths in the fundamental processes of nature. An extremely low amin rate (= Vmin / Tmax) is associated with the weakest restoring force and with the most increased delay.

If the maximum speed c decreases smoothly at the rate of a minimum Vmin = 0.40508 ×10^-34 m/s every second,

then in how much time will the velocity be average V0 = 1.101998×10^-13 m/s

t = 1s·V0 / Vmin = 2.720445 ×10^21 s

If the maximum velocity c decreases smoothly at the rate of an average velocity -V0 every second, then the velocity will be the minimum Vmin = 0.40508 ×10^-34 m/s in time:

For average velocity V0(pl) = 1.101998×10^-13 m/s →

c / V0 = 2.720445 ×10^21 times

V0 / Vmin = 2.720445 ×10^21 times

The velocity c will decrease 2.720445 ×10^21 times the velocity 0.40508 ×10^-34 m/s every 1s = ie 1.101998 ×10^-13 m/s /s (average rate).

If the velocity 1.101998 ×10^-13 m/s is subtracted every 1s (from maximum c)

will it decrease to 0.40508 ×10^-34 m/s in how many time s?

1s·1.101998 ×10^-13 / 0.40508 ×10^-34 = 2.720445 ×10^21 s

In other words:

The velocity with a rate of decrease of 1.101998 ×10^-13 m/s^2 will be the minimum Vmin = 0.40508 ×10^-34 m/s in how many seconds?

t = c / a = 2.720444 ×10^21 s (For comparison with the Hubble constant we found 4.402282 ×10^17 s)

→ 1.101998 ×10^-13 m/s^2 × 2.720444 ×10^21 s = c

Total length: c^2 / a = 8.155686 ×10^29 m (For comparison with the Hubble constant we found 1.319768 ×10^26 m)

> Attention! These times are not based on calculations with the H constant and take into account times and velocities within the structure of matter and not just with the G constant for motions in gravitational fields of astronomical bodies. These simple calculations are "in connection with the calculations of microscopic changes of energy". (486) For this reason “we will continue to use units of length in meters and time in seconds so that astronomical phenomena are more clearly linked to microscopic phenomena and their relationships could be detected”.

(493-4)

> Calculations exactly with average values do not take into account their deviations. Indicatively, the velocity of reduction -Vp from the maximum velocity c that gives the inertia of a proton (according to the relation -V=M·c/Mpl) corresponds to 9.1908416 ×10^-12 m/s. Therefore, if we insert this speed as the average rate of decrease per sec of the maximum speed c then we find:

T(total) = 3.261861 ×10^19 s (For comparison with the Hubble constant we found 4.402282 ×10^17 s)

Dmax = 9.778810 ×10^27 m (For comparison with the Hubble constant we found 1.319768 ×10^26 m)

For the maximum distance of 9.7784841 ×10^27 m we find the following "expansion" rate of free space per distance of 3.086 ×10^22 m (1Mpc):

V = c ×3.086 ×10^22 / 9.7784841 ×10^27 = 946.11735 m/s ≈ 1km /Mpc.

> In our first calculations we have not taken into account that an atom of matter is more complex and a body includes nuclei with a greater number of protons and neutrons. The increased inertia of the matter atoms is associated with a higher velocity subtracted from c (according to the relation V=M·c/Mpl). If we insert these higher velocities as the average rate of decrease V0 per sec from the maximum velocity c then we get almost the same result as the Hubble constant. So we find with the simplest mathematics, that a universal process of nature is related to the deceleration of the maximum speed c. Because there is the limit of a lower speed (which can be subtracted from the higher speed), therefore an average rate of change is universal and related to the constant G of gravity.

Image: velocity-ps-2+table-res

Description: The image contains a diagram and a table.

"Below in the table: How much does the maximum velocity c decrease for a wave termination at radius E-34m and time E-42s at the average rate of 1.101998 E-13 m/s"

* The rate of deceleration so that the inertia scale applies:

Mpl= (h·c/G)= 5.45624 ·10^-8 kg

Mmin= 0.73725 ·10^-50 kg

According to the analogy (Karamihas' equation):

Mpl/M = c/V

-V =√(G·M/λ)=M·c/Mpl=f·λpl=h/Mpl·λ

-V·Mpl·c = -V·16.3574 = E (Energy)

V0 = √(Vmin·c)=√(G·M0/λ0)=M0·c/Mpl=h/Mpl·λ0

Vmin = 0.40508 ×10^-34 m/s

(0.40508·10^-34 m/s) /tmin = (1.101998·10^-13 m/s) /s

The limits to the rate of change:

[-amax = G·Mpl / λpl^2 = c^2 / λpl = -c/Tmin

= -2.218711·10^51 m/s^2 => -amax·tmin = -c]

[-amin = G·Mpl / λmax^2 = V0^2/λmax = -Vmin/Tmax

= -4.050803·10^-35 m/s^2 => -amin·tmax = -Vmin]

125. The shared energy that is concentrated in matter and at the same time offered as disembodied space. The process explanation (1)

The rational interpretation of the structure of matter as fluctuations of energy on a shared amount that exists as space has progressed as far as anyone expected. Even the most skeptical will get used to the thought, that **space is a shared amount dynamically maintained and by a wave process just like matter**. That is why the radius of the structural elements has a function with energy where gathers as a gravitational field and maintains space. The mass of astronomical bodies also conserves a volume of free space! Universal space is dynamically maintained by the concentrated amounts of matter of astronomical bodies. Conversely, space with its dynamic balance as a shared quantity of energy restores the balance to every disturbance and regulates the distribution of matter as a whole. The explanation of the structure of matter according to changes that have minimum and maximum limits has progressed since we applied the correspondence Mpl/M = c/v with a limit inertia coming out of three fundamental constants M=√(h·c/G). We took advantage of the introduction of minimum and maximum limits to physical changes and the correlation of magnitudes between them (with inertia scale Mmax= 5.45624 ×10^-8kg and Mmin= 0.73725 ×10^-50kg) and discovered a treasure of physics and cosmology, which confirms the explanation of structural elements as fluctuations of energy in a shared quantity. Finding the average values for the mean inertia M0 = √(Mmin·Mpl) = h·f0 / c^2 further simplified the interpretation of matter and gave explanations of the microcosm and its laws in the language of numbers.

But in all this tempting interpretation of the structure of matter we had left out the common finding of the variety of matter and its quantity in astronomical dimensions. We had to be patient and prepare theoretically until the time came to explain the existence of large amounts of matter and the mass of astronomical

bodies, which does not agree to the inertia M=√(h·c/G) since we defined it as the maximum according with the ratio Mpl/M = c/v. From the involvement of the constant G in the calculations for the structure of matter we found a slowing down of the maximum speed c and a delay in restoring the energy balance (for the quantities h·f). Thus a slow process of nature was betrayed which is related to the separation of structural elements from the simultaneous and shared amount of energy, offered as free space. That is why we looked for a slow pace of nature when it came time to explain the astronomical distances and the amounts of matter gathered in astronomical bodies and we saw that an average speed (V0 = √(Vmin·c)=√(G·M0/λ0)=M0·c/Mpl=h/Mpl·λ0) gives a fairly slow rate of change -a. This rate of change from an average velocity is related to the gravitational constant G, as we have seen again.

But the Hubble constant as we quickly applied it to the calculations also did not seem irrelevant to these slow rates which we calculated from average values and according to the constant G of gravity. The "expansion" of astronomical space has been contested from the beginning, both by the unscientific description of this phenomenon and by its absurd explanation, but also by the basic thought upon which this newer cosmological theory began to rationally develop. The physical interpretation has reached here and we have concluded, that the phenomenon of "expansion" has another explanation connected with oscillations of the radius within the structure of matter, with a very rapid concentration of energy towards the matter and with the delay in a wave process within the structure of matter, by which the shared quantity of energy and space is dynamically maintained and balanced.

For us, then, the question is to explain how a delay in the process by which the structural elements are preserved is connected with astronomical distances and with amounts of matter gathered in astronomical bodies. The maximum iner-

tia M=√(h·c/G) proved necessary and valuable for wave processes in the microcosm. But all would stop researching, because common experience confirms bodies of greater mass than such a limit (Mmax= 5.45624 ×10^-8kg). However, we have explained what this limit of maximum inertia M=√(h·c/G) is. We did not fall into the trap of looking for such a particle and kept the classical concept of mass for the most obvious cases, such as when Galileo and Newton studied it by observing mechanical motions and with bodies that have stability in their structure. We explained that inertia is not just a constant property of solid bodies and that an equivalent mass can theoretically be attributed to high-rate energy changes, which can momentarily appear as particles.

The existence of a star shows that so much energy is available here and now (as concentrated or decentralized) because there is no short time to compensate. The creation of a star would also take an extremely long period of time where energy is being dissipated without being compensated (or energy is concentrated at a rate many times faster than the rate of restoration of equilibrium). Given that we observe an extremely large number of stars, we conclude that this creation process over such a long time frame cannot occur for all stars, starting from a common moment (at a moment when the whole astronomical world was missing). This creation process with such a long time also cannot start for each star individually and regardless of the total amount of energy (which is shared). The "age" of the universe would then be infinitely greater... and the distribution of astronomical bodies would be a random and unstable process. (p484 corrected)

"Therefore, we will again conclude that this amount of energy presented as matter distributed in the astronomical world is available in advance in less than 1s, that is, it is a simultaneous amount of the Universe. How can such a large amount of energy remain unbalanced, when the maximum quantity h·fmax of the e/m fluctuation corresponds to the short time of 1s? This is the logical question

that properly directs research on the structure of the astronomical world (not of matter)". (p484)

Image: Spherical-Closed-Universe-Concept-mod-txt

Description:

A dark sphere representing the universe contains many bright spots and shapes that we imagine are galaxies and between them there are masses of gases that are illuminated. Below is the note: No astronomical body is the center of the world. The whole nature exists on a surface. The material world as a whole has no astronomical bodies as a center. The space is free for astronomical bodies only on the curved surface of a fantastic sphere.

126. The shared energy that is concentrated in matter and at the same time offered as disembodied space. The microscopic process (2)

With the following considerations we construct the simplest calculations that will connect space as a geometric and static phenomenon 1) to a total amount of energy and 2) to the radius of a volume proportional to a missing amount of energy and an equivalent mass.

“As long as the electromagnetic radiation propagates unobstructed and in the free space, the energy is in quantity hf and the (almost) maximum speed c is introduced for the calculations. When the formulas describe mass, then the energy hf is not transmitted at the maximum speed c and in addition there is a centripetal movement and force as it is shown by the constant G”. (p474) According to the ratio Mpl/M = c/v where -v=M·c/Mpl = √(G·M/λ) and after introducing the minimum and maximum limits we have established that the constant G as well as inertia come from a process of slowing down to the maximum speed of gathering the shared energy. A powerful force of rebalancing was revealed behind each energy disturbance.

“The accumulated amount of matter is an abnormal situation where the energy of the free space is not transmitted synchronously, unimpeded, and smoothly. But the structural elements are thus preserved and are not obliterated” and bodies are formed. (p474) This finding is explained by the next consideration.

“There is also a maximum delay in time that an amount of energy can be compensated. (...) Obviously, the process of restoring equilibrium can be delayed by a multiple of 1s or is following always by a delay that remains constant (compared to a rate at which energy is decentralized or reduced). The space is the

amount of energy in equilibrium, but in the regions of the astronomical world the energy equilibrium has not returned and is constantly returning with some delay. The world of astronomical bodies is spatial areas of maximum delay in restoring equilibrium". (p485) The following considerations recall and interpret the dynamic relationship between structural elements and space as shared energy.

"Recall: We have concluded that two fundamental phenomena occur at a high rate: The reduction of the total amount of energy and the return to the original amount. These two phenomena of reduction and restoration occur simultaneously because the total amount of energy remains constant. The two phenomena of motion from opposite directions occur in a process where energy changes to return to equilibrium. If the shared energy was rapidly reduced (without the balance returning), then the free space would shrink rapidly and the amount of matter would increase rapidly. If the energy returned at a rapid rate, then the free space would increase rapidly and the amount of matter would rapidly decrease. We estimate that the amounts of matter where are concentrated in the astronomical space are areas where shared energy is delayed to return to equilibrium". (p500-1) The following thoughts continue the previous ones to better understand the dynamic relationship between structural elements and space with the sense of rate in their relationship (which is wave manner). Proportions and equations in energy transfer are introduced.

"The conservation of matter and the conservation of free space" (Heading 28.8. 413) "The structural elements are conserved by the reduction in total energy and by an energy flow that compensates for this reduction. Therefore, if the energy were reduced without the total energy returning to its equilibrium, then the free space would be reduced while the density of the material / astronomical world would increase. (...) Conversely, if the reduced energy were compensated, without again being decreased, then the free space would increase, while the

density of the astronomical world would be diminished. If the energy were returned at a slower pace, then the free space would grow at a slower pace and the density of matter would decrease at a slower pace. If the energy were returned at a rapid pace, then the free space would grow at a fast pace and the density of matter would decrease rapidly". (p413)

"If the amount of energy, which is concentrated in the unit of time, is greater than the amount which is decentralized, then the concentrated energy will logically increase. If, on the contrary, the amount of energy which is concentrated in the unit of time is less than the amount of energy which is decentralized, then the concentrated energy will be reduced. If the amount of energy, which returns, is equal, then a constant amount of energy will be maintained, which remains as a static state of spatial energy. The energy can be an invariably concentrated or decentralized quantity or be compensated. If a quantity of energy is decentralized as a wave, it is a phenomenon that is related to an outer direction and this phenomenon fits into the category of the so-called electromagnetic waves. If the amount of energy returns and is concentrated, this is a field of an opposite (internal) direction. The two opposing wave motion effects are inseparably involved in a process where energy changes to return to equilibrium, and the material carriers (particles) and ultimately the structure of matter are formed by such a process". (p413)

"We can still deduce that the equivalent mass of energy which the space itself transfers in a wave manner has a corresponding mass of two opposite directions: It is the equivalent mass / inertia resulting from the energy of the decentralized waves (i.e., electromagnetic mass) and the mass resulting from the energy of the concentrated waves (i.e., gravitational mass). However, only in the case of concentrated waves we observe the accumulation of energy in a shorter radius. While at the same time the radial motion of the waves is interrupted, as when the

waves of the sea reach the boundary of the coast. We began describing the gravitational field as concentrated waves and we achieved to move literally with childish thought so deep into the microcosm! (...) The energy changes at the highest frequencies are momentarily presented as carriers for matter in the tiniest space. The rest of the energy of the Universe, which does not relatively fluctuate, is for the material things the finite space, acting as gravity for their whole and separately for each". (p416-417)

The average energy value E0 = M0 · c^2 = 1.802582 ×10^-12J corresponds to the average frequency f0 = 1.802582 ×10^-12J / h = 2.720444 ×10^21 Hz. Waves at rates of fluctuation around the mean frequency f0≈10^21 Hz are decentered and meet oppositely directed waves (in the direction of concentration) at rates of fluctuation around f0↑ ≈10^21 Hz. The former we call electromagnetic (and have the characteristic of expansion), while the latter we detect as a gravitational field (and have the characteristic of contraction). "The two rates of fluctuation (decentralization and concentration of energy) are a phenomenon of energy imbalance and restoration". (p426)

Small amounts of energy are held in deviation from the mean energy value of ≈1.802582 ×10^-12J within the structure of matter due to delay, which occurs at perturbation rates close to the mean value (≈10^21 Hz). Because the time to restore the energy balance (from the concentric direction) is longer than the period of the disturbance waves which have a decentralized direction (as we have calculated according to t = E·tmin / Emin = h·f / Pmax). Thus the shared amount of energy is dynamically degraded and isolated within the structural elements (and exists as space), while elementary quantities of energy hf in short time intervals are available to interact with each other. The increased delay in restoring energy balance (of space) for fractions of a second is necessary for balance in the structure of matter. But so elementary quantities of energy gathered to restore balance do

not immediately restore it. Elementary quantities of energy return in a direction of decentration (electrons and e/m fields) and can be released and transported anisotropically in one direction and associated at slightly lower rates with other quantities of energy or particles.

“Structural elements are maintained and have their mass and radius by energy that they remove from the common quantity and constantly restore it. From the beginning, the structural elements have their mass and radius because they draw energy from the common quantity where appears as their space and a corresponding length of space is binded and adapted to the structure of matter”. (p418) This abbreviated statement clarifies the dynamic relationship between structural elements and space. It is extremely important because it shows us how to calculate space as a geometric phenomenon in proportion to an amount of energy. Our starting point will be the geometric characteristics and energy amounts we have calculated for the structural elements.

Image: slow-motion-txt

Description: A moving GIF image. Water rises like a column in slow motion and then descends. There remain two drops of water, falling in slow motion and waves are spread around the disturbance center. Below is marked: key-concepts (hashtags) of nature: disturbance of balance and restoring balance / particles and waves, matter and space / core and periphery, surplus and reduction.

* Note

This explanation for the conservation of matter is consistent with the original thought, that building blocks involve reductions in the shared amount of energy, and that what happens by matter makes use of the loss of energy from the shared amount.

127. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Power and energy of nature from its simultaneous Totality

“The energy, which nature can give per unit of time, is a relatively little quantity. It is a little quantity, in the sense of a quantity for a short period of time. However, a multiple amount of energy is offered at the same time (but not in this extremely short period of time). Multiple energy at the same time implies increased intensity and power”. (p432-3) *(Emax/Emin = Tmax/Tmin and h·fmin / Tmin = h·fmax / Tmax = P where Tmin ≈ 0.135120 ×10^-42 sec).

“This amount of energy can be multiple (many times N) for the same time, and this feature (of power) is offered by the free space with its radius as a stored and shared amount of energy” (p433)

“This phenomenon of instantaneous energy decrease (maximum fluctuation and amount of energy per unit of time) explains the phenomenon of having many structural elements in the Universe. The creation of the Universe in many minimum moments at the same time (and not in a single time sequence) as we originally thought of a complete Universe in a maximum period is explained by the high speed and rapid rate of total energy returning to equilibrium. That is, the total energy has not sufficient time to reduced and any reduction is counterbalance and transferred extremely fast. These are energy changes that occur at the shortest possible intervals, and the total energy thus returns quickly to its constant amount (and as shown at a synchronized rate of fluctuation in each individual atom of matter). It is an incredible "deception" of nature (wiliness) so as to be evolving and creative, and with the advantage of having control over energy at all times, while the Universe remains complete and at the same time absents (for things that have a short and occasional existence in the missing world)! (p476-7)

“We would compare the phenomenon of preserving matter to a barrier that prevents rushing waters from entering a region and diverting them to certain other directions or to any controlled flow phenomenon, which is made with switches that turn off fast and in a somewhat synchronized manner”. (p428)

“According to the interpretation of space and structural elements as fluctuations of a shared quantity, the shared quantity of energy is a total and decentralized quantity. Its decentralization is related to the restorative force of equilibrium* which is extremely strong from its simultaneous whole. The energy is distributed without being able to concentrate and that is why it is balanced. But it seems that its total amount is extremely large for the sizes of the material world and large subdivisions of the total amount are not connected at the same time with each other. This means that the distribution of energy is affected by time and its subsets have weak forces with each other and with these weak forces they separate and exist as separate areas of concentration. The distribution of energy is affected by the difference in time, all its subsets do not have the same direct effect on each other and the disturbed balance creates local concentrations. This means that the equilibrium of the total energy amount needs movement and time”. (p489) “The time of counterbalance at a long distance is not short" is the heading 29.4 of the treatise”. *A reminder: (Fmax = 1.210586 ×10^44N, Fmin = 2.210216 ×10^-42N, F0 = 16.35743N and F(re-max)= 4.4499407 ×10^22N for the disturbance F(dis) ≈16.3574N according to Fre = E/λpl = Epl /λ).

“The greater the amount of matter that is concentrated, the greater the amount of energy that is missing in the unit of time and space, and the greater the amount that is transferred from the shared energy so that an increased lack of energy is balanced”. (p490) This means that a volume of space with a longer radius accompanies the concentrated amount of matter as a gravitational field.

“The increased mass of astronomical bodies is related to the repetition of the process by which the average values of the structural elements are maintained. The total amount of energy is presented multiplied and distributed by a maximum of time”. (p507-8)

“The phenomenon of concentration is a process of returning to equilibrium with increased delay for a multiple amount of energy that is really missing and appears as matter. Equilibrium occurs in a fraction of a second as we have explained, but at the same time with a maximum delay that is the same and constant from the be ginning. Thus, together with the conservation of the total amount of energy, the conservation of the missing amount of energy is achieved, that is, the conservation of the material world. However, the restoration of balance continues unabated and it is most clearly seen as a rotation of the amount of matter where is concentrated in the free space and around their imaginary axis, as a field of gravity, even as a loss of energy”. (p489-490) But in relation to moving bodies that measure time by movements between them and the distances between them, the energy that is simultaneously missing appears on the contrary as space (absent and dynamic) and is found limited in matter. The "loss" of energy that we perceive is a return to the shared quantity that we do not perceive, as we have said!

If we think of global space as a shared quantity of energy that is relatively lacking to structural elements, then the radius of global space is associated with a maximum time span in which the total energy is available and distributed beyond the short time that structural elements interact between them. “Instead of all matter being concentrated as a single body and in the center of the Universe, the opposite happens: The total energy is decentralized and the quantities of matter are generated away from the center toward the periphery of the Universe”. (p411)

In future posts we will introduce these rational descriptions into simple calculations and see in numbers that they are confirmed.

Image: Power-energy2

Description:

Power and energy - work. Examples of their difference in physics. A mug with a small amount of water spilled quickly. A bottle containing a larger amount of water but water runs slower. The mug provides more water for a given period of time, but the total amount of water delivered will be less than the bottle. The proportion is that the mug has more power, but lower energy. Below: Two human figures lift the same weight at a different time. The work is the same of both, but the first one lifts the weight a little slower. Work = force x displacement. Power = force x speed

128-2. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Triumph of rationalism in cosmology!

“We have said and we will always remind the reader: The Universe of the largest time period (within which the Universe is complete in all possible ways) is absent relatively, but it is involved in material developments as a whole. The Complete Universe participates in the proceedings as a total amount of energy, which occurs in the form of the finite and isotropic space (...) For this reason, the limits of the maximum possible distance are proportional to the maximum time period. The Complete Universe participates in the proceedings as a total amount of energy of a maximum period of time, and the maximum time period is in proportion to the total amount of energy, as well as to the length limits of the free space”. (p168)

“these are fundamental relations which predetermine the number of the structural elements that can be created in the unit of time (since the structural elements correspond to the decreases and fluctuations of the common energy). The Universe is completed in a maximum period and with its total energy (which appears as a free space)”. (p168)

“The limits of a maximum period and a total amount of energy are associated with the minimum limits in time, length and amount of energy. Thus, they predetermine even the properties of the material carriers (structural elements). That is why the number of atoms which are present in the entire space is not irrelevant either to the limit of the maximum distance of the free space or to the age of the Universe (that is, the maximum time Tuni in which the Universe has all its energy)”.* (p168)

“The total amount of energy is presented to the bodies as the amount that is missing for a maximum period of time and this maximum period of time corresponds to a maximum amount of matter”. (p489) “The total mass of the Universe cannot be presented as a single body”. (p390)

Free space is an amount of energy as it would be distributed without concentrating matter. Since this amount of energy is present in matter and in concentrated quantities, we can assume that the total amount of matter is as much as would be distributed as free space. Conversely, free space is the totality of matter that would exist as a single body. Because this total amount of matter cannot exist as a single body, the total amount of matter is shared and there are many separate concentrations. (...) The total amount of matter is presented as decentralized and distributed as a shared amount of energy that takes the form of a global space and at the same time is presented concentrated in separate bodies and at separate time intervals”. (p491-2)

“For the longest time, the complete Universe with the total amount of energy is not presented as a body and is absent as space”. (p485)

“The total amount of energy that is relatively missing is a multiple of the minimum amounts that is compensated and maintained in the building blocks. The total time in which the total amount of energy is returned to equilibrium is the total time in which the total amount of energy has reduced. The total amount of energy would be reduced to a minimum amount in a maximum of time”. (p511)

“Space is not just a distribution of energy of a total quantity in equilibrium. At the same time it is a total amount of energy that is relatively missing and this amount is presented in matter with the delay in restoring the balance”. (p489)

“The maximum time at the same time is a total delay in restoring the energy balance for the bodies. The phenomenon of concentration is a process of returning to equilibrium with increased delay for a multiple amount of energy that is really missing and appears as matter. (...) Thus, together with the conservation of the total amount of energy, the conservation of the missing amount of energy is achieved, that is, the conservation of the material world”. (p489-490)

“The description of the evolution of the universe according to the Big Bang Theory is inverted from the description of the Universe as a universal space and energy carrier for the structural elements. Phenomena and states described in the first moments of the universe should rather be sought in the structural elements and in astronomical phenomena as the initial moments of the infrastructure of the material world”. (p512)

Image: 7541-20tqxi-128colors-txt

Description: Head with irony: Deform of water ... (and so we'll understand better!). Two neighboring whirlpools in a area of water.

Note: Some cosmologists have noticed since many decades before the end of the 20th century some coincidences, such as that for the age of the Universe in calculations based on the period of the electron and in astronomical quantities that are around numbers raised to the same power in their exponent (such as 10^40 and 10^80). These coincidences were known from the beginning in the rational development of this new cosmological theory and were always within the investigative thought of its author.

129-3. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Astronomical masses and the maximum equilibration delay...

As we have explained “the total amount of energy is not presented as a body and is absent as space” (p485) (...) “But at the same time this distribution which in time seems to be matter is the distribution of an amount of energy that has always been in equilibrium (over a maximum period of time). That is why space is never lacking. The total amount of matter is presented as decentralized and distributed as a shared amount of energy that takes the form of a global space and at the same time is presented concentrated in separate bodies and at separate time intervals”. (p492)

Along with the rational explanation of space as a phenomenon of decentralization of the shared quantity in direction of concentrated matter, we are looking for how to introduce these dynamic relations between matter and space into the known formulas of physics. So as to ascertain whether space and matter have such a dynamic relation in calculations according to the known magnitudes of the physical forces and the astronomical world, as they have been measured and observed. In such a search, we shall find yet another useful equation by combining or substituting the terms in the simple equations we have already used:

“We have thoroughly investigated this amazing equation of the three universal constant (h·c/G)=Mpl^2, while we have in advance an explanation about the structural elements as fluctuations of the balanced total amount of energy, which appears as a free space. We have estimated the lower and upper limits for the change of energy and speed and we have ascertained ourselves how much they are correspond to sizes that have been measured and calculated for the structure of matter. How does this mass / inertia quantity – according to the universal con-

stants - arise from the dynamic space? How does it relate to the time and space boundaries that surround the astronomical world? Given this equation we have found an amount of mass that is not the total amount for entire the world. It is a maximum quantity per second, according to our respective units of measurement.

But if we think rationally and inquisitively, from this above equation lacks a frequency (next to the constant h) which would give a result for a multiple of energy or a corresponding mass. Therefore, this simple equation can be broadened and reveals more about natural processes if we introduce the maximum frequency we have calculated:

(h·fpl^2 ·c / G) = 1,63059 ×10^71 kg^2/s^2 → √× = 4,038056 ×10^35 kg/s.

This is about the mass of stars which have a radius ~1sec light (~3 ×10^8m)".* (p478)

The equation √(h·fpl^2 ·c / G) is valuable for the interpretation of the astronomical world, even if it does not give an actual amount of concentrated matter, and this will be seen from a little investigation with such a limit for the astronomical world. We will denote this amount of astronomical mass √(h·fpl^2 ·c / G)= 4.038056 ×10^35 kg/s "M1s", that is, abbreviated as the mass of a radius of 1 second of light. From the beginning when we introduced the minimum and maximum limits to inertia and dependent quantities according to the limit of Mpl=√(h·c/G) we had the first indications of changes in opposite directions within the structure of matter. Mean values rescued extremes and encouraged the interpretation, avoiding unrealistic conclusions. An important question has remained and its answer is pending. We will search in calculations for the relationship of this astronomical quantity of mass which it has with all the other quantities that we have calculated so far. But before we start these calculations, it is now imperative to answer a question, which perhaps should have been expressed by the previous considerations about the maximum limit of inertia Mpl=√(h·c/G). We need an explanation for the inertia Mpl=√(h·c/G) which until now we have calcu-

lated as an upper limit, temporarily leaving out of the investigation the bodies of our visible world.

If you haven't realized it yet, the principle of special relativity is already fused into any mathematical calculation has fixed and insurmountable upper and lower bounds. Whoever has introduced minimum and maximum limits to the natural numbers, even as a child, and if has determined a step of change of the lower limit to the upper limit and the upper limit to the lower limit, then that mind has unified a multitude of smallest numbers with a multitude of the biggest numbers! We have introduced these limits according to known measurements of physical phenomena (with the physical constants π, c, G, h, k, ±e as the core) and **have unified the world of the shortest delays (i.e. the microcosm) with the world of the longest of slow delays (ie the macrocosm)**. Physicists in their own nomenclature of phenomena and theories call it "unification of quantum physics with the theory of general relativity".

The introduction of minimum and maximum limits on the changes of all physical phenomena (and not only the upper limit on the velocity of bodies) is a complete solution and the easiest to learn. Moreover, this solution is the most creative, because functions are imposed between the dependent quantities, and the functions give an unimaginable variety of results and mathematical relationships. Give schoolchildren the simple equations and functions as here defined, and you will be amazed at the coincidences and results of their calculations. Interested readers please read the posts carefully and you will be compensated for your time. Your questions will be answered and you will be assured to the highest degree with your own mind, since the calculations and physics you see are for intermediate to lower education level students and few measurements of the most obvious phenomena have been used. For this reason and more, the leading professors have lost a pristine area of rational inquiry, held society back many decades

in matters of cosmology, let imagination strangle logic, while an entire encyclopedia on the complete universe as a space of energy oscillations... they would have written!

* Note: For comparison, remember the radius and mass of the Sun: Radius 6.96 ×10^8 m and mass 1.99 ×10^30 kg.

Image: Grand_star-forming_region_R136_in_NGC_2070

Description: An impressive photo from an area of space. A picture of R136 in its stellar complex, near the center of the 30 Doradus Nebula by Hubble Space Telescope. One of the largest stars in the universe, R136A1 is at a distance of ~ 160,000 light -years from Earth and has a mass of 170 to 230 greater than the Sun and volume more than 80000 times (from a radius over 40 times larger than the Sun)

130-4. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. The average speed and maximum balancing delay...

The existence of stars reveals amounts of energy and mass that do not seem to have anything to do with the inertial limit Mpl=√(h·c/G). But the structure of an atom was explained by wave motions and its characteristics were easily calculated with this upper limit. When a quantity of matter is concentrated then the energy of free space does not seem to be transported at the highest speed, unhindered, uniformly and in sync, as we have said and logically, an increased delay in restoring balance explains this situation. "As long as the energy is balanced in a minimum time tmin per minimum quantity, its change occurs by radiation and by oscillations according to the power conservation relations: P = h · fmin / tmin = h · fmax / tmax" as we have explained and the speed is always the maximum c. According to the ratio Emin / Tmin = Epl / sec the energy returns to equilibrium as soon as possible, but it is refuted by the presence of the astronomical bodies. Of course, we have seen that an extremely subtle decrease in the maximum speed c is associated with a corresponding amount of inertia (according to Mpl / M = c / V => M = -V·Mpl /c => -V = c M / Mpl = √(G ·M/λm). This extremely fine deceleration and energy changes at extremely short times that "approach" zero explain the structure of matter and give the variety of the microcosm. Therefore, we need another relation that will give an increased delay in restoring the energy balance and as we have prepared, it will be associated with a low rate of deceleration.

When the elementary quantity of energy h·1HZ is not compensated in the minimum time Tmin (=0.135120 ×10^-42 sec) then the speed is not the maximum c. The minimum time Tmin of an energy fluctuation corresponds to a wavelength λmin ≈10^-34 and then λmin / Tmin = c as well as √(h·fmin / Mmin) = c.

· We have calculated an average time interval (1/f0=T0=3.675870 ×10^-22 s) and an average velocity V0=1.101998 ×10^-13 m/s. These average values to the upper and lower bounds give a ratio of 2.720445 ×10^21, as we have seen. So when the minimum quantity of energy h·1HZ is compensated by an average delay of 10^-22 s then the average quantity of energy E0=M0·c^2=h·f0 = 1.802583 ×10^-12 J which is more 10 ^21 times it will be compensated by a multiple delay which is more 10^21 times than the time Tmin (ie it is an average time of 3.675870 ×10^-22 s).

· If an average delay of 3.6758700 ×10^-22 s (i.e. Tmin ·10^21 times increased ≈10^-22 s) occurs in the change of the minimum quantity of energy h·1HZ then the delay for the average quantity of energy 10^ -12 J will be: 10^-22 s × 10^21 times more ≈1sec.

· The speed that the elementary length λmin gives with the average delay time is λmin/10^-22 s = V0 i.e. it is the average speed V0 and not the maximum c.

· The marginal quantity of energy Epl (=49.038293 ×10^8 J) is 10^21 times more than the average quantity E0 (=1.802583 ×10^-12 J). The delay to compensate for this maximum quantity of energy will reach 1sec × 10^21 times more. Conversely, if an quantity of energy Epl takes ≈10^21 s to compensate, then it will reach the average quantity E0 in so much long time of ≈10^21 s. Then, the compensation rate from the average quantity of energy E0 to the minimum quantity of energy Emin=h·1HZ will be accelerated, ie in less than 1s.

The elementary quantity of energy h·1HZ may have a delay in its change and this is not compensated by the maximum speed c. So we see with rational thoughts and logical conclusions that the delay time increases exponentially for the quantity of energy which is more than the average value E0=1.802583

×10^-12 J with a delay of the average value (T0, according to the minimum and the maximum limits) or with the corresponding mean speed V0. We see as simply as it could be said, that this time can reach 10^21 times longer than 1sec.

The conclusion we were looking for: Therefore, **the quantity of energy [according to the scale limits Emax = h·fpl = 4.903827 ×10^9 J - Emin = h·1Hz = 6.62606 ×10^-34J] can slow down or on the contrary, to accumulate for such a long period of time and the time margins for particles and matter exist to form bodies of extremely increased mass**, reaching the astronomical limit √(h·fpl^2 ·c / G)= 4.038056 × 10^35 kg for a radius of 1sec of light. We will see the margins in simple calculations in the next publication and also the equation √(h·fpl^2 ·c / G) for astronomical mass in relation to the average velocity.

Image: motion_in_alternate_direction

In the image: position, time, speed, acceleration, deceleration and direction

The chart and questions below (https://scripts.mit.edu) will help us understand the difference between the concepts of position, time, velocity, acceleration and deceleration. These are fundamental characteristics of motion and should be imagined as oscillating (as in a Simple Harmonic Oscillation)*

Looking at the position-time graph above, determine the following at each of the eight numbered times:

A.) Is the position of the system positive or negative?

B.) Is the velocity of the system positive or negative?

C.) Is the acceleration of the system positive or negative?

D.) Is the object speeding up or slowing down?

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* Note: Simple Harmonic Motion refers to a certain type of oscillatory or wave-like motion that describes the behavior of many physical phenomena: a pendu-

lum, a weight attached to a spring, low-amplitude waves in air (sound), in water, on the ground, the electromagnetic field of the "vibration" of light, a guitar string, alternating electric current, etc.

131-5. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. The average speed, the maximum balancing delay and relationships with mass limits

The boundary values of physical processes (as shown in the tables below) dynamically unite and separate space from matter. They come out in agreement with the physical constants c,G,h,k and give results again the same constant values. If we introduce sines, angles and imaginary numbers into the calculations, then it will take time and number of pages that we no longer have available, nor the necessary mathematical preparation. We will not forget that the values of the quantities have a negative sign because they refer to forces and velocities of the shared energy and not to bodies. Natural phenomena in the material world begin by energy changes in a shared quantity, which is relatively inactive for our own geometric dimensions and almost non-existent.

When we take the quantities we calculated as minimum, maximum and average value, then from the function between them they will produce certain proportions. Here the quantities are with the units of measurement of the fundamental phenomena and the result of a proportion corresponds to another phenomenon and is not just a quantity. So if the limits are correct (as we have equated them with the physical constants), then a multitude of proportions (always according to the measurement units of each phenomenon) will give a correct result. If the limits were wrong, then only by chance would a correct result be obtained from the proportions of the sizes between them. The minimum and maximum limits and average values we have calculated are those that match the structure of matter and the properties of universal space together. They have been checked by calculations and the cosmological theory is published with the most certain conclusions and the least imagination. If the boundaries were wrong, then the interpretation could not have been developed to such a large extent and indeed accord-

ing to rational descriptions of natural processes. Descriptions and explanations were not easy to derive from simple formulas and calculations, unless the correct explanation had first been formulated in accordance with observations and with the rules of logic and consistency in the use of language.

The fundamental characteristics of motion (position, time, velocity, rate of change of velocity, and direction) fluctuate at the highest rates of nature, as has been seen since the beginning of the theory of structural elements as oscillations of energy in a balanced and shared quantity, which presented as space. Precisely because natural processes ground the universe at extremely high rates, the processes are simple and easily repeatable. Because in the microcosm and fundamental processes there are no mediating long distances, slow times, slow speeds at a distance, all angles at random times, and the mediating of an infinite number of particles, which would make calculations of the constant features of the world impossible. Into this impossibility have fallen those modern researchers who try to explain the whole of nature and the application of physical laws by the meeting and interaction of particles! But those who still philosophize with their vocabulary limited to the word "motion" or "change" without further defining the characteristics that give different form and new properties to motion, have probably missed many episodes... from the evolution of physics. Their explanations of the laws of nature are primitive, do not promote research, and lead to contradictions and logical questions that cannot be answered.

An important observation on the results of these proportions with the limit values: Even if the phenomena occur with the completely opposite values, that is, if the minimum limits are maximum and vice versa and if our description of some increase in the invisible phenomena is a decrease or vice versa, then again the same quantities and the same results are repeated, as can be seen from the sample calculations. Note also, that the limits on some fundamental phenomena

such as especially the velocity V and the rate of change of 'a' are starting values, other times they are termination or completion values in physical processes, and these limiting values are held constant or equilibrated to a mean value, which correspond to certain fundamental phenomena.

The relationship that gives an increased delay in restoring the energy balance and is associated with a low rate of deceleration has been seen after calculations with an average speed and an average time interval for the compensation of the minimum energy Emin=h·1Hz. "If the maximum speed decreases uniformly at a minimum rate and the decrease is associated with a delay to the time of processes within the structure of matter and the restoration of energy balance, then the minimum rate is a constant of nature (-auni), as is the maximum speed c". (p487) The equation √(h·fpl^2 ·c / G)= 4.038056 ×10^35 kg/s gives a maximum amount of astronomical mass M1s for a space radius of 1ls, but we will prefer an equivalent equation, which gives the same astronomical amount in apparent agreement with the concept of delay and reduced speed. This equation comes from the average energy (E0=h·f0) per period of average value (T0=1/f0) and with the average speed in the denominator:

h·f0^2 / V0^2 = √(h·fpl^2 ·c / G) = 4.038056 ×10^35 kg/s = Mmin·fpl / Tpl = h·fpl^2 / c^2.

In terms of force and mass apply:

F0·R(1ls)^2 / G·Mpl = Fpl·λ0^2 / G·Mpl = F(re-max)·λ0^2 / G·M0 = 4.038056 ×10^35 kg.

We see that the rational explanation for increasing mass as a function of decreasing velocity in the shared amount of space continues to be confirmed by consistent equations and by calculations with the limits on the changes as we set from the beginning. We have succeeded in calculating astronomical quantities using certain physical quantities of the microcosm. The explanation of structural elements as oscillations of energy in a balanced and shared quantity, presented

as space, will continue to expand beyond all expectation and be confirmed until it is accepted by all researchers!

Limit values of functions on physical processes. The numbers without unnecessary words:

-> ≈1sec is the shortest time of compensation or concentration for the maximum quantity of Epl at the maximum speed c and ≈10^21 s is the time at the average speed V0.

-> ≈10^-22 s is the compensation time for the average quantity E0 with the maximum speed c and ≈1sec is the time with the average speed V0.

-> Mpl= √(h·c/G) is the inertia for the energy Epl, M0=√(Mpl·Mmin) is the inertia for the energy E0.

-> Now the equation Mpl·V0^2 = Emin = h·1Hz = 6.62606 ×10^-34 J (gives the minimum energy and not Mpl·c^2 = Emax).

-> λpl / T0 = λmax / Tmax · N times = λpl / 10^-22 s = λmax / 10^21 s = V0.

Images: min-max-mean-values-tables-vertical (or cut into two images)

Image contains tables of function boundary values and equations. Functions with marginal values in physical processes that introduce physical laws.

-> F(re-max) · c = 1.334058 ×10^31 J/s

-> Fmax · c = 3.629245 ×10^52 J/s (h·fpl^2 = E1s)

-> F0 · c = 49.03829 ×10^8 J/s (h·fpl=Epl)

-> Fmin · c = 6.62606 ×10^-34 J/s (h·1Hz=Emin)

-> F(re-max) · V0 = 49.03825 ×10^8 J/s (Epl/s)

-> Fmax · V0 = 1.334058 ×10^31 J/s

-> F0 · V0 = 1.802582 ×10^-12 J/s (E0/s)

-> F(re-max) / c = 1.484341 ×10^14 kg/s

-> Fmax / c = 4.038081 ×10^35 kg/s (M1s=√(h·fpl^2 ·c / G)

-> F0 / c = 5.456243 ×10^-8 kg/s (Mpl=√(h·c/G)

-> Fmin / c = 7.372488 ×10^-51 kg/s (Mmin/s)

-> F(re-max) / V0 = 4.038067 ×10^35 kg/s (M1s)

-> Fmax / V0 = 1.098537 ×10^57 kg/s (M1s·2.72 ×10^21)

-> F0 / V0 = 1.484341 ×10^14 kg/s

-> Fmin / V0 = 2.005645 ×10^-29 kg/s (M0/s)

-> F(re-max) · Vmin = 1.802582 ×10^-12 J/s (E0/s)

-> Fmax · Vmin = 49.03841 ×10^8 J/s (Epl/s)

-> F0 · Vmin = 6.62606 ×10^-34 J/s (Emin/s)

->

-> F(re-max) / Vmin = 1.098534 ×10^57 kg/s

->

-> F0 / Vmin = 4.038070 ×10^35 kg/s (M1s)

-> Fmin / Vmin = 5.456245 ×10^-8 kg/s (Mpl=√(h·c/G)

-> Fmin /√(h·c/G) = F0 / M1s = Vmin

-> Fmin / M0 = F(re-max) / M1s = V0

-> Fmin / Mmin = F0 /√(h·c/G) = Fmax / M1s = c

-> h·fpl^2 / Fmax = h·f0^2 / F0 = h·1Hz^2 / Fmin = c

-> h·f0^2 / F(re-max) = h·f0 / F0·s = h·1Hz^2 / F(re-min) = V0

-> h·f0^2 /V0 = h·f0 /Vmin·s = h·fpl·f0 /c = F(re-max)

-> h·f0^2 /Vmin = h·fpl /Vmin·s = h·fpl^2 /c = Fmax

-> h·f0^2 /c = h·f0 /V0·s = h·fpl^2 /amax = h·1Hz^2 /Vmin = F0

-> h·1Hz^2 /c = h·f0^2 /amax = Fmin

-> -amin = Vmin / Tmax = V0^2 / λmax = 4.050803 ×10^-35 m/s^2

-> -amax = c / Tmin = c^2 / λmin = 2.218711 ×10^51 m/s^2

-> a0 = √(-amin · -amax) = 2.997924 ×10^8 m/s...

Reminder:

Fpl = h·fpl^2 /c = h /c·Tpl^2 = h·fpl/c·Tpl = Epl / λpl ≈ 1.210586 ×10^44 N

Fpl = c^2·c^2 /G = G·Mpl^2/λpl^2 ≈ 1.210586 ×10^44 N

Fmin = h·fmin^2 /c = h /c·Tmax^2 = Emin / λmax

F0 = √(Fmin·Fpl) = E0/λ0 = √267.56565 = 16.35743 N

Fpl = 1.210586 ×10^44N, Fmin = 2.210216 ×10^-42N, F0 = 16.35743N

F(re-max)= 4.4499407 ×10^22N για διατάραξη F(dis) ≈16.3574N σύμφωνα με Fre = E/λpl = Epl /λ.

F(re-min)= Fmin·F(re-max)/F0 = F0/2.720445 ×10^21 = 6.012771 ×10^-21N

Epl / E0 = √(Fpl / F0) = √(F0 / Fmin) = E0 / Emin = 2.720445 ×10^21

* In the tables: F is the force, F0 is the average magnitude force (from the minimum Fmin and the maximum magnitude Fmax), F(re-max) is the maximum restoring force for a given magnitude perturbation (average F0 value), c is the known speed ~ of light, V0 the average value of velocity (from the minimum Vmin value and with the maximum of c), h is the known constant 6.62606·10^-34 J·s, capital M is mass and capital E the energy, f is the frequency calculated according to the maximum speed c, -a is the rate of change of speed from initial speed

the maximum c. The '0' indicates the mean or equilibrium value. The subscript 'pl' means a minimum min or a maximum value max according to $\sqrt{(h \cdot c/G)}$

132-6. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. (Unified theory)

The equation √(h·fpl^2 ·c / G) gives a multiple amount of matter than the limit of Mpl=√(h·c/G) for a 1s radius of light and the multiple mass is for an astronomical amount. The equation √(h·fpl^2 ·c / G) coincides with the equations h·fpl^2 / c^2 = h·f0^2 / V0^2 = Mmin·fpl / Tpl and as we said is valuable for the interpretation of the astronomical world, even if it does not give an actual amount of concentrated matter. As the maximum inertia Mpl=√(h·c/G) was not calculated as a particle, but as a maximum inertia limit corresponding to a maximum reduction of the maximum speed c according to the initial relation Mpl/M = c/v. We saw the introduction of the maximum limit along with the minimum limit and how useful it proved to be in explaining the structure of matter. It revealed to us many high-speed phenomena and extremely subtle processes. The astronomical amount of mass M(1ls) for a radius of 1 s of light is introduced into the cosmological interpretation not as an exact prediction, but as a quantitative mass limit for astronomical space. It comes out theoretically consistent and would probably be a black hole, because the gravitational acceleration g=G·M/R^2 is equal to the speed of light. But it comes close to the amount for bodies that have been called "stars" and for astronomical nuclei, which could be the center of gravity for a large number of stars.

The limit of Mpl=√(h·c/G) has given us many conclusions on the structure of an atom. The astronomical limit of the multiple mass M(1ls) as a multiple result maintains a mathematical connection with the first limit and so calculations for astronomical magnitudes will have an obvious connection to tiny sizes! The astronomical limit of multiple mass M(1ls) is a tracer of mathematical relations that gives proportions for the distribution of matter on the largest scale of space, and these proportions will have a mathematical connection with the magnitudes of the

subatomic world and in agreement with the universal constants (h,c,G), since the boundaries and sizes in the microcosm were determined in agreement with these universal constants. First calculations show that this M(1ls) astronomical limit can easily be matched (adapted) to interpret the distribution of astronomical bodies in the whole of a universal space.

As with the inertial limit Mpl=√(h·c/G) so now, the astronomical mass limit of 4.038056 ×10^35 kg will be investigated as a function of a quantity of energy missing from the shared quantity which it is related to the gravitational field and to the conservation of a volume of free space. We have thought of global space as a shared quantity of energy where is relatively lacking towards structural elements. The radius of global space is associated with a maximum time span over which the total energy is available and distributed, beyond the short time span that the structural elements interact with each other. The distribution of matter in larger concentrations within universal space (and distances) is determined by the radius of the volume left as free space, because this volume is associated with the amount of energy where is missing and appears concentrated in astronomical bodies with a ratio again of radius body and mass.

Some more conclusions that are drawn or have been drawn and confirmed:

"The total amount of energy is presented to the bodies as the amount that is missing for a maximum period of time and this maximum period of time corresponds to a maximum amount of matter". (p489)

"A maximum amount of energy can be missing per unit of time (...) and this amount is presented with a quantity of concentrated matter. Concentration is the phenomenon of the gravitational field, from the transfer of the common quantity and in this way a limit is introduced in the increase of the quantity of matter where it is concentrated. The greater the amount of matter that is concentrated, the

greater the amount of energy that is missing in the unit of time and space, and the greater the amount that is transferred from the shared energy so that an increased lack of energy is balanced. The structure of matter resists and is maintained until the intensity of the gravitational field exceeds a value and then the concentration of matter begins to limit. According to this interpretation, the maximum amount of energy that can be missing from shared energy and concentrated in matter is close to an amount of mass for a radius that would have a body of length 1 sec of light (≈ ^35kg). And as we have explained, total mass does not appear all at once in one body and is divided over time, into many astronomical nuclei. (p490)

"The time of 1s for the total amount of energy corresponds to a quantity of matter 1e42 times than the marginal inertia Mpl ≈5e-8kg, ie it approaches the amount of 1e35kg matter which is theoretically an astronomical body of maximum mass. This astronomical amount of matter represents the total amount of energy with all its power and not elementary (in the minimum time tmin)". (p485)

The time of 1 s is in nature an interaction for a volume of space with a radius as long as the length traveled at maximum speed c, i.e. 2.997924 ×10^8 m. For comparison in meters, the average Earth-Moon distance is ≈3.84 ×10^8 m and corresponds to a time interval of ≈1.28 s. This length seems extremely long for our life on the surface of the planet, but it is short enough for the energy processes of nature.

Image: stars-animation-gif-txt2

A moving gif image, where it looks like a journey through space. The header writes: The theoretical limit (of an astronomical mass). Just below: √(h·fpl^2 ·c / G) = h·fpl^2 / c^2 = h·f0^2 / V0^2 = Mmin·fpl / Tpl. Under the moving image and less emphasized: f0: 2.720445·10^21 Hz | V0: 1.101998·10^-13 m/s | fpl: 7.40080·10^42 Hz | Tpl: 0.135120·10^-42 s | Mmin: 0.73725·10^-50 kg | √h·c/G: 5.456243·10^-8 kg

133-7. The distribution of the shared amount of energy in astronomical nuclei. Proportions of the limiting astronomical mass M(1ls)

> The volume of a sphere if radius is 1 second for the speed of light, ie with radius R = 2.997924 ×10^8 m :

4π·R^3 / 3 → 12.56637 × 26.944 ×10^24 /3 = 3.38588273 ×10^26 / 3 = 1.12862757 ×10^26 m^3

The average density of the imaginary mass M(1ls) for the radius volume of the 1 s:

M(1ls) / Vol(1ls) = 3.577846 ×10^9 kg/m^3

> What is the surface area of the volume of spherical space if its radius is 1 second for the speed of light, ie = 2.997924 ×10^8 m :

S(1ls) = 4π·R^2 = 1.12941 ×10^18 m^2

> Ratio of the imaginary stellar mass M(1ls) to the mass Mpl :

[√(h·fpl^2 ·c / G)] / [√(h·c/G)] = 4.038056 ×10^35 kg/s / 5.456221 ×10^-8 kg = 7.4008 ×10^42 Hz = fpl

> Within the relation (h·fpl^2 ·c / G) is contained the relation (h·c/G) = Mpl^2

Therefore: h·fpl^2 ·c / G = Mpl^2 ·fpl^2

Because h·fpl = Epl = Mpl·c^2 →

M(1ls)^2 = (h·fpl^2 ·c / G) = Mpl ·c^2 ·fpl ·c / G = kg^2 / sec^2 →

This relation contains an important equality:

Mpl ·fpl = c^2 ·c / G = h·fpl^2 ·c / G = M(1ls)

We observe useful relations for the maximum inertia √(h·c/G) without the con-

stant h :

Mpl = c^2 ·c / G ·fpl = c^2 ·c ·Tpl / G = c^2 ·λpl / G = √(h·c/G)

The relation √(h·fpl^2·c / G) which gives the maximum astronomical mass M(1ls) coincides with the following relations:

M(1ls) = √(h·fpl^2 c / G) = Mpl·fpl = c^2·c / G = Mmin·fpl^2 = 4.038056 ×10^35 kg/s

> The relation √(G·M/R) gives the following centripetal velocity for a mass of 4.038056 ×10^35 kg and for a radius length of 1sec of light:

√(G·M/R) = c

> In a first investigation of the astronomical magnitudes according to the Hubble rate ≈70.1 km/s / Mpc "it was sought if there is any relation of the velocities V(H) = c·D / Dmax = D / T(H) = V= √(G·M/R).Thus we tentatively calculated a total mass from the relation M(H) = c^2·R(H) / G when paradoxically we entered the maximum extension distance D(H) as the radius R and according to the limit of the maximum speed of expansion of space" (Lines from this presentation). We asked how much mass we will find when in the equation M=V^2·R/G we insert the maximum velocity V = c for the length of the maximum Hubble extension D(H) = c / H = 1.319768 ×10^26 m as a radius and then we calculated:

M(H) = c^2·R(H) / G = (2.997924 ×10^8)^2 · 1.319768 ×10^26 /G = 1.777666 ×10^53 kg.

We have seen that this total amount of mass M(H) = c^2·R(H) / G is proportional to the maximum inertia √(h·c/G)=Mpl.

If 1.777666 ×10^53 kg correspond to the time T(H) = 4.402282 ×10^17 s

how many kg do they account for the minimum time Tpl = 0.13512 ×10^-42 s?

M = 5.456221 ×10^-8 kg = Mpl = √(h·c/G).

{√(h·c/G)·T(H)} / Tpl = M(H).

> The total amount of mass M(H) = c^2·R(H) / G through these equations* gives the universal time T(H) as a ratio to the astronomical mass M(1ls)= √(h·fpl^2 ·c / G):

1.777666 ×10^53 kg / 4.038056 ×10^35 kg/s = 4.402282 ×10^17 s.

* We saw that:

If R(uni) = c·T(uni) and R(uni)/T(uni)= c then M(uni) = c^2 ·R(uni) / G = c^2 ·c·T (uni) /G.

But the time interval Tuni for matter means distance and delay in movement and in the application of force. We will look for the mathematical explanation, that global space does not have a continuous and straight radius and the total amount of energy does not exist concentrated as a single body, in this entanglement of time.

Next, we will see the multiple mass M(1ls)=4.038056 ×10^35 kg/s in proportion to the magnitudes we have calculated for global space (mainly mass, distance, time) according to the Hubble constant. We don't forget that distance in space is delay time (1s for every length 2.997924 ×10^8 m). We proceed with a simplified view of global space as a three-dimensional volume whose boundaries remain dynamically unchanged. We derive mathematical ratios which will be needed in calculations for the relationship of space with the weakening of the gravitational field and with the time delay.

Image: track-sector-cluster-space/sphere_wireframe__bl

A geometric sphere on a dark background is divided into meridians and parallel circles to the vertical axis. Next to it is a data storage disk with the sectors that are subdivided...

134-8. The distribution of the shared amount of energy in astronomical nuclei. Ratios of the M(1ls) mass to the total Muni amount according to the Hubble constant

We have seen in the previous two parts of the cosmological interpretation how an astronomical mass [M(1ls)= √(h·fpl^2 ·c / G) = h·fpl^2 / c^2] can be mathematically related to the mass quantities that we have calculated as a limit for the structure of matter. We have seen how an astronomical mass limit comes into agreement with the atomic mass limits √(Mmin·Mpl) and achieved a mathematical unification of the microcosm with the macrocosm. We achieved unification by explaining the concentration of matter with an increased delay in the process of rebalancing the shared amount of energy. In the first attempt we calculated a long delay (up to ≈10^21 s), when the delay in the microscopic process that occurs in waves at extremely high rates is less than a second (≈ -10^22 s)! Now here we will see how an astronomical mass such as the limiting M(1ls) can be mathematically related to the total amount of energy and equivalent mass of the entire Universe. Thus the mathematical unification of the microcosm will be extended for the entire world and laws will be seen that regulate the distribution of matter in global space. We have avoided the fallacy of local experience, which shows countless astronomical bodies and groups without realizing how they are regulated and balanced, and we have simplified cosmological research incredibly. We have avoided being misled by the method of deriving conclusions from general principles. Below in the calculations we observe some proportions in imaginary conditions, so that the proportions are preserved and not affected by the approach of other bodies.

> The total amount of mass M(H)= c^2·R(H) / G is also proportional to the astronomical mass M(1ls)= √(h·fpl^2 ·c / G).

1.777666 ×10^53 kg / 4.038056 ×10^35 kg/s = 4.402282 ×10^17 s

The result “is the universal time T(H) according to the Hubble constant for a maximum expansion radius R(H). Here in this case the number comes out as the ratio of the total mass to a maximum stellar mass". According to these ratios, the universal Tuni time is associated with the distribution of a total amount of mass into smaller amounts.

The maximum time T(H)= D(1Mpc) / V(H) = Dmax / Vmax is many times longer than the time 1s of the radius for an astronomical mass M(1ls). Accordingly the astronomical radius R(H) as the maximum extension distance Dmax = c / H is proportional to the radius R(1ls) of the mass M(1ls): [1.319768 ×10^26 m / 2.997924 ×10^8 m =4.40228 ×10^17 ie as many masses M(H) / M(1ls)].

In this simplified scenario: The total mass M(H) amounts to 10^17 astronomical nuclei M(1ls) with a maximum mass of 10^35 kg for each. The marginal mass M(1ls) : 4.038056 ×10^35 kg ×T(H) gives the total mass Muni = 1.777666 ×10^53 kg (where T(H)=4.402282 ×10^17s) → M(1ls)= 1.777666 ×10^53 kg /Tuni = 4.038056 ×10^35 kg

> If the astronomical mass of 4.038056 ×10^35 kg is repeated 4.402282 ×10^17 times, then the ratio √G·M(H)/R(H) = c holds:

√G·M/R = √(G × 1.777666 ×10^53 / 1.319770 ×10^26 m) = c. [As with mass M(1ls)]

> If a radius length of 2.997924 ×10^8 m scales for every 1sec, then over time T(H)=4.402282 ×10^17 sec scales a total length:

2.997924 ×10^8 × 4.402282 ×10^17 = 1.319770 ×10^26 m = R(H) [The maximum extension distance Dmax].

> The universal mass Muni = c^2·Runi / G from this simple relationship can be seen more revealing, when we introduce the universal time Tuni as in the following equations:

M(1ls) ·T(H) = c · R(1ls) · R(H) / G = M(H) · s

where R(1ls) = 2.997924 ×10^8 m and R(H) = 1.319770 ×10^26 m

→ Some other relationships:

M(1ls) = c · R(1ls) · R(H) / G ·T(H) = c ·V(H) · R(H) / G

* Where R(1ls) / T(H) = 6.8099 ×10^-10 m/s and c / T(H) = 6.8099 ×10^-10 m/s^2

> The imaginary mass M(1ls)=√(h·fpl^2 ·c / G) is a mass multiple of the marginal mass Mpl=√(h·c/G) i.e.:

√(h·fpl^2 ·c / G) = Mpl ·fpl (and also h·f0^2 / V0^2 = c^2 ·c / G).

If the total Muni mass is a multiple of M(1ls), i.e. Muni = M(1ls) ·T(H) then (with an example from calculations with the constant H) we see the following relations:

c^2 ·R(H) / M(1ls) ·T(H) = G/sec = m^2·m / kg ·s^2 ·s = c^3 / M(1ls) →

R(H) = G ·M(1ls) ·T(H) / c · R(1ls) = G ·M(1ls) / c ·V(H) = 1.319770 ×10^26 m [where V(H) the velocity per meter in the relation R(1ls) / T(H)]→

V(H) = G ·M(1ls) / R(H) · c = 6.8099 ×10^-10 m/s

T(H) = c · R(1ls) · R(H) / G ·M(1ls) = 4.402289 ×10^17 s

M(H) = c · R(1ls) · R(H) / G = 1.777669 ×10^53 kg ·s

> If "If the total length of radius of the Universe is allocated in many spheres and free space is maintained by processes that are repeated (due of total quantity of energy which is not presented or converted entire in matter only in a minimum moment)" (p480) then a number of radii will give a corresponding number of spherical volumes. Number of radii of the total radius (of an extended space

R(H)=c/H = 1.319768 ×10^26 m according to the constant H) of radii proportional to the length of 1s of light:

1.319770 ×10^26 m / 2.997924 ×10^8 m = 4.402280 ×10^17.

> What is the total volume of global space (in three dimensions) and what is the average mass density if the total radius is (d=c/H = 1.319768 ×10^26 m):

Vuni = 4π ·R^3 / 3 = 9.63 ×10^78 m^3.

Muni / Vuni = 1.84615 ×10^-26 kg/m^3.

> The number of spherical volumes for these radii R(H)=1.319770 ×10^26 m and R(1ls)=2.997924 ×10^8 m:

9.63 ×10^78 m^3 / 1.12862757 ×10^26 m^3 = 8.5324869 ×10^52.

While the radii have a ratio:

R(H) / R(1ls) = 4.402280 ×10^17.

That is, the same ratio as the masses: M(H) / M(1ls) = 4.402282 ×10^17.

> Ratio of their average density:

{M(1ls) / Vo(1ls)} / {Muni / Vuni}= 1.938004 ×10^35. As can be seen from this theoretical simplification, as the volume of space increases the mass density thins and the thinning is 10^35 more for the total volume.

> What is the surface area of the volume of spherical space if the radius is (d = c / H = 1.319768 ×10^26 m):

Suni = 4π·R^2 = 2.1888 ×10^53 m^2

> The ratio of the total area of global space to the area of space of 1 light second radius:

Suni / S(1ls) = 1.938003 ×10^35. The space for 10^17 concentrations of matter with a maximum mass of 10^35 kg in each region (tangentially, if they existed simultaneously, in the same sec or consecutively) does not sound small.

> The average mass density of the compared volumes gives the same ratio as the surfaces.

{M(1ls) / Vo(1ls)} / {Muni / Vuni} = Suni / S(1ls)

"Space is maintained and extended in the presence of astronomical nuclei and does not disappear. We have to look for the process that an astronomical nucleus does not have all its mass in a length of 1s of light and that it is not necessarily a single astronomical body with the mass of a black hole. Its amount of mass may be close to what a black hole would be, but part of that quantity extends far beyond the radius of 1 light sec and is represented by more astronomical bodies, nebulae, and the environment of a free space. According to astronomical observations, an astronomical nucleus of 10^35 / ls appears to extend into an astronomical volume where its radius may exceed 100,000 light-years". (p481-2)

"If an amount of matter greater than 10^30 kg is concentrated in a radius of 1ls then the corresponding energy of this amount is missing from the global amount presented as balanced space”. (p481)

Images: multiverse-dynamic-sphery-txt2

Fantastic spheres that are deformed and contain galaxies and all together are in a dark oval shape

An excerpt to notification:

The distribution of the shared amount of energy in astronomical nuclei. Ratios of the M(1ls) mass to the total Muni amount according to the Hubble constant

In the two previous parts of the cosmological interpretation we saw how an astronomical mass [M (1ls) = √ (h·fpl^2 ·c / g) = h·fpl^2 / c^2] may be mathematically linked to the quantities of mass we have calculated as a limit for the structure of matter. We have seen how an astronomical mass limit comes in agreement with the limits of the atomic mass √(Mmin · Mpl) and we have achieved a mathematical integration of the microcosm with the macrocosm. We have achieved this integration by explaining the concentration of matter with an increased delay in the process that the shared amount of energy returns to balance. With the first attempt we calculated a long delay (up to ≈10^21 s), when the delay in the tiny process that occurs at extremely high rates is less than a second (≈ -10^22 s)! Now here we will see how an astronomical mass such as marginal M(1ls) can be mathematically linked to the total amount of energy and equivalent mass of the entire universe. Thus, the mathematical integration of the microcosm will extend to the whole world and will appear laws that regulate the distribution of matter in the world.

End of notification

135-9. The distribution of the shared amount of energy in astronomical nuclei. The volume of free space that accounts for each amount of concentrated matter

When the first pages of this cosmological theory were written here 1.5 years ago they did not contain physics formulas and calculations. A rational interpretation of the phenomena began in opposition to the prevailing view of research by chance observations, with every scientific tool, with experiments and with measurements and... wherever our endless experience takes us. We explained that the study of nature is simplified when we think about the common characteristics of things and their most stable traits over time. We started with the most general concepts and thought about nature as a whole and as a part, and then the first conclusions began to emerge. We have said that the answers to many questions of cosmology cannot be given by knowledge of physics and astronomy alone, and that some of the general concepts of thought must be connected with the rules of common sense. From the first we said, that a multitude of natural phenomena are explained by a few general notions of the common language, such as "full Whole," "part," "balanced quantity," "disturbance of equilibrium," and "restoration of equilibrium". Many people - and not only professors - have believed that general concepts are not revelatory and creative when they are confined within thought. With this view they do not expect to learn anything when they think without observing things.

In this particular theory, the identification of space with a common or shared quantity did not appeal to some readers or did not seem compatible with scientific thought, while those in their thinking used more obscure concepts, outside common experience and with absurd consequences. So then, when the first pages of this cosmological theory were written, many would not have expected that the cosmological theory could be extended so far and that we would transfer the

analogies and oppositions that we had rationally thought into formulas of physics. We used to think about the structure of matter as oscillations of energy in a shared quantity. When minimum and maximum limits were introduced for the change in the fundamental phenomena, then we were able to calculate the change of one phenomenon to the change of the others (as simplified functions) according to defined limits. Limits have been derived from a few measurements, used in calculations as physical constants (c,G,h,π) for a multitude of phenomena. Now we have succeeded in calculating the sizes of the astronomical world in a simplified manner and in relation to the sizes, which we know of microscopic processes and of the structure of matter.

There are still some answers to questions created by the interpretation, and one of the most necessary answers we will now learn. From the beginning of the explanation of the structural elements as oscillations of energy in a shared quantity we have clarified, that the gravitational field is a result of the wave transfer of energy of the shared quantity to matter and bodies. Thus we have also explained free space as a shared phenomenon that is dynamically maintained just as structural elements are dynamically maintained. We have understood and explained that the distance between astronomical bodies is related to their mass, because a corresponding amount of energy is missing from the shared quantity and this missing amount creates space as a weakened gravitational field around the bodies ($g=G\cdot M/R^2$). It remains to see this also in calculations and to find the relationship that gives this ratio between a radius -R of free space and the mass M concentrated in a body. The previous calculations for the distribution of matter within global space according to the mass limits we have determined and according to the Hubble constant will serve as a first approximation to calculate this ratio between the volume of space and the mass of astronomical bodies.

The mass M from the concentration of energy in a body is proportional to a ra-

dius -R of a volume of space through which the energy is transferred. If the mass were to increase without limit, then more energy of the shared quantity would be transferred and the radius -R of space would also increase without limit. Then the total energy of nature would be unlimited. Then, the total space could depend on a single body, the one with the largest mass (since a volume of space of longer radius -R would correspond to that body). Consequently all other concentrations of matter would then have their own radius R of concentration adjusted to the rest of the volume of space, as this would have been determined to a high degree by the body with the greatest mass.

The concentration of matter within a limited volume of space (of limited radius length) is impossible to scale to a radius -R of a volume that exceeds the maximum radius -Rmax (which scales to the total mass, as if the total energy were concentrated in a single body). We infer the limit of a maximum amount of matter that can be concentrated in a body from another physical phenomenon, which is the dependence of space as a shared quantity on the concentration of matter in a body. Even if the radius R of the concentrated matter is smaller, then again the volume of space where is bound is determined by the mass of the body and the intensity (g) of the gravitational field at a maximum radius -R, where it receives the average value of acceleration a0. The initial conclusion, that the total amount of energy or matter cannot be concentrated as a single body, nor can space be completely empty without any body, remains from these more detailed descriptions of the dynamic relationship of matter to space. **The concentration of matter is the removal and decentralization of energy from the shared quantity**, while space is the shared quantity that constantly returns to balance, compensating for areas where energy is depleted or concentrated.

The mass M from the concentration of energy in a body is proportional to a radius -R of a volume of space through which the energy is bound and transferred.

We will call this radius -R the "radius of concentration or binding radius of space". Mass has a limit to increase and radius -R also has a limit to increase, as does the volume (Vol) of space of that radius. The concentration radius in the relation -R^2 = G·M/g has a length limit and the mass M of the concentrated matter also. For -Rmax^2 the body mass must also be Mmax and the g-field strength must have a lower value up to the -Rmax radius distance limit. What is the maximum concentration radius -R and what is the maximum mass M that can be attributed to a body? The limit to the increase in mass of a concentrated amount of matter is also determined by the intension g=G·M/R^2 of the body's gravitational field (which increases as the amount of concentrated matter is increased). However, the radius -R of the volume from which a quantity of energy is drawn to concentrate in a body is not infinite in length either, and the total energy is shared by many bodies. Next time we will see in numbers this ratio between volume of space with mass of concentrated matter and the simple formula that gives the ratio.

Image: space-concentration/supernova 1987A-res-txt

Description: The impression of an artist for the 1987A supernova, showing the asymmetric material launch. Source: L.Calcada/ESO (from https://www.nature.com). It looks like a bright core in the space with the countless stars and around the core there is a bright ring. To the left and right is again formed a light ring in large size, because the area is illuminated.

136-10. The distribution of the shared amount of energy in the global space. Ratio of gravitational field intensity, radius and volume of potential space

"The greater the amount of matter that is concentrated, the greater the amount of energy that is missing in the unit of time and space, and the greater the amount that is transferred from the shared energy so that an increased lack of energy is balanced". (p490)

"The mass and radius of bodies are related to a shared amount of energy and to the radius of a space where energy is concentrated". (p488) The radius of the gravitational field around each astronomical body can be likened to its own free space, and we can say that global space contains many spaces of smaller radius.

"We have explained that space as a periphery and free is maintained simultaneously with the concentration of an energy in the bodies. The mass presented in bodies has a bound amount of energy that is missing from the common amount and the shared energy is presented as a space of a certain radius. Thus we understand that in celestial bodies of greater mass more energy is bound and correspondingly more energy is missing from the common amount. Therefore, the gravitational field of a larger body mass attenuates (and has the lowest acceleration rate g) at the periphery of a longer radius from its center. We can calculate a minimum acceleration rate for all bodies, of any mass since this rate is at the maximum radius of each field. The same rate of acceleration will always exist at a certain length of a radius. The radius will be different for bodies of different mass". (p491)

The longest radius (-R) that defines in the shared energy the volume of a free space (because the energy is concentrated in the bodies) is the radius where the

intensity g=G·M/R^2 of the gravitational field approaches the mean value a0 =1.101998 ×10^-13 m/s /s [V0 = √(Vpl·c)=√(G·M0/λ0)=M0·c/Mpl]. This ratio between gravitational field strength, radius, volume, and energy or mass is shown to hold for microscopic radius lengths and at astronomical radii, and is the first approximation with the simplest calculation.

<•> The radius of the space bound and concentrated according to -R=√(G·M/a0) indicatively for certain masses is:

• The space binding radius -R for a proton mass Mp= 1.672621 ×10^-27 kg: 1.006358 ×10^-12 m [Length within the limits of an atom]

• The -R radius for 100 times the mass of the proton M= 1.672621 ×10^-25 kg is: 1.006358 ×10^-11 m [Close to the rBohr radius ≈5.3^-11m for a compound atom]

• The radius -R for the mean mass M0= √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg is: 1.101998 ×10^-13 m (The mean length)

• The -R radius for the Earth mass 5.973 ×10^24 kg is: 6.013816 ×10^13 m [For comparison, the average distance between Earth and the Sun is 1.4959787 ×10^11 m]

• The -R radius for the Moon's mass 7.347 ×10^22 kg: 6.669740 ×10^12 m

• The -R radius for the Sun's mass Msun = 1.99 ×10^30 kg: 3.471206 ×10^16 m (≈1pc ≈ 3.669ly) [For comparison, the heliopause is said to start after ≈^13m]

• The radius -R for the imaginary mass M(1ls) = 4.038056 ×10^35 kg/s from the relation √(h·fpl^2·c/G): 1.563652 ×10^19 m (≈ 506.74pc ≈ 0.51kpc ≈ 1652.78ly)

• The -R radius for an imaginary (galactic) mass ≈2.27^42 kg : 3.707377 ×10^22 m = 1 201 470.512pc = 1.201 470 Mpc = 3 918 596.074ly

• The radius -R for the total mass of a maximum time period Muni = 1.777666 ×10^53 kg (For Tuni= D/V(H) = Dmax/c =4.402282 ×10^17 s) is: 1.037478

×10^28 m ≈ 1.0966 ×10^12ly

These results approach the root of mass (√M) because the a0 approaches the quantity 6.6725 ×10^-11 of the constant G and R=√(G·M/G)=√M. We have found a ratio for calculating a volume of free space accompanying bodies. We found this valuable ratio from the strength of the gravitational field and its relationship to an amount of concentrated energy in mass, introducing yet another space radius. This radius -R of outer space is always proportional to an average gravitational field strength (which we have calculated as the average rate of change V0/s in physical processes). The ratio of the volume of free space to an amount of concentrated energy in mass matches the structure of the astronomical world and the dimensions of global space, satisfactorily if we appreciate the simplicity of the calculation.

The next effort is to match the calculations more closely to observations of the radius and volume of galaxies, which contain a large number of astronomical bodies. Galaxies and their clusters have sizes that lie between imaginary masses of 4.038 ×10^35 kg and 2.27^42 kg and corresponding extents for smaller radii from 1.564 ×10^19 m (or 1652.78ly) to 3.707 ×10^22 m (or 3 918 596.074ly). The distances between the galaxies are even greater and this we have just explained with the relation of the dynamic space which as a shared quantity of energy gathers and maintains the astronomical bodies.

Image: space-concentration-2 (b2811e70-5227-11ea-81eb-e18bf4077555_800_420)

Description: It looks at the forefront, a dark astronomical body in space and on the contrary a wide bright vortex, which here we imagine is the gravitational field visible in the eyes.

137-11. The distribution of the shared amount of energy in the global space. The volume of space where is reserved for each amount of concentrated matter

We will calculate the volume of space with the above/previous samples of radius -R and the missing average mass density. Before, we remind you:

"We have observed the close relation that the radius of a celestial body has with its mass with the following formula:

F = G √M1 √M1 / R^2 = G M1 / R^2 = g" (p492)

"If the radius R in the denominator of the relation g=G·M/R^2 is the square root of the mass M, (that is R = √M) and in the numerator the constant G = 6.6725 ×10^-11, then the following rate of change is obtained: ±a = 6.6725 ×10^-11 m/s^2". (p487)

"The radius R at the denominator of the relation g=G·M/R^2 must be the square root of the mass M, ie R = √M to get the minimum rate of change ±amin = 6.6725 ×10^-11 m/s^2 keeping the constant G = 6.6725 ×10^-11 on the numerator. In other words, if the square root of the mass gave the radius R then the relation g=GM/R^2 would give g = G". (p492)

"If the mass M is reduced to a square root, then the radius R^2 must be reduced to R^2/√M so that the same acceleration g comes out from the relation GM/R^2" (p492)

The radius R of a body (according to R^2=G·M/g) is related to the radius of the volume surrounding the body as free space according to -R^2 = G·M/a0. When in the relationship M=g·R^2/G the intensity g or the radius R is increased, then the

mass is also increased. The ratio G and the rate a0 in the relation -M=a0·R^2/G are constants. The binding radius -R is always larger when more (equivalent) mass is missing from the shared amount of energy. The mean rate a0 gives a radius of concentration -R that conserves a volume of space, and this radius cannot grow indefinitely, since then the global space would also be infinite (hence the shared amount of energy). The binding radius -R (of the shared energy) is set for each body by the limit of an average value a0 in the gravitational field strength, and the average value a0 is the same for each body. All bodies have the same average value a0 in their gravitational field strength at a certain distance, and the radius of bounded space decreases or increases according to this limiting value. Thus the universal space "knows" and is divided into radii of volumes in proportion to each quantity of matter where is concentrated.

The binding or concentration radius -R^2 = G·M/a0 introduces the mean value limit for g of the bodies' gravitational field. The radius R of bodies may increase as a function of their mass (according to R^2=G·M/g), but their mass is a function of the bounding radius of space -R^2 = G·M/ a0 = g·R^2/a0. And **the radius of the bodies, as well as their mass have a function of the binding radius -R because from the volume of space of this radius -R the shared amount of energy is concentrated and bodies have their mass**. The bounding radius of space -R is proportional to the mass M of bodies. A larger volume of surrounding space corresponds to bodies of greater mass. In regions with many bodies and overall greater mass also a greater volume of surrounding space is accounted for and many volumes coalesce. So finally again we can conclude, that the global space corresponds to a total amount of matter that is concentrated in bodies and the space itself is subdivided into smaller volumes. "But as it turns out, the free space is always an area of a minimal gravitational field and therefore its large radius is associated with a large amount of mass that is not concentrated in space as a body". (p491) The limit of the same average value a0 in the gravitational field strength is the origin of free space and the points where universal space bal-

ances (and is truly free).

When the mass of bodies M=g·R^2/G increases in function of their own radius R then the mass -M=a0·R^2/G which is theoretically proportional to the volume of the binding radius -R of space increases and the binding radius -R also extends at least up to the limit value that g=a0. The -R radius of space expands because the shared amount of energy or equivalent mass proportional to the volume of space is distributed uniformly/isotropically (certain mass per unit volume). Equal amounts of energy h·f are proportional to equal volumes of equal radius -R. Energy is removed and decentralized isotropically, proportionally and simultaneously from all directions to gather as a body. Consequently, more energy from an ever-larger circumference is decentralized, the radius of space -R expands, and space with its spherical volume is conserved.

* Calculations here are not intended to produce results with the smallest deviation and according to exact measurements. These are the initial calculations and are intended to show whether certain processes in the fundamental phenomena actually occur and whether an explanation we have given is correct or incompatible with what else we know. If the physical processes are confirmed and as their explanation is improved by the application of calculations, then we will think about the result with the most precise targeting. Don't be too quick to dismiss it because of the inaccuracy, which is reasonable and expected.

A few useful notes for readers of this theory:

1 light year (ly) = 9.460730 ×10^15 m = 0.3066 pc = 63241.1 AU.

AU = 1.49597870 ×10^11 m is an Astronomical Unit (the average distance between the center of the Earth and the center of the Sun).

1 parsec ≈ 3.2615 ly (light years) = 3.0857 ×10^16 m = 206266 AU

1 parsec ≈ 1.02925112 ×10^8 sec of light

1 Earth year ≈ 365.25 days ×24hours ×60min ×60sec = 31.5576 ×10^6 sec

"The mass presented in the bodies has bound an amount of energy that is missing from the shared quantity, and the shared energy is presented as a space of a certain radius with an increased gravitational field intensity (g)". (From previous pages 121-2)

100 000 ly = 30660.74 pc = 9.460729 ×10^20 m = 3.15576 ×10^12 light sec

500 000 ly = 153303.7 pc = 4.730365 ×10^21 m = 1.57788 ×10^13 light sec

Volume for radius 500 000 ly: 4.433758 ×10^65 m^3

Volume for radius 100 000 ly: 3.547007 ×10^63 m^3

Image: space-concentration-3-neg-remove-c (Same image in negative b & w)

138-12. Volume of space in proportion to energy density or equivalent mass

Some indicative calculations for the volume of space that is bound and the average mass density missing for energy concentration in bodies according to the above/previous samples of the binding radius -R=√(G·M/a0).

Ratio of radius and volume (V3D=R^3·π·4/3) of space to mass or equivalent energy. The mass of bodies (as concentrated energy) in proportion to the volume of space (as decentralized energy).

Sphere volume (3D) for binding or concentration radius -R0:

1) 1.006358 ×10^-12 m (for the mass of a proton): 4.269193 ×10^-36 m^3

2) 1.101998 ×10^-13 m (of the mean length λ0): 5.605707 ×10^-39 m^3

3) 6.013816 ×10^13 m (for Earth mass): 9.110425 ×10^41 m^3

4) 3.471206 ×10^16 m (for the mass of the Sun): 1.751981 ×10^50 m^3

5) 1.563652 ×10^19 m (for the imaginary mass M(1ls):1.601432 ×10^58 m^3

6) 3.707377 ×10^22 m (for imaginary galaxy mass):2.134462 ×10^68 m^3

7) 1.037478 ×10^28 m (for a total Muni mass): 4.677620 ×10^84 m^3

Average density (in mass) of the bound space:

1) 1.672621 ×10^-26 / 4.269193 ×10^-36 = 3.917885652 ×10^9 kg/m^3 (Extremely dense)

2) 2.0056443 ×10^-29 / 5.605707 ×10^-39 = 3.577861454 ×10^9 kg/m^3

3) 5.973 ×10^24 / 9.110425 ×10^41 = 6.556225 ×10^-18 kg/m^3 (for Earth)

4) 1.99 ×10^30 / 1.751981 ×10^50 = 1.135857 ×10^-20 kg/m^3 (for the Sun)

5) 4.038056 ×10^35 / 1.601432 ×10^58 = 2.521528 ×10^-23 kg/m^3 (Sun

×202 917)

6) 2.27 ×10^42 / 2.134462 ×10^68 = 1.0634996 ×10^-26 kg/m^3

7) 1.777666 ×10^53 / 4.677620 ×10^84 = 3.800364 ×10^-32 kg/m^3 (Extremely thin)

<•> The total mass of 1.777666 ×10^53 kg can give 10^17 matter concentrations of 4.038056 ×10^35 kg.

<•> The total volume 4.677620 ×10^84 m^3 by volume for a radius of 100 000 ly (= 3.547007 ×10^63 m^3): 1.318751 ×10^21 volumes.

<•> The total volume 4.677620 ×10^84 m^3 by volume for a radius of 500 000 ly (= 4.433758 ×10^65 m^3): 1.055 ×10^19 volumes.

* We have chosen to calculate the amount of space energy in mass, because this way is easier to perceive the amount and compare it with the amount of matter that visible bodies have.

* In this simplified scenario: The global space has dimensions consistent with the Hubble expansion constant (70.1 km / sec / Mpc) and the Universe has a corresponding “age” of ≈13.9 billion years with this ratio between space-binding radius, spherical volume, and mass of concentrated matter, and according to the simplest relations of physical phenomena (here chosen after the explanation of the relation of matter to dynamic space).

* We observe that as the mass of the body is greater, also the radius of energy concentration and the volume of space increase and the average energy density of space decreases.

* The average energy density in a tiny volume turns out to be extremely high in these relations. The average energy density in a larger volume of space turns out to be extremely low and approaches the equivalent mass of one electron per cubic meter. The large volume of space with the small average energy density

can concentrate a large amount of mass into a smaller volume and divide into more volumes of concentrated matter. Apparently this is explained because in geometry when "the radius of a perfect sphere is doubled then its volume is eightfold".

* When the radius R in the denominator of the relation g=G·M/R^2 is the square root of the mass M (ie R = √M) or greater than the root of mass (R > √M), then the intensity g of the gravitational field is extremely weak and the average mass density will be extremely small. In the calculations we observe, that the radius must be smaller than the root of the mass (R < √M) and approach a root of the root of mass (R ≤ √√M) so as the intensity g of the gravitational field to be extremely strong and the average mass density near the limit where light does not escape. The radius of astronomical bodies is larger than the root of the root of their mass (R > √√M) and considerably smaller than the root of their mass (R < √M).

* We must not forget that global space contains a large number of concentrated bodies and their distribution dynamically achieves an energy balance over time.

* The rate a0 =1.101998 ×10^-13 m/s /s is an average velocity according to minimum and maximum limits of change for an inertia scale Mpl= √(h·c/G)= 5.45624 ×10^ -8 kg - Mmin= 0.73725 ×10^-50 kg. A delay of ≈3.6758700 ×10^-22 s in the minimum quantity of energy h·1HZ gives a delay time of ≈1s for the average value of energy and corresponding mass M0 = √(Mmin·Mpl) = h·f0 / c^2.

* According to our rational interpretation of matter, space dynamically exists because of the shared energy which is concentrated in bodies. We conclude: When we consider a larger volume of free space we see the effect of a greater lack of energy, which occurs in more concentrations of matter. The global volume of space corresponds to a total lack of energy distributed over a total amount of matter. On the contrary, when we consider a tiny volume of space then the space is almost annihilated and the calculations show a large amount of energy that

cannot be in such a tiny space. (We will think again to confirm).

* We calculate an average energy density for a volume of space of radius -R0 as this energy or mass would be divided by a ratio per unit length according to the relation -R^2 = G·M/a0 which gives a radius of space as a function with the intensity of the gravitational field of a quantity of mass. Therefore, and conversely, we can calculate how much mass is concentrated in a radius, beginning from the amount of mass where is distributed over a corresponding volume of space. For example, a volume of space of 1.751981 ×10^50 m^3 is 1.240548 ×10^23 times the volume of the Sun (which is ≈1.412264 ×10^27 m^3). The average energy density of 1.135857 ×10^-20 kg will be 1.240548 ×10^23 times greater in the smaller volume: 1409.085 kg/m^3. This average density times the volume of 1.412264 ×10^27 m^3 gives the mass of the Sun (1.99 ×10^30 kg). In other words, if a volume of space of 1.751981 ×10^50 m^3 contains an equivalent mass of 1.99 ×10^30 kg (=1.135857 ×10^-20 kg per m^3 cubic meter) and is compressed to radius volume R=6.96 ×10^8 m (which is V=1.412264 ×10^27 m^3), then the energy will have a density of 1409.084987 kg/m^3 (in equivalent mass) and mass 1409.084987 × 1.412264 ×10^27 m^3 = 1.99 ×10^30 kg.

It is not known whether such a ratio of volume of space to mass or equivalent energy has been formulated. Here as you see on FB, this analogy was formulated simply and with examples, after proper preparation, which was based on the rational considerations of explaining space as a shared quantity of energy and for the structure of matter as its fluctuations. Certainly the distribution and concentration of matter in global space with its many astronomical bodies is more difficult to calculate. The calculation will be more accurate when we take into account the distribution of matter on the surface of the volume and not in a spherical shape, as we will see. The interest increases and the explanation will be more revealing when we introduce the time delay in the transfer of energy from such large radii

of space to the astronomical bodies. **The time delay in the process of concentration and decentralization of the shared amount of energy explains the preservation of the astronomical bodies and the ceaseless movement to rebalance without ever arriving at the stillness of a static equilibrium**. Calculations for the mass of the structural elements at microscopic radii give a large amount of mass or corresponding energy, and this is no accident. We have seen that the equilibration time at microscopic lengths is extremely short. Extremely high rates of change and forces are brought down and by a wave process conditions are created for delay... Astronomers and cosmologists have so far tried to convince us that we live in a constantly changing world. They do not miss the opportunity to thrill us with some cases of explosions of astronomical proportions. We here continue against the current (but rationally) to explain how the world constantly returns to its equilibrium and maintains itself by dynamic processes.

Image: table1, 2

Description: The tables contain the volume proportions to the average density of the bound space and the notes as written above.

A few useful notes:

• Globe volume if the radius is 1 second for the speed of light, ie from radius R = 2.997924 × 10^8 m:

4pi · R^3 /3 → 12.56637 × 26.944 × 10^24 /3 = 3.3858273 × 10^26/3 =

1.12862757 × 10^26 m^3

• Area sphere if the radius is 1 second for the speed of light, ie with radius R = 2.997924 × 10^8 m:

4pi · R^2 → 12.56637 × 8.987551 × 10^16 = 1.1294089 × 10^18 m^2

• Ratio 1.12862757 × 10^26 m^3 /1.1294089 × 10^18 m^2 = 10^8 m

• Surface of sphere if radius is 1m: 12.5663706 m^2

• Volume if the radius is 1m: 4.1887902 m^3

• When the radius of a perfect sphere is doubled then its volume eightly.

• The surface area of the sphere is four times the area of its maximum cycle.

139-1. A more recent review on passing theory to calculations of astronomical magnitudes. (Summary from publication 104-3 onwards. Calculations for the limits of the astronomical world began to be made in post 105)

Happy New Year! When I hesitantly decided in March '21 to present the rational interpretation (of the structure of matter as energy fluctuations on a shared quantity that exists as space) on FB, then I had no intention of writing a new book. It was my intention to inform the readers of this interpretation and to show how much simpler the truth is and how much confusion prevails about cosmological issues from the global information storm. Many mistakes and nonsense are repeated out of blind trust in those who have received a relevant qualification and thus the confusion is maintained.

The presentation here has gone beyond the original goal of making the theory read more comprehensibly by more readers and as a summary of an extended treatise. Credibility and logical consistency of thoughts are always the first choice. For this reason, thoughts that are missing from the voluminous treatise and clarifications, which are needed for calculations with more certain results, have been formulated here. Nevertheless, those who seek knowledge and not faith in persons and experts can understand the cosmological theory quite well with preparatory knowledge, which we all acquire in school. This ease of understanding about many physical phenomena tied together within a cosmological theory is a major achievement in itself. Calculations show how carefully we have thought about natural phenomena and their relationships, and how fruitfully (creatively and effectively) interpretation has expanded beyond rational considerations. Here is a brief review of how the interpretation was extended to calculations for the astronomical world and with important conclusions that were missing from the global survey. The rational interpretation on the structure of matter as fluctuations of energy in a shared quantity that exists as space will be better understood with

this review. In subsequent publications the most likely scenarios for the limits of astronomical sizes and without relying on the Hubble "expansion" constant will be formulated.

· The universal physical constants facilitated our calculations and we were able to find the principle of physical laws, which is motion with minimum and maximum limits together with the presence of a balanced quantity, which we perceive statically as space. (Post 122)

· We have unified the world of the shortest delays (i.e. the microcosm) with the world of the slowest delays (i.e. the macrocosm). Physicists in their own nomenclature of phenomena and theories call it "unification of quantum physics with the theory of general relativity". (Presentation 129-3) We do not use the concept of "delay" loosely. As explained and confirmed, physical time (and motion through space) is a property (and general result) of a physical process whereby the entire Universe is absent as space and everything occurs from a time delay, achieved by the structural elements (matter) and their dynamic connection to a shared quantity.

· The global space is interpreted as a balanced amount of energy by the simultaneous presence of the cosmos as a whole. The structural elements (matter) are revealed as energy oscillations of this shared quantity, which remains in balance, and their structure is interpreted by wave and rapid changes. Space has the properties and behavior of a shared amount of energy, and the structural elements are intimately connected to it as pico-bangs within wave phenomena. The Universe interrupted at extremely high rates by the structural elements appears at a larger radius from their structure ($r > e\text{-}11m$) absent as space, while at a smaller radius ($r < e\text{-}13m$) within their structure it appears present as a common core .

· The average amount of energy of ~10^-13 J that we have theoretically calculated matches the energy density of universal space, while the essential particles of an atom have characteristics that are small deviations from the average value. (432 - 433) The average velocity V0=√(G·M0/λ0) = M0·c/Mpl = 1.101998 ×10^-13 m/s is connected to the average values of the other physical changes, which give the mean inertia value (M0 = 2.00564 ×10^-29 kg). The electron (≈10^-31kg) and the proton (≈10^-27kg) are extremely subtle deviations from these average values.

· A force to bring the shared energy back into balance is in the direction of concentrating matter. The restoring force together with an opposing force from the perturbation of the energy balance in nuclear dimensions is weakened (at average values) and around the structural elements it exists as a gravitational field. The attenuation of the nuclear force shows the space to the structural elements and bodies "free" as a capacity of a certain radius.

· The structural elements are maintained and have their radius r ≈^-10m by energy that they extract from the shared quantity and constantly restore it. Thus space is also dynamically and wave is preserved, like the atoms of matter. Conservation of matter is also conservation of free space. The mass presented in the bodies has bound an amount of energy that is missing from the shared quantity, and the shared energy is presented as a space of a certain radius with an increased gravitational field intensity (g). (p491)

The review on the transition to calculations of astronomical quantities is useful for understanding cosmological theory and aiming for revelatory calculations. It will be continued in the next post.

Image: CosmosEduThess-txt

A picture of the dark sky with a few stars with the note: How most people see the sky. Down in a second picture the sky was from the multitude of stars brighter and was written: how it is actually. This second note was deleted with a red X and replaced by the note: How the sky looks after some reinforcement of light coming from the farthest sources (here on our planet through telescopes). A third image was added below with the following note: for those who do not remain in the impression... The procedures and laws that regulate reality do not appear in our eyes.

140-2. The continuation of the review on the passage of rational thought to calculations of astronomical quantities (according to the interpretation of the structure of matter as energy fluctuations of a shared quantity that exists as space)

· A universal process of nature is related to the deceleration of the maximum speed c and we have shown it in the previous publications (according to the relations Mpl / M = c / V and -Vm = M·c/Mpl = √(G·M/λm)= λpl·f). We have calculated an average velocity V0 = √(Vmin·c)= 1.1019978 ×10^-13 m/s. This average velocity V0 corresponds to the average values of the other physical quantities and the average inertia M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg. This average velocity V0 per sec is not far from the rate of increase of astronomical redshift and the gravitational acceleration with masses of one kilogram at a distance of one meter.

· Conversion of Hubble's constant to common metric units and calculations for a rate over short distances revealed a low rate of increase in velocity (a = 6.809946 ×10^-10 m/s^2) linking the constant H to constant of gravity G (and rate a = 6.6725 ×10^-11 m/s^2).

· The Hubble speed per meter: 2.271553 ×10^-18 (m/s) /m = 70.1 km/s / 3.086 ×10^19 km. While according to the rate a of gravity the redshift speed per meter is: 2.225706 ×10^-19 (m/s) /m = 6.868530 km/s / 3.086 ×10^19 km.

· The rate of increase 6.809946 ×10^-10 m/s^2 = 70.1 km/s /t of Mpc. The rate of increase from the gravitational force is 6.6725 ×10^-11 m/s^2 = 6.868530 km/s /t of Mpc.

· The proton has a slightly larger rest mass (≈83.39569 times) than the aver-

age quantity M0≈10^-29 kg. The subtracted velocity -Vp from the maximum velocity c for a proton according to the relation V=M·c/Mpl corresponds exactly to 9.1908416 ×10^-12 m/s. Coincidentally, this velocity as an average rate is close to the average rates of redshift and gravitational acceleration (and is ≈83.4 times higher than the average value of ≈10^-13 m/s).

· The astronomical "expansion" velocity V(H) calculated at microscopic lengths (according to H·D = c·D / Dmax = D / T(H)) approaches close to the minimum velocity limit Vmin (≈10^-34 m /s) for a distance around the average length λ0 ≈ 10^-13 m (it comes out to be about 2.5 ×10^-31 m/s).

· The difference of the Hubble velocity (70.1 km/s per Mpc) from the velocity we calculated according to the gravitational force (6.86853 km/s per Mpc) is not so great if we consider how the Hubble constant was derived and how the gravitational constant was derived.

· A total mass of the universe M(H) calculated according to the Hubble constant (1.777666 ×10^53 kg) is also not significantly different from a total mass (Muni ≈^54 kg) calculated in the same way according to the rate a of the gravitational force as locked to the constant G. The total mass is (and should be) mathematically related to the inertial limit Mpl = √(h·c/G). The Hubble expansion rate is closely related to the rate a (from the gravitational constant G) if not identical to it.

· Simpler calculations with velocities around the mean value (V0=1.1019978 ×10^-13 m/s) give a total time interval and a maximum distance that are close to first guesses with the expansion rate H and gravitational acceleration according to the constant G. The slowest rate -a is the one that would take maximum time to reach the maximum speed c uniformly. Conversely, the maximum speed c would take the maximum time to uniformly reach the minimum value at the slow-

est rate. If the maximum speed c decreases uniformly at the rate of a minimum Vmin = 0.40508 ×10^-34 m/s every second, then the average speed will be V0 = 1.101998×10^-13 m/s in time t = 1s·V0 / Vmin = 2.720445 ×10^21 s. If the maximum velocity c decreases uniformly at the rate of an average velocity -V0(pl) = 1.101998×10^-13 m/s every second, then the velocity will be the minimum Vmin = 0.40508 ×10^- 34 m/s in the time of 2.720445 ×10^21 s. For comparison with the Hubble constant, we found a universal time of 4.402282 ×10^17 s. The maximum time interval calculated at the above rate does not rely on calculations with the constant H and takes into account times and speeds within the structure of matter. These first calculations with average values do not take into account their deviations. (Post 124-2)

· We have not denied the movement of the space itself. We have rejected the movement of space as a body (like a rubber surface). In space there is a fluctuation of radius, but this is a microscopic fluctuation within the structure of matter and not the phenomenon as described for astronomical space. The presence of matter is also associated with wave motion of the shared amount of energy in the direction of concentration and with its nuclear force.

· An oscillation of radius within the microscopic structure of matter around average values and at extremely high rates, 2) a slowing down of the highest speed c (which is incalculably little higher than that of light), and 3) an extremely fine time delay for restoration of energy balance are the beginning of a time delay in the fundamental processes of nature. This fine delay (in rebalancing per elementary quantity h·f is tmin = 0.135120 ×10-42 sec and mean value t0 = 3.675870 ×10^-22 s) gives the time margins for an increased amount of matter at longer distances. A delay in time when the shared amount of energy returns to equilibrium preserves the structural elements and space is also preserved as a dynamic phenomenon, with astronomical distances between bodies and with amounts of

matter concentrated in astronomical bodies. The compensation time for the average amount E0≈1.802583 ×10^-12 J at the maximum speed c is ≈10^-22 s while at the average speed V0 it is ≈1sec. The shortest compensation or concentration time for the maximum amount of Epl ≈ ×10^8 J at the maximum speed c is ≈1sec while the time at the average speed V0 is ≈10^21 s (≈6182 times longer than the TH time) .

· The delay in re-equilibration is multiplied by the number of structural elements and thus the bodies of each shape are formed. The world of astronomical bodies are regions of maximum delay in rebalancing.

· The complete Universe with the total amount of energy does not appear as a body for the longest time and is absent as space.

· "Space is not just a distribution of energy of a total quantity in equilibrium. At the same time it is a total amount of energy that is relatively missing and this amount is presented in matter with the delay in restoring the balance". (p489)

· The maximum period of time is at the same time a total delay in restoring the energy balance for the bodies. The concentration effect is a rebalancing process with increased delay for a multiple amount of energy that is actually missing and appearing as matter.

· The shared amount of energy is a total and decentralized amount. Its decentralization is related to the rebalancing force* that is strong from its simultaneous whole. "The concentration of matter in astronomical quantity is simultaneously the decentralization of shared energy (space) and the limit on increasing the amount of mass is the limit of the maximum amount of decentralized energy". (p500) A maximum amount of energy can be missing from the shared energy and

is concentrated in matter of a body (of astronomical dimensions).

The review of how rational thought passed into calculations of astronomical magnitudes is useful for understanding cosmological theory and aiming for revelatory calculations. This review of a few pages is more than 50% of the solution to whether and how nature has limits and how it is preserved. This review will be completed in the next post.

Image: 3dillusion-london.gif

Description: A moving GIF image. A sphere on a black background is formed by circles that expand and contract ...

141-3. The completion of the review for the theory that prepared us to make calculations of astronomical magnitudes (according to the interpretation of the structure of matter as fluctuations of energy on a shared quantity that exists as space)

· The inertial limit of Mpl=√(h·c/G) gave us many conclusions about the structure of an atom. The equation √(h·fpl^2 ·c / G) gives a multiple of matter. The astronomical limit of the multiple mass M(1ls)≈^35 kg as a multiple result (from the equations √(h·fpl^2 ·c / G) = h·fpl^2 / c^2 = h·f0^2 / V0^2 = Mmin·fpl / Tpl) maintains a mathematical connection with the limit of Mpl=√(h·c/G). So calculations for astronomical magnitudes have an obvious connection to microscopic magnitudes (even if the magnitudes are incorrect). Functions and proportions of values are revealed which give explanations for the distribution of matter in space.

· A quantity of matter thousands of times greater than 10^30 kg (as we calculate for the Sun) is possible and is concentrated in a radius of 1 light sec and the corresponding energy of this quantity is missing from the universal quantity presented balanced as space. A volume of space is reserved for each amount of concentrated matter. That is why it was necessary to calculate a volume of free space proportional to each amount of concentrated matter. The gravitational field strength g is the common characteristic of bodies that can betray a ratio between the mass of an astronomical body and the volume of space.

· The mass M from the concentration of energy in a body is proportional to a radius -R=√(G·M/a0) of a volume of space from which the energy is transferred. "The mass and radius of bodies are inextricably linked to the corresponding energy and radius of space". (p488)

· An astronomical mass limit M(1ls) = √(h·fpl^2 ·c / G) = h·fpl^2 / c^2 comes

out in agreement with the atomic mass limits √(Mmin·Mpl) and we obtained a mathematical unification of the microcosm with the macrocosm. We achieved unification by explaining the concentration of matter with an increased delay in the process of rebalancing the shared amount of energy. In the first attempt we calculated a long delay (up to ≈10^21 s), when the delay in the microscopic process that occurs in waves and at extremely high rates is less than a second (≈ -10^22 s). Microscopic quantities are revealed in connection with astronomical magnitudes, and this connection was missing from cosmology.

· The time of 1 s in nature is an interaction for a volume of space with a radius as long as the length traveled at maximum speed c, i.e. 2.997924 ×10^8 m. The time 1s for the total amount of energy corresponds to an amount of matter 10^42 times the marginal inertia Mpl ≈ 10^-8kg, i.e. it approaches the amount of matter 10^35kg which is theoretically an astronomical body/nucleus of maximum mass.

· Extremely far distances are those where the curvature of free space begins to exceed 1 degree. For example, when we talk about a universe with a maximum distance of ≈10^27m then the far distance of space up to ≈10^24m is only ≈1 degree off the straight line.

· The radius shown within the structural elements of the universe (R < e-10m) is the beginning (or end) of a radius where its maximum edge is at the periphery of the Universe (or vice versa from the periphery to a center). The radius of the Universe is not just a geometric/static length. The radius of the Universe is also a phenomenon analogous to the attenuation of the maximum force, which the shared amount of energy presents as a whole up to a maximum possible attenuation. The calculation of this imaginary radius coincides with a calculation for the attenuation of the nuclear force and for the geometric length of space as a weak gravitational field.

· We have calculated a V3D volume of free space (accompanying bodies) in proportion to an amount of concentrated energy in (body) mass. We calculated the volume by introducing one more radius of the body up to the limiting distance where the gravitational field strength g weakens to the mean value a0 = √(Vpl·c)= √(G·M0/λ0)= M0·c/Mpl = 1.101998 ×10^-13 m/s^2. The relation is: -R=√(G·M/a0).

· The average rate a0 approaches (≈) the quantity 6.6725 ×10^-11 of the constant G and therefore R=√(G·M/G)=√M → R=√(G·M/a0)≈√M. The radius of astronomical bodies is larger than the root of the root of their mass (R > √√M) and considerably smaller than the root of the mass (R < √M). (Under investigation).

· From a first calculation according to limits theoretically derived from fundamental processes and according to physical constants: Galaxies and their clusters have sizes for a volume of space of radius between 1.564 ×10^19 m (or 1653.15 ly = 506.854 pc) up to 3.709 ×10^22 m (or 3 921 289 ly) according to theoretical masses of ≈4.038 ×10^35 kg up to ≈2.273^42 kg. The distances between galaxies are even greater, because of the dynamic way space is created by decentralizing the shared energy to concentrate towards the bodies.

· The total amount of energy does not exist concentrated as a single body. The maximum time Tuni for matter means distance and delay in movement and application of force. Hence the involvement of time explains that "the time for the transfer of the amounts of energy, which are needed to counterbalance the deficiencies and changes that take place somewhere far away, is not short". (p429) "The closest points have priority". (p395) This time delay explains that the astronomical world is spread out and distributed at a distance within universal space and not as a single body.*

What we have concluded is shown by the first calculations, and the first calculations generally match the measurements and confirm the conclusions, which connect a multitude of physical phenomena like a puzzle. Now we are looking exactly for the limits of astronomical space and the total amount of energy and whether the physical constants need corrections and some harmonization in their application. The completion of the cosmological theory for a complete Universe that appears absent as space will be, when we find how much is the total amount of energy for matter to exist in its known structure as lightning energy fluctuations and to be distributed in global space with such astronomical magnitudes as we observe them and with such a structure of the astronomical world.

Image: scenario-p3-Vg-R0 (Table):

Calculation of the (perpendicular) velocity $V_g = \sqrt{(G \cdot M/-R_0)}$ at the binding radius distance ($-R_0$). The radius $-R_0$ determines the volume of space in the shared energy according to $-R_0 = \sqrt{(G \cdot M/a_0)}$

Some selected radius lengths $-R_0$	$V_g = \sqrt{(G \cdot M/-R_0)}$
1) 1.006358 ×10^-12 m ($-R_0$ for the mass of a proton*)	3.330173 ×10^-13 m/s
2) 1.101998 ×10^-13 m ($-R_0$ of average length λ_0)	1.101998 ×10^-13 m/s
3) 6.013816 ×10^13 m = 200599.35 ls ($-R_0$ for the mass of the Earth)	2.574337 m/s
4) 3.471206 ×10^16 m = 3.669067 ly ($-R_0$ for the mass of the Sun)	61.848708 m/s
5) 1.563652 ×10^19 m = 1652.781551 ly ($-R_0$ for the imaginary mass M(1ls)	1312.684652 m/s
6) 3.707377 ×10^22 m = 3 918 700.777 ly ($-R_0$ for imaginary galaxy mass)	63 937.130 m/s = 63.937 km/s
7) 1.037478 ×10^28 m = 1.096615166 ×10^12 ly ($-R_0$ for total mass Muni**)	33812705.83 m/s = 33812.7058 km/s = c/8.866265

Sample: Mass proportional to 1m binding radius: $M = -R \cdot a_0 / G$ = 1.6515516 ×10^-3 kg. Velocity V_g = 3.319635 ×10^-7 m/s

* The relation √(G·M/λ) was applied and investigated for quantities of energy h·f and equivalent inertia according to the scale Mpl= √(h·c/G)= 5.45624 ×10^-8 kg to Mmin= 0.73725 ×10^-50 kg. We infer a velocity -V subtracted from the maximum c (according to Mpl / M = c / V) and the inertia in general M and the mass of particles at this -V velocity corresponds to.

** Muni = 1.777666 ×10^53 kg for Tuni= D/V(H) = Dmax/c = 4.402282 ×10^17 s = (13,949,989,860 earth years)

*** 3.707377 ×10^22 m = 3 ,918 ,700.777 ly = 1.2 Mpc | The constant *H* ≈70.1 km/s / 3.086 ×10^22 m

<•> The result from the known relation V_g =√(G·M/R) for the binding radius of space -R_0=√(G·M/a_0) is not the velocity of the constant *H*, as initially shown for the distance ≈1Mpc. The velocity √(G·M/-R) is extremely large for microscopic radius lengths compared to the velocity of the constant *H*. A relation was sought that would reduce the velocity √(G·M/-R) at small lengths and increases to lengths greater than Mpc in order for this velocity to agree with the *H* constant.

end of the table

Calculation of the (perpendicular) velocity V_g = √(G·M/-R_0) at the binding radius distance (-R_0) 3

The radius -R_0 determines the volume of space in the shared energy according to -R_0=√(G·M/a_0)

Some selected radius lengths -R	V_g = √(G·M/-R_0)
1) 1.006358 ×10^-12 m (-R_0 for the mass of a proton*)	3.330173 ×10^-13 m/s
2) 1.101998 ×10^-13 m (-R_0 average length λ_0)	1.101998 ×10^-13 m/s
3) 6.013816 ×10^13 m = 200599.35 ls (-R_0 for the mass of the Earth)	2.574337 m/s
4) 3.471206 ×10^16 m = 3.669067 ly (-R_0 for the mass of the Sun)	61.848708 m/s
5) 1.563652 ×10^19 m = 1652.781551 ly (-R_0 for the imaginary M(1ls)	1312.684652 m/s
6) 3.707377 ×10^22 m = 3 918 700.777 ly (-R_0 for imaginary galaxy)	63 937.130 m/s = 63.937 km/s
7) 1.037478 ×10^28 m = 1.096615166 ×10^12 ly (-R_0 for total mass Muni**)	33812705.83 m/s = 33812.7058 km/s = c/8.866265

cosmonomy ©2022-3

** Muni = 1.777666 ×10^53 kg για Tuni= D/V(H) = Dmax/c = 4.402282 ×10^17 s = (13 949 989 860 years)

*** 3.707377 ×10^22 m = 3 918 700.777 ly = 1.2 Mpc | *H* ≈70.1 km/s / 3.086 ×10^22 m

<•>

The result from the known relation Vg = √(G·M/R) for the binding radius of space is not the velocity of the constant *H*

142. The "expansion" velocity H·D / 1Mpc = c·D / Dmax = D / T(H) calculated from the relation V=√(G·M/-R) adjusted for space as a shared quantity of energy with equivalent mass

All ratios and first functions have been prepared with the physical quantities describing microscopic and astronomical processes. In this publication you will see more clearly how with simple relations of motion and with simple proportions of the quantities as we have determined (in agreement with the physical constants c,G,h) we can give correct results for the most microscopic processes as well as for the larger astronomical sizes. This mathematical simplicity is a universal wonder in rational thinking about the investigation of the universe.

The velocity from the relation Vg=√(G·M/-R) = √(a0·-R) for the chosen radius lengths:

· For R= 1.006358 ×10^-12 m the velocity is Vg= 3.330173 ×10^-13 m/s

· For R= 1.101998 ×10^-13 m the velocity is Vg= 1.101998 ×10^-13 m/s

· For R= 1 m the velocity is Vg= 3.319635 ×10^-7 m/s

· For R= 6.013816 ×10^13 m the velocity is Vg= 2.574337 m/s

· For R= 3.471206 ×10^16 m ≈1pc ≈ 3.669ly the velocity Vg= 61.848708 m/s

· For R= 1.563652 ×10^19 m ≈506.74pc ≈ 0.51kpc ≈ 1652.78ly the velocity is Vg= 1312.684652 m/s

· For R= 3.709587 ×10^22 m ≈1.202 186 Mpc = 3 921 036.75 ly the velocity is Vg= 63 937.130 m/s = 63.937 km/s

· For R= 1.037478 ×10^28 m ≈1.0966 ×10^12ly the velocity is Vg= = 33812705.83 m/s = 33812.7058 km/s = c/8.866265

The simple relation √(G·M/-R) does not give the "expansion" velocity H·D / 1Mpc = c·D / Dmax = D / T(H).

The result from the known relation Vg=√(G·M/R) for the binding radius of space -R0=√(G·M/a0) is not the velocity of the constant H, as initially shown for the distance ≈1Mpc and which they measure as the speed of expansion of space. This velocity √(G·M/-R) is associated with energy or equivalent mass that is missing from the shared quantity because energy is concentrated in astronomical bodies. The concentration speed of the waves is the maximum c as we have deduced and extremely slightly greater than the velocity we measure for light. The velocity Vg=√(G·M/-R) is not the wave concentration velocity towards bodies from the space radius -R. The velocity √(G·M/-R) does not agree with the velocity from the constant H: H·D = c·D / Dmax = D / T(H). As can be seen, at astronomical distances and especially at the length of Mpc the two velocities approach. But the calculations with a sample from a minimum length and from a maximum length show an extremely large deviation from the speed that the calculation with the constant H would give. The speed Vg=√(G·M/-R) is extremely higher for microscopic lengths radius compared to the velocity from the constant H. The velocity Vg=√(G·M/-R) is less if the maximum "extension" length is not exactly at the limit of the maximum velocity c and the maximum time of this expansion. A relation was sought that would decrease the velocity √(G·M/-R) at short lengths and increase it at lengths greater than Mpc so that the velocity agrees with the H constant.

One would ask, how do we calculate this velocity √(G·M/R) without a moving body. The calculation is correct without the body, because this speed does not depend on the moving body and its mass. This is an equilibrium velocity itself for any body moving at a distance from the center of gravitational attraction, and any body would have an orbit with this velocity. From one point of view, this speed √(G·M/R) again corresponds to an inertia since it thus presents a resistance to the gravitational traction of the central body. A moving body would have an orbital path and resist the gravitational traction of the central body at this speed √(G·M/R) and then have no "falling" direction towards it. Therefore, the calcula-

tion of the velocity $\sqrt{(G \cdot M/R)}$ for a dynamical space - which has been explained as the result of a weakening of a maximum force and identical to a gravitational field - theoretically gives a velocity related to the properties of the space itself and the shared amount of energy, by which the space is dynamically created and maintained.

We have replaced Hubble's law by an equilibrium velocity Vg which is related to the gravitational acceleration and to the gravitational field (at each radius length) and at long distances, which have time-varying interactions. From the adjustment of the known relation $\sqrt{(G \cdot M/R)}$ to give the velocity in agreement with the constant H we again find the existence of a limit to the maximum time and the maximum length of the astronomical space, as we expected and had deduced theoretically. The constant H of Hubble's law results when a constant relation derived from a minimum velocity limit and a maximum velocity limit (constants V0, c and ratio V0/c) is introduced into the calculation. The "expansion" speed Vg could take any value without these two limits. The mathematical ratio according to $Vg=\sqrt{(G \cdot M/R)}$ is different for the same quantities without their limits, whether we calculate speed, or time and length, or a rate of change, or mass and force. Once the min and max limits are entered in the calculations, then the result comes out in agreement with the observations and with the physical constants. As soon as the limits on the sizes are introduced, then a mathematical "miracle" occurs that there is an average value, which facilitates our calculations, but also nature in its processes!

General Conclusion: Limits on natural quantities are not limits of termination and immobility on changes, but they regulate the ratio to the increase and decrease of a change, and the ratio ceases to be smooth when the change is close to the limit.

---------- In tables ----------

When numbers say more than pictures and more simply than words! The "expansion" speed H·D / 1Mpc = c·D / Dmax = D / T(H) calculated from the relation V=√(G·M/R) adjusted for space as a shared amount of energy with equivalent mass. For selected masses and lengths.

Mass of the proton Mp	1.672621 ×10^-27 kg
Average mass M0=√(Mmin·Mpl)	2.0056443 ×10^-29 kg
Sample mass	1.65155159 ×10^-3 kg
Mass of Earth	5.973 ×10^24 kg
Mass of the Sun Msun	1.99 ×10^30 kg
Boundary mass M(1ls)	4.038056 ×10^35 kg
Galactic mass	2.272706 ×10^42 kg
Muni total mass	1.777666 ×10^53 kg

The space binding radius -R according to √(G·M/a0) for the corresponding masses. (Radius -R specifies in the shared energy the volume of space).

1.006358 ×10^-12 m

1.101998 ×10^-13 m

1 m

6.013816 ×10^13 m

3.471206 ×10^16 m ≈1pc ≈ 3.669ly

1.563652 ×10^19 m ≈506.74pc ≈ 0.51kpc ≈ 1652.78ly

3.709587 ×10^22 m ≈1 202 186.417pc = 1.202 186 Mpc = 3 921 036.75 ly

1.037478 ×10^28 m ≈1.0966 ×10^12ly

The sphere volume (V3D= R^3·π·4/3) of binding radius -R:

4.269193 ×10^-36 m^3

5.605707 ×10^-39 m^3

4.188790 m^3

9.110425 ×10^41 m^3

1.751981 ×10^50 m^3

1.601432 ×10^58 m^3

2.134462 ×10^68 m^3

4.677620 ×10^84 m^3

The average mass density (kg/m^3) bound as spherical space:

3.917885652 ×10^9 kg/m^3

3.577861454 ×10^9 kg/m^3

3.942789183 ×10^-4 kg/m^3

6.556225 ×10^-18 kg/m^3

1.135857 ×10^-20 kg/m^3

2.521528 ×10^-23 kg/m^3

1.0634996 ×10^-26 kg/m^3

3.800364 ×10^-32 kg/m^3

The equilibrium velocity according to Vg^2=(G·M/-R)=(a0·-R)

[Does not give the "expansion" velocity H·D / 1Mpc = c·D / Dmax = D / T(H)]

√1.109005307 ×10^-25 m^2/s^2 = 3.330173 ×10^-13 m/s

√1.214399808 ×10^-26 m^2/s^2 = 1.101998 ×10^-13 m/s

√1.101997798 ×10^-13 m^2/s^2 = 3.319635 ×10^-7 m/s

√6.627213486 m^2/s^2 = 2.574337 m/s

√3825.262747 m^2/s^2 = 61.848708 m/s

√1.723140997 ×10^6 m^2/s^2 = 1312.684652 m/s

√4.087956634 ×10^9 m^2/s^2 = 63 937.130 m/s = 63.937 km/s

√1.143299076 ×10^15 m^2/s^2 = 33812705.83 m/s = 33812.7058 km/s = c/8.866265

The equilibrium velocity Vg is the same from all the following relations:

√{(G·M/-R)·(-R·V0/c)} = √{V^2 ·(-R·V0/c)} = √{V^2 ·-R/2.7204446 × 10^21} = a0·-R /√c = (√c)·-R·V0/c

(It gives the "expansion" velocity H·D / 1Mpc = c·D / Dmax = D / T(H) with a ratio of ≈2.8).

6.405058796 ×10^-30 m/s

7.013766526 ×10^-31 m/s

6.364589826 ×10^-18 m/s

3.827547645 ×10^-4 m/s

0.220928 m/s

99.52003426 m/s

236 099.9947 m/s

6.603123669 ×10^10 m/s

The equilibrium velocity from V=√(G·M/-R)·√(-R·V0/c^2)= √(G·M·V0/c^2) = G·M/-R·c = a0 ·-R/c

(The velocity from √{(G·M/-R)·(-R·V0/c)} has room to decrease when divided by √c. That is √{V^2 ·(-R·V0/c)} /√c = √{V^2 ·(-R·V0/c^2)}. Then the velocity deviates more from the "expansion" velocity of ≈70.1 km/s /3.086 ×10^19 km) according to the H·D = c·D / Dmax = D / T(H).

3.699244 ×10^-34 m/s

4.0508025 ×10^-35 m/s

3.675869697 ×10^-22 m/s

2.210600898 ×10^-8 m/s

1.275970554 ×10^-5 m/s

5.747780787 ×10^-3 m/s

13.6359582 m/s

3.813635955 ×10^6 m/s

The equilibrium velocity V from √(a0·-R^2/Rmax) for Rmax=1.037478 ×10^28 m and a0=1.101998 ×10^-13 m/s^2

(The radius R^2 in this relation is entered as if it were the radius of a central body).

3.279846044 ×10^-33 m/s

3.591548714 ×10^-34 m/s

3.25912453 ×10^-21 m/s

1.959977525 ×10^-7 m/s

1.131309262 ×10^-4 m/s

0.050961365 m/s

120.9000599 m/s

3.3812700 ×10^7 m/s

The expansion velocity according to H·D = c·D / Dmax = D / T(H) for H=70.1 km/s /3.086 ×10^19 km and T(H)=4.402282 ×10^17 s

2.285991674 ×10^-30 m/s

2.503242636 ×10^-31 m/s

2.271549165 ×10^-18 m/s

1.366067871 ×10^-4 m/s

0.07885015 m/s

35.519124 m/s

84265.09251 m/s

2.356682284 ×10^10 m/s

For D(H)= 1.319768 ×10^26 m → 2.99791789 ×10^8 m/s

Notes

*1) Relations equated with the Hubble's law: √{(G·M/-R)·(-R·V0/c)} = √{V^2 ·(-R·V0/c)} = √{V^2·-R/2.7204446 ×10^21} = a0·-R /√c = (√c)·-R·V0/c ≈ H·D / 1Mpc = c·D / Dmax = D / T(H)

*2) The calculation of binding radius -R according to √(G·M/a0) is simplified for wave concentration in a single body. The binding radius -R for many astronomical bodies together will be larger. Besides, we have set the astronomical mass limit for a body, and larger amounts of mass will be shared among a larger number of astronomical bodies.

*3) The equations V=√(G·M/-R)·√(-R·V0/c^2)= √(G·M·V0/c^2) = G·M/-R·c = a0·-R/c are applied up to the minimum mass of the average value M0 which is of the order of ≈10^-29 kg and for microscopic lengths.

*4) V0 = a0 = 1.101998 ×10^-13 m/s (/s)

*5) Of course we can insert any radius or distance length and any mass and show more results from a larger sample. The lengths and masses you see here have been chosen as representative.

*6) The radius -R is 1.037478 ×10^28 m ≈ 1.0966 ×10^12ly for the total mass of a maximum time period Muni = 1.777666 ×10^53 kg (For Tuni= D/V(H) = Dmax/c = 4.402282 ×10^17 s)

Image: The tables with the results

1 The equation V=√(G·M/-R) adapted when space is calculated as a shared amount of energy with equivalent mass

When numbers say more than pictures and more simply than words! The "expansion" speed" H·D / 1Mpc = c·D / Dmax = D / T(H) calculated from the relation V=√(G·M/-R) adjusted for space as a shared amount of energy with equivalent mass. For selected masses and lengths.

Mass (kg)	The radius -R of space where is bound according to √(G·M/a0) for the corresponding masses*	Volume of sphere (V3D= R^3·π·4/3) of space binding radius -R:	The average mass density (kg/m^3) where bound as spherical space:	√{(G·M/-R)·(-R·V0/c)} = √{V^2 ·(-R·V0/c)} = √{V^2 ·-R/2.7204446^21} =a0·-R/√c = (√c)·-R·V0/c**
The mass of the proton Mp 1.672621 ×10^-27 kg	1.006358 ×10^-12 m	4.269193 ×10^-36 m^3	3.917885652 ×10^9 kg/m^3	6.405058796 ×10^-30 m/s
Average M0=√(Mmin·Mpl) 2.0056443 ×10^-29 kg	1.101998 ×10^-13 m	5.605707 ×10^-39 m^3	3.577861454 ×10^9 kg/m^3	7.013766526 ×10^-31 m/s
A sample of mass 1.65155159 ×10^-3 kg	1 m	4.188790 m^3	3.942789183 ×10^-4 kg/m^3	6.364589826 ×10^-18 m/s
The mass of the Earth 5.973 ×10^24 kg	6.013816 ×10^13 m	9.110425 ×10^41 m^3	6.556225 ×10^-18 kg/m^3	3.827547645 ×10^-4 m/s
The mass of the Msun 1.99 ×10^30 kg	3.471206 ×10^16 m ≈1pc ≈ 3.669ly	1.751981 ×10^50 m^3	1.135857 ×10^-20 kg/m^3	0.220928 m/s
Marginal mass M(1ls) 4.038056 ×10^35 kg	1.563652 ×10^19 m ≈506.74pc ≈ 0.51kpc ≈ 1652.78ly	1.601432 ×10^58 m^3	2.521528 ×10^-23 kg/m^3	99.52003426 m/s
Galactic mass 2.272706 ×10^42 kg	3.709587 ×10^22 m ≈ 1.202 186 417 Mpc ≈ 3 921 036.75 ly	2.134462 ×10^68 m^3	1.0634996 ×10^-26 kg/m^3	236 099.9947 m/s
Total mass Muni 1.777666 ×10^53 kg	1.037478 ×10^28 m ≈1.0966 ×10^12ly	4.677620 ×10^84 m^3	3.800364 ×10^-32 kg/m^3	6.603123669 ×10^10 m/s

* The radius of -R determines the volume of space in the shared energy.

** Gives the speed of "expansion" H·D / 1Mpc = c·D / Dmax = D / T(H) with ratio ≈2.8. Same speed of balance Vg from all formulas.

2 The equation V=√(G·M/-R) adapted when space is calculated as a shared amount of energy with equivalent mass

The radius -R of space where is bound according to √(G·M/a0) for the corresponding masses	Vg=√(G·M/-R)·√(-R·V0/c^2)= √(G·M·V0/c^2) = G·M/-R·c = a0·-R/c***	Vg=√(a0·-R^2/Rmax) for Rmax=1.037478 ×10^28 m and a0=1.101998 ×10^-13 m/s^2****	H·D = c·D / Dmax = D / T(H) for H=70.1 km/s /3.086 ×10^19 km *****
1.006358 ×10^-12 m	3.699244 ×10^-34 m/s	3.279846044 ×10^-33 m/s	2.285991674 ×10^-30 m/s
1.101998 ×10^-13 m	4.0508025 ×10^-35 m/s	3.591548714 ×10^-34 m/s	2.503242636 ×10^-31 m/s
1 m	3.675869697 ×10^-22 m/s	3.25912453 ×10^-21 m/s	2.271549165 ×10^-18 m/s
6.013816 ×10^13 m	2.210600898 ×10^-8 m/s	1.959977525 ×10^-7 m/s	1.366067871 ×10^-4 m/s
3.471206 ×10^16 m ≈1pc ≈ 3.669ly	1.275970554 ×10^-5 m/s	1.131309262 ×10^-4 m/s	0.07885015 m/s
1.563652 ×10^19 m ≈506.74pc ≈ 0.51kpc ≈ 1652.78ly	5.747780787 ×10^-3 m/s	0.050961365 m/s	35.519124 m/s
3.709587 ×10^22 m ≈ 3 921 036.75 ly ≈ 1.202 186 417 Mpc	13.6359582 m/s	120.9000599 m/s	84265.09251 m/s
1.037478 ×10^28 m ≈1.0966 ×10^12ly	3.813635955 ×10^6 m/s	3.3812700 ×10^7 m/s	2.356682284 ×10^10 m/s

*** The velocity V from √{(G·M/-R)·(-R·V0/c)} will be lowered when divided by √c.

That is: √{V^2 ·(-R·V0/c)} /√c = √{V^2 ·(-R·V0/c^2)}. Then velocity deviates more from the accepted speed of "expansion" H·D / 1Mpc if is ≈70.1 km/s /3.086 ×10^19 km.

**** The radius R^2 in this equation is inserted as if it were the radius of a central body.

***** Velocity of expansion according to H·D = c·D / Dmax = D / T(H) for H=70.1 km/s /3.086 ×10^19 km and T(H)=4.402282 ×10^17 s. For D(H)= 1.319768 ×10^26m → V= 2.99791789 ×10^8 m/s

143. "Broken twigs... that leave their new trunk without causing any harm to it"

The explanation of space as a shared quantity of energy, after also correlating the speed of pseudo-expansion H·D with a speed √(G·M/-R) that comes out according to the limits in the radius of a universal space, enters the final straight. Of course, there will be some questions left unanswered by all this thorough explanation of many interdependent physical phenomena. But at least two successes are remarkable, regardless of any disagreements and questions: 1) It is an explanation with rational thoughts, with rules of common sense, and it has started with fundamental concepts that come out of the experience of any thinking biological body. 2) A multitude of phenomena have been unified and the fundamental processes of nature are described in a simplified manner as much as possible for issues that also need an educational preparation.

But what is explained and the number of conclusions are much more and more important than possible questions (for physicists) that have still remained unanswered. Many readers may not have read the posts carefully and will express questions answered. Some questions from newer research are repeated in well-known books and are based on incorrect assumptions. When the questions are based on wrong assumptions and acceptances then don't expect a logical answer. Ask those who express them to give you answers. L.g. the interference effect of waves from two slits cannot be explained by the false assumption that the photon is a particle and moves as such or with rest mass. Many will express questions regarding the beginning of life and whether the world has a creator. These questions cannot be convincingly answered by rational thought unless we know how nature works and what it is as a whole. That is why the questions have been separated and you will read the answers after first understanding how matter is energy fluctuations in a shared quantity presented as space.

Doubts and any inaccuracies should not overshadow the consistency of the conclusions and simple solutions given so far. Here an early thought fits, written in the preface of a book in the 90s, in which the first cosmological thoughts were recorded without any calculations. "For inaccuracies, inconsistencies and mistakes we will say that they are like broken twigs, which leave their newly formed trunk without any damage". More thoughts could be posted here that would serve the research and several scenarios as possible answers to some questions that remain. But the cosmological explanation here is presented with the most certain conclusions and the closest truths and with the most careful use of language, as a theory worthy of being called "scientific" and exemplary in general for the creative collaboration of imagination with rational thought.

Next post on 1/22, Sunday. Till then study the previous posts.

Image: UGC_2885/lossy-page1-1024px-UGC_2885-txt

Description: UGC 2885 (Rubin's Galaxy, nicknamed "Godzilla galaxy") is a large barred spiral galaxy of type SA(rs)c in the constellation Perseus. It is 232 million light-years (71 Mpc) from Earth and measures 463,000 ly (142,000 pc) across, making it one of the largest known spiral galaxies. Copyright: NASA, ESA, and B. Holwerda

https://en.wikipedia.org/wiki/UGC_2885

144. What are the maximum magnitudes that impose such a structure of the Universe, such dynamic processes at such rates and speeds and such proportions between limits?

How do such a large number of astronomical bodies move at the "right" speed so that the bodies do not crash into each other, even though they have an attractive force on each other? Did they wonder? This is one of the first questions that needs answering because such general phenomena quickly reveal universal laws. But in human history research proceeds by chance, by procrastination and by other professional obligations. Many important questions are unfortunately left for the end of the research and for whoever insists on solving the problem. Here it is shown that especially for the investigation of nature as a whole, general concepts are used such as for example "the beginning and the end", "the one and the many", "the union and the separation", "the approach and the distance", " motion and immobility' etc. and rational thought is inevitable, impartial and revealing. On the contrary, observation and gathering of information in itself has no end and does not provide solutions or it provides solutions after coincidences and from research that is focused on a random question. As Aristotle wrote somewhere, if sight and the senses were knowledge, then those who see would be scientists...

Before attempting the next calculations about the limits of the Universe we will think carefully on what we have explained about the distribution of matter in global space and their close relationship. As we have explained, the gravitational field starts from the structure of matter with the weakening of the nuclear force and with the decrement of the higher rates to energy fluctuations. (Post 114-3 and back) We later explored the relationship that the astronomical observation of redshift has with dynamical space and matter. We used the constant H and calculated an "extension" for distance 1m further and for even shorter lengths than one meter. Calculations for short distances revealed a low rate of increase in velocity

(a = 6.809946 ×10^-10 m/s^2) linking the constant H to the gravitational constant G (and the rate a = 6, 6725 ×10^-11 m/s^2). If we conversely calculated an "expansion" speed for a distance of 1Mpc away according to the gravitational constant G, then again we would see the possible relationship of these two constants.

The "expansion" velocity approaches the minimum velocity limit -Vmin ≈ 10^-34 m/s for a distance of about the mean length λ0 ≈ 10^-13 m (or a radius relative to the wavelength λ0). The minimum velocity -Vmin theoretically is the one corresponding to the minimum inertia h·Hz/c^2 = Mmin according to the equations $-V_m = M \cdot c/Mpl = \sqrt{(G \cdot M/\lambda m)} = \lambda pl \cdot f$ and is subtracted from the maximum speed c≈2.997924 ×10^8 m/s. (Post 113-2) Coincidentally we find this speed from the pseudo-expansion rate. Then we saw that the constant H is closely related to the constant G of gravity and these two constants are also closely related to the mean values in the energy fluctuations of space (where E0=h·f0 = 1.802582 ×10^-12J and the average speed 1.1019978 ×10^-13 m/s). We have seen that the constant H gives a rate of increase of velocity that approaches the rate of acceleration of gravity according to the known constant G. The velocity per meter according to the constant H approaches the velocity per meter according to the constant G. The velocity H per meter: 2.271553 ×10^-18 (m/s) /m = 70.1 km/s / 3.086 ×10^19 km. While the redshift speed per meter according to the rate a of gravity would be: 2.225706 ×10^-19 (m/s) /m = 6.868530 km/s / 3.086 ×10^19 km. (Posts 115-116) We have calculated an average velocity of 1.1019978 ×10^-13 m/s and this velocity per sec also approaches the Hubble and gravitational acceleration rates. (Post 116-5) That is, we have extracted three low rates of increase of a velocity or decrease of maximum velocity c from completely different observations and are investigating them (V(H)≈10^-10 m/s^2, V(G)≈10 ^-11 m/s^2, V0≈10^-13 m/s^2).

In subsequent publications (127-1) we explained that a maximum amount of energy can be missing from the shared energy per unit of time and this accumulates in waves in matter. The limit to the increase of mass is a limit of maximum decentralization of energy. From previous publications we had separated power from energy and this separation proved to be important for explaining microscopic processes. When we describe nature as a simultaneous Whole in a maximum period of time, then immediately from rational thought the conclusion is drawn about an amount of energy per unit of time. When space is identified with a limited amount of energy by processes of concentration and decentralization, then the concept of energy per unit of time is also successfully applied.

If we think of universal space as a shared amount of energy that is relatively lacking towards the structural elements (so as to agree with the common experience of space as a free or disembodied field), then the -R radius of universal space is associated with a weakening of a strong force, which the Total (as equivalent mass) applies to itself. The total energy is also available and distributed according to a maximum time interval, beyond the short time intervals that the structural elements interact with each other. The minimum and maximum time intervals also give a fixed unit of time for the transfer of energy per quantity. We had calculated the limits on energy changes for atomic dimensions. Some possible limits of space and time for the totality of matter we could and found from calculations for physical processes within the structure of matter. Time within space was revealed as a delay time for a reality that is kept complete for a short time while we are not aware of it. We perceive physical forces at a distance and periodic movements without understanding that these are phenomena that constantly restore balance. Now we seek precisely the maximum limits... which determine the structure of universal space and the distribution of matter.

From publication 125 onwards we explain the process by which space is dy-

namically maintained as incorporeal while at the same time shared energy is concentrated into matter in astronomical space. We have said that the concentration of matter in astronomical space is the removal and decentralization of energy from the shared quantity. Masses where are created and moved also modify the radius that a volume of space (and weakened gravitational field) exists and the limits of the circumference of that volume. In more recent publications we have explained that a volume of free space is bound and proportioned for each amount of concentrated matter. The mass M from the concentration of energy in a body is proportional to a radius -R of a volume of space through which the energy is transferred, and we have given the simple relationship and the numbers, as they fit according to the physical constants. The average value a0 for the gravitational field at a radius -R seems to match the lengths and distances, which the calculations give for astronomical bodies. From the first calculations we drew limits for a universal time (Tuni) and space (Runi). We have succeeded in calculating extremely simply a volume of space in proportion to a mass concentrated as a body. We calculate ratios of selected quantities to the maximum limits of the Universe. However, we need to explain more precisely the distribution of matter in astronomical space and the structures that appear at extremely far distances from each other (galaxies and clusters) and to consistently calculate the maximum sizes, which impose such a structure of the Universe and such mathematical proportions to natural sizes.

Many useful conclusions have been drawn from the explanation of space as a shared quantity of energy, and we perceive world research 100 years back late and in a completely opposite direction (of the mechanistic interpretation). We use the conclusions to develop theory and solve the ultimate problems we aim at. The next conclusion is a key to further calculations: The radius that appears within the structural elements of the universe (R < e-10m) is the beginning (or end) of a radius, where edge is the circumference of the Universe or a common center. This geometrical relationship connects the radius of the global space as an attenua-

tion effect of the maximum force, which the shared amount of energy presents as a whole to the structural elements within them. This in our interpretation (of space as a shared quantity of energy and matter as oscillations) means, that the geometric sizes we calculate for the universal space have some function to the physical forces as we have explained them (gravitational and nuclear) and facilitate research , as well as the confirmation of the interpretation.

Image: straight line across the diameter of the black circle-gif

Description: A moving GIF image

145. No astronomical body is the center of the universe. The astronomical world exists on a curved surface

We have calculated a ratio of volume of space (radius -R=√G·M/a0) to average energy and mass density and to mass M of an amount of matter accumulated as an astronomical body. Universal space is not just a three-dimensional spherical volume without substance, and it has a behavior as a force towards astronomical bodies. Astronomical bodies move together with the motion of a quantity as a wave that gathers together, and so a shared quantity exhibits gaps of decentralization and together areas of concentration of energy. A large number of astronomical bodies move at the "right" speed so that the bodies do not fall into each other, despite the attractive force between them, because each is moving in a negative region of lack of energy, and each body is the result of a concentration from a such lack of energy. Each astronomical body is accompanied by its own space and moves within the space maintained by the existence of the other bodies. We will try to give the final answers with calculations based on the distribution of the astronomical world according to the considerations of the relationship of such a dynamic space with matter as energy oscillations. The following are conclusions about the shape of the dynamic space, which are useful to attempt the following calculations.

"We try to give the best explanations with the language that describes the common experience of people. We try to represent some phenomena in our minds with the language of images. Geometric patterns and shapes help in understanding, because they immediately show a lot of relations together, which things have during the passing of time and with each other. We have explained* how the spherical shape fits into describing the total and balanced energy, which is offered as an empty space. But the universal space has no walls and a bark. We will try to describe more natural phenomena of the dynamic relation which

space has with the astronomical world”. (p407)

"By observing the natural world we find that the electromagnetic radiation and waves have a strong presence and increased tension in conditions that matter is compressed, particularly in astronomical bodies such as stars and occasionally when frictions are created and the electric charges vary locally. This is, while the amount of matter and the bodies are kept dark and these bodies always have their gravitational field without irradiating (except for the heat generated by molecular friction and microscopic mobility). The total amount of energy is equally shared by the phenomenon of free space and is not localized like the material bodies. Thus, the space appears to be isotropic and free from the spread of light as well as from the motion of the bodies without the resistance of the other bodies. The total amount of energy remains stabilized with an energy flow that is constantly concentrated wherever matter is available. However, the returning energy does not achieve full stability. The returned energy is lost again in part and is quickly shared for the mobility and interaction of the structural elements. The accumulated amount of matter is an abnormal situation where the energy of the free space is not transmitted synchronously, unimpeded, and smoothly. But the structural elements are thus preserved and are not obliterated”. (p474)

Such dynamic space is nothing different from the gravitational field. Free space to its large dimensions is the weakest gravitational field, which grows and strengthens where quantities of matter are concentrated. (p436)

"The astronomical world is maintained with weakened nuclear force. The free space of astronomical bodies is this weakened field and the forces between them are this weakened field in a proportion to the amount of matter. The nuclear force has a direction perpendicular and radial to the minimum length and the gravitational field has the same direction towards the center of an increased amount of

matter”. (p508)

"The total amount of energy in relation to a maximum distance is shown as a finite void space. This same amount of energy in relation to the minimum distance is associated with a maximum gravitational force (that is nuclear) and with the fluctuations that occur in the atomic nucleus”. (p409)

"The total amount of energy (presented as free space to matter) exists as a common nucleus. Such a common center of the Universe does not exist in the free space of the astronomical cosmos and is somehow presented by nuclear force in tiny dimensions. At astronomical distances and outside the structural elements, the cosmos is presented only from its circumference”. (p408)

* Footnote: Rational thoughts and observations that here and now are not necessary.

Image: giphy-star wars space GIF

Description: A slowly rotating galaxy and illusion of receding

146-2. The astronomical world exists at the periphery of an imaginary volume. The common center is the complete Universe and acts as a nucleus for matter (outside astronomical space... ie from microscopic lengths)

Here are some more selected conclusions about the dynamic relationship of space and matter as energy oscillations, which prepare the final view of the limits and distribution of the astronomical world. We are approaching the final and most probable estimates of the limits of the universe, without needing the astronomical redshift constant H. The theory begun with the definition of a Universe that is in all possible ways within a maximum period and then everyone easily doubted. When later the explanation of matter as oscillations of energy in a shared quantity seen as balanced space was couched in physics terms, then disputing was again easy. No one easily chooses to think creatively and positively... The research effort was not hindered and instead continued more persistently and a priceless treasure of cosmology was hidden in the darkness of prejudice.

· The shared amount of energy is presented in matter and in concentrated amounts of matter. The total amount of matter is an amount that would be distributed as free space (if it were not concentrated at all). Conversely, free space is the totality of matter that would exist as a single body (if matter could be kept indefinitely concentrated). "The total amount of matter is presented as decentralized and distributed as a shared amount of energy that takes the form of a global space and at the same time is presented concentrated in separate bodies and at separate time intervals." (p492) This conclusion will help in calculations about the limits of the astronomical world. We have already calculated a ratio of volume of space (radius -$R=\sqrt{G\cdot M/a0}$) to average energy and mass density, according to the unique relationship between space and matter manifested by the gravitational field.

· "We begun with the concept of a global whole and then as a "whole" we had in mind a global space with all the astronomical bodies it can contain. Initially we had this thought according to the image formed by the observation of the light coming from the sky. With the rational explanation now more extensive, among other conclusions we conclude that this global space is the surface of a super-whole (which is not only externally present). The common quantity that appears (geometrically and externally) as the absence of a world does not only have its large dimensions and the capacity in astronomical bodies as its feature. The common and balanced quantity that appears as free space does not only appear externally and geometrically. It also appears with long-distance force phenomena and as a global common center in tiny dimensions. Light never comes from the center of the world. Its center (with which the structure of matter is maintained by wave processes) is not the center in the geometric sense and cannot be found anywhere in the astronomical space. The astronomical world is maintained by nuclear power somewhat weakened and free space is the weakened field". (p419) This conclusion summarizes the dynamic connection of the Whole with its parts and by what physical processes this connection exists. It will be seen conclusion useful in calculations about the limits of the astronomical world and helps to form a picture of the astronomical world as dynamic not between stars and galaxies, but even more dynamic and dependent on microscopic processes.

· We have explained that the most powerful force is a rebalancing force that occurs in the shared amount of energy (of space) when it is disturbed. "The presence of the complete Universe from the minimum distance (~λmin) appear with a maximum force that cannot be applied to any body. A maximum force due to the simultaneous presence of the total mass of the Universe does not concentrate all astronomical matter into a single body, as we would say. On the contrary, the maximum force of the total mass of the Universe maintains its total mass in the form of free space energy which has always been divided and balanced. Matter (in the form of particles) are the points that "escape" the process of concentrating

the shared amount of energy like the remnants of an explosion that never began". (p474) This is the explanation for the distance of astronomical bodies while there are attractive forces.

· "The maximum force of attraction has no direction, as if it came from an external / material thing. It appears from all directions, since it stems from the coherence of balanced total energy and wherever this energy is disturbed. Nuclear force is due to the equivalent mass of the entire Universe, and this force is maximized from (or to) the minimum possible distance of free space". (p424) This strong force weakens with the structural elements and then the equivalent mass of the entire Universe exists as free space and without nuclear force. The nuclear force has weakened and reduced to gravitational force. The maximum attenuation is the minimum gravitational force. The minimum gravitational force is space as free and with minimum curvature. The immediately preceding conclusion is clarified by this conclusion. The nuclear force is revealing of the force that the universal space has as a shared amount of energy and internally in matter which are its oscillations.

The selection of conclusions on the dynamical distribution of the astronomical world will be completed in the next publication.

Image: cdn-forumcomm-txt2

Description: An image of the dark sky with its stars. With this image as a background we read: Since images from the vast space do not reveal the answers to our eyes, let us write them in the language of logical thinking, which reveals the invisible connection of images and distinct things:

The clusters of the astronomical bodies move generally elliptically and peripherally and all of them move on the surface of a sphere. The maximum distance which they have between them is called "free space". But this global space is not just their own

surface. It includes the common attraction center of the entire astronomical world and they detect this center as a nuclear force. The global space is a "black hole," and the astronomical bodies are formed by trapped radiation, which we detect decelerated as "matter"”

147-3. The common center is the complete Universe and acts as a nucleus for matter (ie from microscopic lengths). The astronomical world exists in the periphery

· A reminder of the rebalancing force from an earlier post (* 92-4):

The quantity of energy E=hf divided by the minimum length λmin gives the same force as the maximum quantity of energy Emax divided by the wavelength λ of the quantity hf. That is, F = E/λmin = Emax /λ. The same force results from the following relations with the constant of gravity G:

F = G·Mpl·M / λpl^2 = G·Mpl·Mpl / λpl·λ

*[The disturbance force F(dis) ≈ 2.210216 ×10^-42 N and the force of restoration F(re-max) ≈ 16.3574 N corresponds to the minimum quantity of energy Emin ≈ 6.62606 ×10^-34 J

The disturbance force F(dis) ≈ 16.3574 N and the maximum force of restoration F(re-max) ≈ 4.4499407 ×10^22 N corresponds to the average quantity of energy e E0 ≈ 1.802582 ×10^-12 J]

*[The force of restoration F(re) for the energy disturbance from Emin to E0 escalates ≈ 10^21 ie 4.4499407 ×10^22 / 16.3574 = 2.720445 ×10^21

The corresponding disturbance force escalates 16.3574 / 2.210216 ×10^-42 = 7.4008 ×10^42]

· The restoring force Fre approaches an average value √(Fmin·Fpl) for energy quantities hf of electromagnetism, which are smaller than the average quantity E0. An energy perturbation close to this mean force F0=√(Fmin·Fpl) creates the fundamental particles of matter and then the opposing force to restore equilibrium is stronger and with a magnitude that gives as a component the mean force. These calculations connect a weaker force to a stronger one and serve for distance calculations. The average restoring force 16.3574 N multiplied by 10^42

times gives the maximum force Fpl= c^2·c^2 /G ≈ 1.210586 ×10^44 N. The minimum disturbance force 2.210216 ×10^-42 N multiplied by 10^42 times gives an average disturbance force magnitude F0 = E0/λ0 (equal to the minimum restoring force of 16.3574 N).

· "The volume and maximum distance of the free space reveal how weakened the nuclear force can be. Free space has its minimum curvature and maximum radius only for light that does not move with the increased mass of bodies (...) In astronomical bodies with increased mass, the free space is smaller in radius and the stronger gravitational fields limit the distance of the bodies motion" (430) The preceding calculations of force and its scaling are a function of the dimensions of space.

· "The celestial bodies move as if they were on a spherical surface of non-Euclidean geometry, ie they are forced to have a center and elliptical movement. They have enough time to move in an orbit and return without stopping. Generally, the celestial bodies cannot be removed from each other or be approached in a straight line. (...) the material world as a whole has no astronomical bodies as center. The totality of structural elements must be in the periphery or on the surface of the imaginary sphere. The large internal volume of such a space is in a large radius without astronomical bodies. The space is free from astronomical bodies only on the curved surface of the imaginary globe. Astronomical bodies cannot move in radius length towards a common center of the sphere. They can also not be relocated radially passing through an universal center. (...) The volume inside the global sphere is not a free space for movement of bodies and it is only theoretically present (for our geometrical picture)". (407) This conclusion may need a correction. Yet it is certain, that the maximum distance of space as circumference is towards the limit of a minimum length, and the minimum length is towards the center within the structure of matter. The calculations of geometric

dimensions of universal space has been simplified with these rational considerations.

· "By the identity of global space with a total amount of energy and in connection with the maximum time some conclusions emerge about the distribution of the astronomical world. This total amount of energy is relatively absent for the longest period. It is a constant quantity in equilibrium for the longest time (...) It also means that structural elements are not created for a so long time". (405) We have linked the shared energy and its balance to a maximum period of time and to the phenomenon of space. Space is equivalent to a quantity of matter where is not concentrated, as we have said. Since space is explained by the shared quantity, which is connected with the maximum time, therefore the quantity of matter that the shared quantity equals does not exist for a long time.

· "The structural elements and complex things wherever they exist, are connected to the same space in tiny lengths, and so the free space is a common core for the material things. But at same time the things between them have long distances and weak forces. The greater amount of energy of the free space is a core where slow fluctuations and matter are impossible to exist. In reverse with a such shared core, radiation is probably generated that is decelerated and outstretched until a maximum limit of distance without this radiation ever escaping from an extreme distance. In this long distance of a cosmic radius the nuclear force is attenuated enough and there is the imaginary surface where it is possible for the structural elements to exist. Only in this way it is explained how the structural elements have a nuclear force inside them, but externally they have distances in long lengths and the nuclear force appears attenuated as gravitational force". (405) The previous conclusions are met. In this conclusion the relation of matter to dynamic space and the relation of nuclear force to gravitation as weakened nuclear is formulated a little differently. Space as a whole is connected as a

core to the energy oscillations that are the structural elements. The difference of the amount of the whole with the amount of energy of an atom of matter is also presented geometrically, with a difference in length.

· "The interior of the sphere and the common attraction center is not an astronomical body, and perhaps only light can pass through it. The common center of attraction, which is inside the astronomical whole, exists as a space that these never penetrate, as it would happen if they had a rectilinear movement. The clusters of the astronomical bodies move generally elliptically and peripherally and all of them move on the surface of a sphere. The maximum distance which they have between them is called "free space". But this global space is not just their own surface. It includes the common attraction center of the entire astronomical world and they detect this center as a nuclear force. The global space is a "black hole," and the astronomical bodies are formed by trapped radiation, which we detect decelerated as "matter"" (412) We repeat the paradoxical phenomenon, that the common Whole (the global space, the shared energy and the complete Universe) is connected simultaneously with the structural elements and this exists as a center in microscopic dimensions and with the application of a maximum force. That is, the common Whole is not the astronomical world as the bodies are distributed only externally to each other and at a distance. The distance between the bodies is space as a circumference and with the gravitational force, which is weaker than the nuclear one.

Image: concentration-of-space\ energy-flow-vortex/ e09f42d4e183d5053e23ee55ffb1431b (A moving GIF image)

Text lines to notification: The last lines “We repeat... the nuclear one”

148-4. The amount of matter of the astronomical world and its relation to a shared quantity that is always dynamically distributed

We have seen that the equation √(h·fpl^2 ·c / G) gives an amount of matter multiple times the limit of Mpl=√(h·c/G) and in agreement with the limits of atomic mass √(Mmin·Mpl). This multiple mass of such a concentration is an astronomical amount around 10^35 kg at a radius of 1ls. We have detected a large number of astronomical bodies and astronomical subsets with even more mass from space exploration. If an oscillation of 10^-21 s and energy h·f ≈10^-13 J is repeated 10^21 times per 1s then an amount of energy ≈10^8 J and its equivalent mass ≈10^-8 kg are proportional to a time interval of 1s. A stellar mass and the astronomical limit of 10^35 kg would require the limit quantity √(h·c/G) of 10^-8 kg multiplied by 10^42 times and thus the time interval of 1 s multiplied by 10^42 times according to the maximum speed limit c. Even this amount of mass of 10^35 kg is minimal compared to the countless number of astronomical bodies. An extremely large amount of matter is present in astronomical space and in many concentrations over a long period of time. Therefore, the quantity of 10^-8 kg · 10^42 in a radius of 1 ls remains unexplained by the energy as we calculate it according to the constant h and for electromagnetic effects with the maximum speed limit c. The presence of approximately this much matter within a 1 s radius of light needs an explanation. We would not allow such a question to be easily used to challenge the entire cosmological interpretation.

After the first calculations according to our interpretation of the mass it appears, that the presence of astronomical bodies is not explained by e/m energy that has the speed of light and a centrifugal motion. But we have explained the concentration of matter by an increased delay in the process of rebalancing the shared amount of energy. We calculated with the first attempts a long delay (up to ≈10^21 s), when a delay in the microscopic process (which occurs in a wave-

like manner at extremely high rates) is ≈10^-22 s per elementary quantity for a quantity of energy h·fpl≈10^8 J. We have early inferred a fundamental process of nature, which is the wave concentration of energy as opposed to the decentralizing movement of e/m energy. The concentrated motion in the energy transfer of the shared quantity has the limit of a minimum radius and the deceleration where peaks at microscopic lengths (r<10^-13m), as we have calculated. We have seen that the equation √(h·fpl^2 ·c / G) coincides with the equations h·fpl^2 / c^2 = Mmin·fpl / Tpl = h·f0^2 / V0^2 = 4.038056 × 10^35 kg/s and an astronomical mass comes out without the maximum speed c. **The explanation of the concentration of energy from a shared quantity shows a way out of the question of how a large amount of mass is concentrated in a short time, which is not explained by the energy of electromagnetism**.

The concentration of waves with the limit of a minimum length is the fundamental phenomenon that explains the delay in restoring the energy balance and the increase of mass in nature. We notice that the relation √(h·fpl^2 ·c / G) = Mmin·fpl / Tpl which gives a multiple amount of matter than the atomic limit of Mpl=√(h·c/G) can give the same amount ≈10^35 kg with the average speed value: h·f0^2 / V0^2. This simple relationship with velocity lowered (V0≈10^-13 m/s) could not be appreciated if we did not previously have in our rational mind a process of nature, which is contrary to the more obvious observation of centrifugal motion with electromagnetic force. The concentration of energy and the presence of astronomical bodies with a mass many times greater than the limit of Mpl=√(h·c/G) is explained by a wave process, where the transfer of energy at the maximum speed is blocked, interrupted and accumulated in a microscopic radius. In contrast to e/m energy transference which is attenuated by being carried over a larger circumference and in the shortest time. The gravitational field accompanies and manifests this fundamental process of the world.

This explanation for the concentration of matter with an increased delay in the re-equilibration process would be impossible if a shared amount of energy were not present beforehand. Its distribution in space has no beginning in time. The shared amount of energy was always a total amount and dynamically balanced. The matter of the astral bodies appears concentrated by a slowing process into a total amount of energy that is present as shared and balanced over a maximum period of time. Its distribution is maintained according to the maximum time margin and to the mathematical ratio that a concentrated amount of matter has to a volume of free space as a decentralized amount of energy. In other words, if astronomical bodies with many times more mass than the $\sqrt{(h \cdot c/G)}$ limit had been created by e/m energy, then a much longer time would be required. In addition, the problem of applying the same laws at extremely large distances (for the speed of light) and the problem of synchronization and the same mass limit in the formation of stars and processes that would be external to each other would remain unsolved. Nature has the problem solved by its simultaneous existence as a whole and through the mediation of a shared quantity, which appears divided and in shorter time intervals than that of total time. **The shared quantity from its distribution with the wave phenomena of concentration and decentralization appears as bodies and respectively as free space**. Thus the common quantity appears to bodies as absent and inactive as empty space, whereas it is always a total quantity of energy inseparably connected with bodies and never absent.

Image: concentration-of-space\energy-flow-vortex/3Szn (an animated gif, energy concentration with spin)

149-5. A question that has no answer unless matter is interpreted as fluctuations in a shared quantity of energy (which appears as space)

The theoretical problem of applying the same laws and limits to the entire astronomical world has been solved by the first rational considerations. The definition of the Universe as a complete and stabilized whole in all possible ways within a maximum period of time already contains within itself the solution. Now we admire the confirmation of the original definition and the rational explanation in more detail. We have explained what are the physical phenomena that connect matter to space, after the detailed description of the relationship of structural elements to dynamic space as wave phenomena. The simplest calculations of fundamental phenomena according to physics reveal their close relationship. The entire astronomical world is regulated by the same processes and with the same limits. This arrangement is achieved not because distant parts connect and interact at faster than light speed or once... at the beginning of an expansion of the universe. Instead, there are distant places and astronomical bodies where do not connect or interact with each other because the speed limit exists. Any interaction between them is weak and an extremely slow process. "The time of counterbalance at a long distance is not short" is subtitle 29.4 of the recent treatise.

A simultaneous amount of energy is distributed at reduced rates, and structural elements always maintain the closest relationship to this shared amount. Distance exists only between bodies that have between them a weak force and distribution that never started at a moment in time. The distance is also a time delay for the bodies to connect and interact (1 s for each radius length of 2.997924^8 m). **Things did not need to interact with each other in a shorter time to exist with the same laws**. The laws apply from the contact of the structural elements with the shared quantity at the minimum distance and in the shortest time. The rest that occurs between the structural elements is "disciplined" to the limits

of time, length, speed and energy introduced by the shared quantity as a whole and as elementary quantities by its oscillations. Unbelievable, but true and clever! In the simplest example, imagine sea waves crashing foaming on two shores as if independent of each other. But they are created in a shared amount of water, which is present at the same time on both coasts and despite the time difference between them. The waves do not interact with each other. The number of waves and the rate that they follow each other carry kinetic energy determined by the dynamic characteristics of a balanced quantity (the sea), which can give many times more waves.

“Throughout theory, we think of the free space as a quantity of energy in equilibrium. Along with all the other limits which we have concluded, we have concluded a maximum length limit to body displacement, a limit to maximum velocity in motion and a limit to the highest rate of change in energy. A question arises from these three thoughts on the boundaries: If the free space is a quantity of energy and has distances so large that the light needs so much time to be transmitted, then the parts of this balanced amount of energy are not connected with each other in a short time. A disturbance of energy here does not change the amount somewhere far away ...or in the same moment. Therefore its disturbances should destroy its equilibrium. This is, because the time for the transfer of the amounts of energy, which are needed to counterbalance the changes that take place somewhere far away, is not short. But we observe and conclude that there is a united and communal space, if not for the entire astronomical world, then certainly for an extremely large part of the Universe. This is similar to observe and conclude that there are the same structural elements (which have the same amounts of energy and the same rates of change) to such a large extent of space. The gravitational fields cannot also be propagated at a faster speed than the maximum limit. We cannot further explain by these fields a transmission of force for the entire space and the synchronization that is maintained over so much long distances, which we measure in earthly light years. The gravitational

field in an area of the astronomical world could have prevailed and the whole world would have been gathered there". (p429)

The energy balance and dynamic conservation of global space is achieved extremely quickly and therefore any destabilization is local. The forces generated decay extremely quickly and are confined to a local radius. Thus we will explain how the astronomical world is kept organized and independent of great distances, since the energy to restore equilibrium returns extremely quickly and in microscopic lengths for every quantity change that occurs. The space around astronomical bodies is kept distributed and isotropic by the rapid process of rebalancing the shared amount of energy. The gravitational field is a result of this dynamic equilibrium which is achieved at nearly the speed of light and at extremely high rates.

"We are accustomed to think about weakening a force by increasing distance and we think that this phenomenon needs no explanation. We find it natural and reasonable to have a thinning or a weakening in a quantity that spreads in each direction of space leaving its source. But this common phenomenon is achieved by laws that keep the world as a whole and the presence of space as a homogeneous phenomenon and without inertia". (p395)

"a star exists by a process that takes many times longer than 1s and is extremely longer. If a corresponding quantity of Mpl ≈5e-8kg needs the minimum time 1s, then the amount of 1e35kg would need the time of 1e42s. An amount of energy is available in the astronomical world that would take 1e42s to create. The existence of a star shows that so much energy is available here and now (as concentrated or decentralized) because there is no short time to compensate. (...) Given that we observe an extremely large number of stars, we conclude that this process with such a long time frame cannot occur for each star individually. The

"age" of the Universe would then be infinitely greater ... and the distribution of astronomical bodies would be a random and unstable process". (p484)

"The force to return to equilibrium (nuclear power) is not determined by the amount of astronomical bodies and by the sum of masses of astronomical world. The force of restoring balance exists before any particular body, and this is power of the complete Universe by which is maintained and presented as a universal space. With this rational interpretation (of identifying the total amount of energy with the global space and for matter as its fluctuations), research on the calculation of astronomical limits and sizes is unexpectedly simplified". (p419)

"The universal force of restoration of equilibrium is simultaneous for the complete Universe and for this reason its presence is manifested at the moment of a disturbance of the energy balance. The total amount of energy is simultaneous and is not limited to a short time or to a single point of space. It is shared for the whole of a maximum period of time and in periodic connection with the rest of the energy of the nature. Its connection is periodic, ie with a very fast process that is repeated at extremely fast rates and with short moments of reduction". (p477)

Image: 3nff (an animated gif. Waves on a spherical surface which are connected to the center)

Text lines to notification from 149-5: A question that has no answer unless matter is interpreted as fluctuations in a shared amount of energy (which looks like space).

The whole of the astronomical world is regulated by the same processes and with the same boundaries. This adjustment is achieved not because remote parts are connected and interacting at a speed greater than light or sometimes ... at the beginning of a explosion of the universe. On the contrary, there are remote parts

and astronomical bodies where are neither linked nor interact with each other because there is a speed limit. Any interaction between them is weak and with an extremely slow process. The gravitational field of an area of the astronomical world could have prevailed and there the whole rest of the world be concentrated ...

Things did not need to interact with each other in a shorter time to exist with the same laws. The laws are applied by the contact of the building blocks with the shared amount to the minimum distance and the shortest time.

End of notification

150-6. Did the Universe need to be so big with countless stars and galaxies, outnumbering the grains of sand on Earth's beaches? What is the use of being so large or even infinite?

“From the most recent astronomical observations, the universe appears far larger than we would infer from the simple interpretation of matter as extreme fluctuations of a common quantity. The number of galaxies also appears extremely large as do the distances between them. From this cosmological interpretation is introduced the suspicion that the observation of the universe that turns into images creates a deceptively large image of it. The existence of a single galaxy such as our own galaxy presents a concentrated and distributed amount of energy of a common quantity, which is enough but is not visible to the eyes and is presented as free space. Since space is the common core of structural elements, one galaxy would be enough to be the entire Universe. If we had thought of the Universe as a superset of too many galaxies, then we would have not be surprised at their extremely large number. Nor would we try to explain the lack of a limit and the infinite number would disappoint our research. But here we have interpreted the galaxies in reverse, as formations and fluctuations of a common quantity which is in balance and present at the same time for the whole world. That is, the Universe and its laws are already present (as an invisible presence) and we do not expect to know the Universe better by increasing the number of galaxies we are exploring. The large number of galaxies has something to do with their evolution over time, and their evolution over time probably depends on evolution in every other galaxy that we perceive as separate, external to others, and always in the past. Through the eyes of logic we see not only a repetition of astronomical bodies and galaxies, but a free space maintained by the weakening in the concentrating force of a global nucleus. Just as structural elements have the same nucleus and it is common in tiny dimensions, astronomical bodies also have a global quantity as their common nucleus which is to internal dire-

ction...” (p482-3)

A first answer has been given in an earlier treatise, before the calculations of the limits of universal space and before the mathematical connection of astronomical quantities with the sizes of an atom of matter. In summary it was as follows:

The Theory of a complete Universe that seems to be absent as space (of complete and total Time) turns this naive question into yet another examination of its consequence and paradoxically provides the explanation. The vast numbers that describe the Universe show that all things must be very indirectly connected, created over long timescales, so that they can combine in all possible ways and co-exist, without ever destabilizing the simultaneous Whole. Everything can happen within predetermined limits (as long as the balance of the Whole is undisturbed). Therefore, enough time and detail are needed and enough space, distances, energy and matter so that everything can happen and inexhaustible things can exist and with the possibility of evolution, without the whole being destabilized.

This simple answer will be more accurate if we say: the Universe must instead be incomplete... so that so many things can exist as separate ones and have space to move, without all existing together or in all ways connected between them at the same time. This in nature is achieved in a related way: The complete Universe exists simultaneously in minimal time intervals, from which the most complex things begin and in all possible time intervals. This relative absence of the Universe (age where the Universe in its parts is missing and appears as space) is mathematically related 1) to the relationship of the maximum period of time and the total amount of energy and 2) to a (shorter time) limit on the division of the maximum time period and correspondingly in the division of the total

amount of energy (with a limit of a minimum quantity in the unit of time). Newer thoughts have been added to this first answer for you to read next time.

Image: dynamic-multi-parts/pngwing_com

151-7. Did the Universe need to be so big? What is the use of this being so great or even infinite?

The simplest answer could be: The Universe is extremely large because it is made up of an extremely large number of parts. It is subdivided into smaller sets and its division can be repeated for an extremely large number of times. The Universe is extremely large because it can be divided into extremely small parts or even infinitely. The answer could include a purpose and logically the creation of life. Here we do not ask for these simple answers and avoid entangling the question with the phenomenon of life. We appreciate that a more detailed answer can be given, and that will explain what are the natural phenomena that impose such an extent of space and such a large amount of things. The phenomenon of life and the participation of a universal intelligence are not avoided and we will introduce them into the cosmological theory later, when we are better prepared.

Things are in time not only with the arrow from "now" to "after". Things between them have a time difference and time interval relations, as parts where act on each other having an upper speed limit, even for the application of force. The limit of a maximum speed is easily and rationally deduced from the given reality, since things in nature are also at a distance, in addition to being in motion. Any connection between them requires an interval of time. External things do not exist simultaneously in a fraction of a second and as a single continuous and indivisible body. The characteristic of time difference (which coincides with spatial-geometrical distance) according to our interpretation (of matter as energy oscillations in a shared quantity) is imposed on a quantity, which returns to equilibrium in an extremely short time, i.e. extremely quickly. But this is not evident from material bodies.

In philosophical terminology we would say, that the shared quantity serves the

unity and the application of the laws to the parts where are separated (as matter) due disturbing the balance. The quantity is extremely large because it can thus be divided dynamically into parts, which are separate from each other, without being static and without the parts losing their connection to a shared quantity and their synchronicity. **Things are divided by a dynamic process and at the same time united as a whole**. Bodies move and can be far apart but do not lose their connection to a shared reality and the synchronicity that their own body parts have with each other. The parts of nature can and do exist separately with a process of delay in rebalancing, which allows time for their movement and dynamic connection with other things over wider timescales. However, the parts retain their connection directly to the shared quantity (like bubbles in water). The shared quantity of separate things gives them time and ability to indirectly connect with each other and create combinations of parts and compositions after movement and synchronization. Thus the shared quantity exists as a field for their movement and action.

The world could exist in an extremely small radius or a radius of only 1 s of light. Things could be pure bodies in the mechanistic sense, that is, as if they were separate and self-contained without the need for an intermediary/carrier. In this case, the structural elements would be the final parts of the division of bodies and have no other connection in smaller dimensions. The structural elements could be pure particles of constant mass. Any movement of the structural elements would then be exclusively external within space and towards the other particles. But the world with the carrier of such a... shared quantity that appears as a space of coexistence and movement of bodies extremely quickly maintains its equilibrium and does not lose it from any disturbance, as happens with the deformation of solid bodies. If the parts of nature were not connected to such a shared quantity, then nature could not be a dynamic whole of many parts and certainly could not be an organized whole. An electronic circuit without the power supply would be a static connection of parts. If the electrical circuit works and accom-

plishes tasks by the cooperation of its parts, it accomplishes them by the passage of electric current through all its parts, and its parts are designed according to characteristics of the electric current.

However, the restoration of balance in an extremely short time does not leave time (more than fractions of a second) for a thing to stabilize. A world that dynamically and in motion maintains its equilibrium can simultaneously be an organized whole of many parts only if its equilibrium is somewhat delayed in returning (without eventually losing it). Delay means time, and time gives margins for action, for creating difference and distance, and ultimately for formations and separate parts. But the delay in restoring the balance with which the structural elements form bodies is not due to the lack of balance of the whole and the carrier of the structural elements. The whole is stabilized in advance and forces the restoration of equilibrium by its direct participation as a shared carrier for matter at the highest rates.

Therefore, the world we perceive as inexhaustible variety and vast in extent achieves variety because time margins are extremely large, but at the same time bodies are formed with fundamental amounts of energy held in balance (as matter). Interactions on the shortest timescales and re-equilibration at extremely high rates occur because the shared quantity is not destabilized. Time is complete for the Whole and it is 100% present to itself. The longest time intervals exist between parties even when they do not interact (distance) and are provided by the shared quantity, which exists as space for things. Time is for things a possibility and a delay for what can be realized. The total energy is always distributed so that it remains constant at the same time that things are connected over longer periods of time. Thus things are maintained and formed due to the close contact of their structural elements with the common quantity (since they are oscillations of this energy). Separate things do not "wait" for their connection in the long inter-

vals of time to achieve combinations, compositions and developments as separate bodies and at a distance from each other. They exist as separate things and connected at a distance provided their structural elements are preserved. Things through the structural elements do not lose their connection (directly) to the common quantity and instead connect to it in extremely short time intervals.

“But here we are looking at the opposite reality, with the interpretation that a common amount of energy is present and it is presented with the mass of matter and with matter concentrated in bodies by its own decentralization. The Universe does not exist as a central body. But the Universe behaves as a whole with a strong restorative force that be decelerated and attenuated with the structural elements of the bodies and then some quantities of energy are presented as decentralized, as particles...” and in increased quantity as bodies. (p488-9)

Image: dynamic-distance/global-regeneration-giphy

Description: A moving GIF image. A sphere of slim lines like spider web to dark background and moving like waves while at the same time the center explodes

152-8. Did the Universe need to be so big? What is the use of this being so great or even infinite? The relation of the universal whole to matter

“The lack of a central point for all celestial bodies can be easily deduced by the thought of a maximum force of attraction of their total mass. For, where the strongest force of attraction would appear, things could not be maintained. Where the maximum attraction force of the Universe is applied, there can be no structural elements and movement. We can imagine only a quantity of electromagnetic energy and a black hole. There, where the center of gravity of the whole Universe would be, there would be any body, but a free space itself as a black hole and a repulsive force due to the weakness of matter to remain so strongly condensed. In theory, only at a certain distance from such a center of attraction for the whole matter, the energy could have the fluctuations by which the particles and the structure of matter are generated. And this means that the material world is always far from such a center of attraction for the whole Universe. The maximum force of attraction will be minimal up to a maximum distance of displacement. But at the same time, gravitational attraction is the maximum toward the minimum distance, as if the whole Universe existed inside the structural elements. Therefore, the large volume, which is supposed to be the interior of the imaginary sphere, appears in the periphery as a long distance between the astronomical bodies. Perhaps the explanation for the nuclear force (as the maximum gravitational force of the whole Universe that does not apply to material bodies as an external force) is not convincing for a modern physicist and will be considered to be supernatural. The only supernatural phenomenon is that the Universe is uncreated simultaneously and so it appears as absent, that is, with the image of an empty space”. (p409-410)

The above reasoning recorded in the treatise is perhaps not the most consistent to explain the nuclear force within the structure of matter and the distribution

of matter in a global space. However, it gives a simplified picture of how matter is dynamically connected to a constitutive force of concentration, determined by a total amount of energy (from the entire Universe) and how this is distributed in global space. In a brief reasoning: The whole of the cosmos appears united and with a strong gathering force, as if it were a continuous body and together the opposite phenomenon occurs: of the "disintegration" of the whole by its own composed force, which is extremely strong so that a body can be kept united and with structural elements. Thus the conclusion is simply drawn, that the structural elements (matter) and bodies composed of them cannot be at the center of such a strong force of attraction, and on the contrary, the material world is in areas where the universal force of concentration is weakened. Along with it follows the conclusion, that a quantity which is not confined within the structure of matter exists as a carrier of the force of concentration and is presented as space to bodies. These reasonings can be extremely easily challenged by anyone and from their simplicity. But simple calculations also fit this simplistic interpretation of the Universe and its relationship as complete with a universal (rebalancing) force. That is why the reasonings will be useful for understanding the cosmological interpretation even if they are not completely correct. Let us not forget that most who have tried to explain the natural order and balance of the natural world (ancient philosophers and modern researchers) have concluded that nature has simplicity in its processes, despite the initial impression formed by the local variety of things.

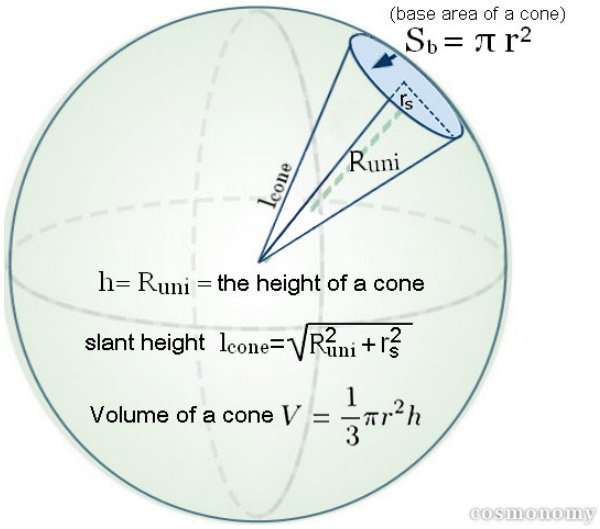
“if there were a universal center within the astronomical space (of three dimensions), then there would be a unique direction of observation for the center of the sphere. We would observe a different structure of the Universe in this direction and the distribution of the astronomical world would be presented at closer distances and perhaps with a source of total creation (such as is a Big Bang)”. (p408)

“So, if space is connected as a nucleus (common center) with the structure of matter everywhere of its regions, then on its surface (where we imagine the astronomical world) there will be regions that are farther apart than the radius of the sphere. An interaction at a distance exceeding the length of the diameter would take longer than the time it takes for the center to interact with the surface. Therefore, it makes sense that there are distant regions of the astronomical world that do not have time to appear while these regions toward the center would be visible. We can even assume that there is a region diametrically opposed to every region of the astronomical world on the surface of the imaginary sphere and is connected simultaneously with the center. But these astronomical regions are without interaction with each other. They probably have a closer connection in tiny dimensions by the nuclear force of the common core that is the space”. (p408-9)

It is recalled that the nuclear force is the most obvious phenomenon, which confirms the existence of the shared amount of energy and the close relationship of this amount with space and with the Universe as a complete Total (Supertotal) of all things within the totality of a maximum time. We must not be misled into thinking that the powerful force by which the shared energy is brought back into balance (-Fres) is a force at a distance and external to things. It is a force such as is created when a visible quantity vibrates or waves meet and stop. Energy can be transferred and force produced without transporting bodies and molecules in wave motion. Those who have not read the earlier publications and are ignorant of this interpretation of structural elements as energy oscillations in a shared energy quantity will easily express their doubt about the rebalancing force and its relation to the Universe as a whole and to a shared energy quantity. So here are selected quotes on the relationship between nuclear force and the shared amount of energy. We have said much about the inseparable relationship of matter to space as a shared quantity, and about the physical forces within its structure, before turning to considerations* of the astronomical observation of redshift.

(*GR112. October 2, 2022) Now—nearing the end of the published interpretation of matter as oscillations of energy in a shared quantity appearing as dynamic space and of the complete Universe as fixed—a few more rough calculations of the limits of universal space are pending, which reveal the consistency of reasoning and of the conclusions.

Image: The design with the conical connection of the surface to the center (cone-of-r-uni-gr-in-sphere-txt)



153. A review focused on the relationship of nuclear power to the shared amount of energy (keys for physicists and cosmology)

"When we increase the masses to the maximum limit of Mpl ~ 10^-8kg in the calculation with the constant G of gravitational force then the gravitational force in an atomic core radius comes out in nuclear size. However, so much mass particles do not observe them. It is paradoxical that we find e / m and nuclear force by the formula that gives gravitational force and this only happens with the limits of inertia and energy we have introduced (according to universal constants c, h, G do not forget).

In theory, the force is extremely more powerful (even from the known nuclear) when calculating it with the maximum quantities of energy Mpl·c^2 = h·fpl or corresponding inertia h·fpl/c^2 at the minimum length ~ λmin. We can not ignore the minimum (min) and maximum limits (max) that have defined and hurried to deny them because they come out of the known constants (c, h, G), according to known formulas. The proper sizes for the structure of an atom come out with these limits. Such lower and upper limits give average values approaching the measured sizes by which the structure of the matter has its known characteristics". (67-2j)

*[The inertia scale derived from the physical constants is: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

*[The average value of energy and corresponding inertia: E0 = 1.802582 ×10^-12 J and M0 = 2.00564 ×10^-29 kg for M0 = √(Mmin · Mpl)]

"The two extremes on the theoretical scale of energy (≈×10^8 - ≈×10^-34 J) and corresponding force (≈×10^-42 - ≈×10^44 N) are not seen within the structure of an atom, yet we observe and measure the average values of these two in-

visible limits (E0 ~1,802582 ×10^-12 J, F0 ~16,3574 N, M0 ~2,00564 ×10^-29 kg). (...) The mean force towards smaller radius r < 10^-13m has an increased magnitude as nuclear while towards longer radius >10^-13m outside an atom it is attenuated and appears as e/m and as gravitational force". (119-1)

"Nuclear and gravitational force coexist, such as space and matter, the complete Whole and the elementary part" (93-5)

"The mathematical solution for connecting the microcosm to the astronomical world was overcome by explaining the structural elements as oscillations in a shared amount of energy, which is presented as space between them. Thus the structural elements by which the physical world exists are infinitesimal variations of a shared and large quantity that is in equilibrium". (77)

"If the electric force occurs around the average value, then this explains that the electric charge is positive (+) and negative (-). Because the average values come from the two opposite processes of nature as we have established (concentration and decentralization of energy), which include the two extremes of changes, the minimum and maximum values". (94-6)

" the electric charge changes the distribution of the energy h·f. Instead of being radiation energy, it is distributed to other transmission angles as trapped and within a certain radius length and with the Bohr momentum L=M·V·r". (97-9)

"The quantum number n which determines the radius of the circumference and the energy levels is obviously closely related to the finer deviation in the mean values around which the necessary particles of matter and the force of the electric charge occur". (97-9)

"The restoring force to equilibrium has a centripetal direction and magnitude from extremely weak (≈ 2.210216 ×10^-42 N) to extremely strong (≈ 4.4499407 ×10^22 N). The strongest force within the structure of matter degrades at extremely rapid rates and balances at average values, around which the particles of matter and the force of electric charge present themselves". (96-8)

"An e/m perturbation occurs at extremely high rates along with a weakening of the nuclear force, so that eventually around the atom there remains a weakened force that is detected by the gravitational field of larger bodies". (94-6)

“We have calculated an extremely strong force according to the relations F= h·fmax/λmin = c^2·c^2 /G = G·Mpl^2/λpl^2 and according to the limits as introduced by the connection of physical constants h·c/G. We did not calculate such a strong force for the sun with our planet and paradoxically this force is greater with tiny quantities of mass at extremely tiny lengths". (94-6) *Fpl=1,210586 ×10^44 N and F(remax) ≈ 4,4499407 ×10^22 N

"The nuclear force, therefore, has the characteristic of a maximum concentrated force indifferent to the electric charge and that is why here we have identified it with a maximum gravitational force. Because the nuclear force comes out of the gravitational force equation (G ·Mpl ·Mpl / m^2) when we introduce the maximum inertia √(h·c/G) = 5.45624 ×10^-8 kg at extremely short lengths (λ<10e-14m) and as we have explained, the structure of matter is maintained by oscillations on a shared amount of energy that appears as space but exhibits a restoring force to equilibrium". (96-8)

" the nuclear force can be identified with a maximum gravitational force, and the gravitational force (as we know it from large bodies) is the weakened nuclear

force which is vertical and concentrated. Let no one think, even as a joke, that we equate the nuclear force with the gravitational force, meaning the gravitational force as a result of gravitational attraction between particles". (96-8)

"Nuclear perturbations are e/m forces" (102)

"The rebalancing force (nuclear force) is a property of the total amount of energy which is balanced and shared" (120-2)

"A shared amount of energy is held as a nucleus for matter and at the same time is held as free and extended space" with the nuclear force weakened to gravitational through the structure of matter. (120-2)

"The attenuation of the nuclear force shows the space to the structural elements and bodies "free" as a capacity of a certain radius". (138-1)

"The mass presented in the bodies has bound an amount of energy that is missing from the shared quantity, and the shared energy is presented as a space of a certain radius with an increased gravitational field intensity (g)". (120-2)

"The nuclear force is revealing of the force that the universal space has as a shared amount of energy and internally in matter which are its oscillations". (145-2)

"The interpretation of the structure of the cosmos and matter by small balls and " remote controlled " laws can not explain thousands of phenomena that spring from microscopic dimensions. But most importantly, it cannot be explained why many same particles move ceaselessly, how they are formed, where their

properties (such as charge, spin, distance forces, etc.) they come from and how they all together manage to form stable things and not an infinite dust with random forms..." (p57) But the nuclear force itself can not be explained by particles.

We have explained and calculated the relationship of matter with dynamic space as the scientific community of the whole world has not done for 100 years. Now you have to wait another 100 years until a distinguished scientist will have studied this theory and his opinion will be heard in the world news and influence the teachers of the whole world. By then, everyone will have lost the greatest treasure of rational research (not instrument observations) and history will record a failure of incredible proportions and some inadequacy of the educational system for effective thinking. The author of this cosmological interpretation has understood this weakness of the scientific community since 30 years ago. He did his best to provide convincing answers and to speed up social developments. Therefore, he accompanies the theory with results of calculations, which no one can easily ignore and dispute, and would hardly dare to publish them, if he did not have the whole explanation in his mind (which others now read and must understand and to remember what they have read).

But the numbers here did not come out of complex calculations in which an error may be hidden and in calculations only for mathematical minds and they reveal the consistency of reasoning and conclusions. Any deviation from them is reasonable and tolerable for such research, which many did not dare, because they assumed that the universe is infinite and has no boundaries or that space missions are needed. We have seen that calculating the limits of nature is easier than calculating a human construct... but what happens for effects between the limits within nature is extremely difficult to calculate. And this difficulty because as we have explained, the fundamental particles of matter - by which the visible world is formed - are already quantities of extremely subtle changes (of speed and energy), which we cannot measure! What exists and happens in nature is affected by extremely subtle changes in physical processes, by the interaction of

many other parts, and by the application of forces that are held in fragile balance and are not entirely constant.

Image: 43PTP (Drops bounce over rippling water)

Description: Drops bounce over waving water in natural color

The shortest summary to notification

The review that follows is aimed at the relationship of nuclear force to the shared amount of energy (keys to physicists and cosmology). This is the explanation for the unification of physical forces and how nature has its structure and laws. Cannot be more summarized.

When we increase the masses to the maximum limit of Mpl ~ 10^-8kg in the calculation with the constant G of gravitational force then the gravitational force in an atomic core radius comes out in nuclear size. The nuclear force comes out of the relationship of gravitational force (G ·Mpl ·Mpl / r^2) when we introduce maximum inertia √(h·c/G) = 5.45624 ×10^-8 kg into extremely short lengths. However, so much mass particles do not observe them. It is paradoxical that we find e / m and nuclear force by the formula that gives gravitational force.

We can not ignore the minimum (min) and maximum limits (max) that have defined and hurried to deny them because they come out of the known constants (c, h, G), according to known formulas. The proper sizes for the structure of an atom come out with these limits. Such lower and upper limits give average values approaching the measured sizes by which the structure of the matter has its known characteristics.

*[The inertia scale is: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]

*[The average value of energy and corresponding inertia: E0 = 1.802582 ×10^-12 J and M0 = 2.00564 ×10^-29 kg for M0 = √(Mmin · Mpl)]

The nuclear force is revealing of the force that the universal space has as a shared amount of energy and internally in matter which are its oscillations. Nuclear force disorders are e/m forces.

The interpretation of the structure of the cosmos and matter by small balls and " remote controlled " laws can not explain thousands of phenomena that spring from microscopic dimensions

End of notification

154-2. Mass density in and without bodies also manifests a shared amount of energy (which balanced appears as space)

We would wonder about the average density in the tiny volume of an atom, if such a tiny 3D volume makes sense. The following rough calculations are indicative to explore the atomic scale of mass Mmin - Mpl relative to a given volume of space and the relation of global volume to equivalent mass density. *[Inertia scale: Mmax =√(h·c/G) = 5.45624 ×10^-8 kg to Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg]. Here we calculate energy in an amount equivalent to mass in order to keep in mind the connection of phenomena with tangible matter, with known particles and with the multiple mass of astronomical bodies. We have entrenched the astronomical world connected with the processes of an atom of matter with numbers. We are trying to ascertain how mass is distributed within universal space in bodies, with space as a shared amount of energy equivalent to a total amount of mass.

> The volume of sphere (3D) with radius R = 2.997924 ×10^8 m (1 second for the speed of light and λmax = h/Mmin·c = h·Hz /c^2):

4π·R^3 / 3 → 12.56637 × 26.944 ×10^24 /3 = 3.38588273 ×10^26 / 3 = 1.12862757 ×10^26 m^3

> The volume (3D) for the average length λ0(pl) →

1.3382652 ×10^-39 ×4 ×π /3 = 5.605707 ×10^-39 m^3

> The ratio of the sphere volume Vo with radius r = 2.997924 ×10^8 m to the volume Vo with the radius of mean length λ0(pl) :

1.12862757 ×10^26 / 5.605707 ×10^-39 = 2.013354551 ×10^64

> Indicative density for the maximum inertia Mpl =√(h·c/G) and for the volume from the average length λ0(pl) :

5.456243 ×10^-8 kg / 5.605707 ×10^-39 = 9.733371 ×10^30 kg/m^3 (This is approximately the density a star like the Sun would have in a volume of ≈0.2m^3).

> The average mass or equilibrium mass comes from the atomic inertia scale Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^ -50 kg and it is: M0=√(Mmin·Mpl)=h·f0 / c^2 ≈2.0056443 ×10^-29 kg.

Indicative density for the average mass M0=2.0056443 ×10^-29 kg and for the volume from the average length λ0(pl):

2.0056443 ×10^-29 / 5.605707 ×10^-39 = 3.577861454 ×10^9 kg/m^3

> The average mass in the numerator must decrease as much as the volume of 1m^3 has decreased, so that give the average mass M0 ≈2.0056443 ×10^-29 kg comes out as the density in the volume of an atom, that is:

1m^3 / volume by length λ0(pl) = 1.783896 ×10^38 times.

2.0056443 ×10^-29 / 1.783896 ×10^38 = 1.124305429 ×10^-67 kg (Smaller than the Mmin limit of a "photon")→

1.124305429 ×10^-67 / volume by length λ0(pl) = 2.0056443 ×10^-29 kg/m^3

We note that the average mass M0 gives an extremely high density in kg/m^3 for a volume 3D calculated from the average radius ≈λ0. For comparison, we calculated the mass density of the Sun to be 1409.085 kg/m^3. This makes sense since extremely strong forces are applied to the microscopic lengths within the structure of an atom (as we have also seen according to the h·f energy quantities towards the upper limit of the scale and not just from the electric charge force). Calculations with the strong forces theoretically give increased mass. The aver-

age energy value E0 = 1.802582 ×10^-12J to a radius smaller than the average length r<λ0 gives strong forces. We will see the high density in kg/m^3 more clearly if we compare the density of the microscopic volume to the same density as the volume of an astronomical body would have.

> Indicative density for an astronomical core mass (theoretically) of 4.038056 ×10^35 kg/s and for a volume of 1 s light radius :

4.038056 ×10^35 / 1.12862757 ×10^26 = 3.577850 ×10^9 kg/m^3 ≈ 2.0056443 ×10^-29 / 5.605707 ×10^-39

Where the mass 4.038056 ×10^35 kg/s of √(h·fpl^2·c / G) and is proportional multiples of the √(h·c / G).

Indicative density with the minimum amounts of mass.

> The density with the minimum inertia Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg (photon) and for the volume calculated from the average length λ0(pl):

0.73725 ×10^-50 kg / 5.605707 ×10^-39 = 1.315177 ×10^-12 kg/m^3 (Low density, but the number of atoms per cubic meter would be large).

> If the minimum amount of energy h·Hz or inertia Mmin = h·Hz /c^2 is proportional to a volume calculated from the elementary length λpl = 0.40508 ×10^-34 m :

Vo=(λpl)^3 ×π ×4 /3 = 2.7842655 ×10^-103 m^3 →

Density: (h·Hz /c^2) / 2.7842655 ×10^-103 = 2.6479 ×10^52 kg/m^3 (Extremely high density...)

<•> We notice that the minimum amount of inertia Mmin in a 3D volume calculated from a radius smaller than the mean length r<λ0 also gives extremely high densities in kg/m^3. The minimum amount of energy h·Hz or inertia h·Hz /c^2

gives an extremely high density (×10^52 kg/m^3) in a volume calculated from the elemental length λpl. This is close to the total amount of mass (M(H)≈×10^53 kg), as we calculate it as equivalent for global space with radius -Runi ≈ 1.32 ×10^26 m (mass and radius calculated according to the constant Hubble). [M(H) = c^2·R(H) / G = c^2 ·c·T(H) / G = h·fpl^2 ·T(H) /c^2 = Mpl ·fpl ·T (H)]. But the total amount of Muni mass does not exist concentrated as a single body, and the average mass density for the volume of universal space (Vo(uni) of the -Runi radius) approaches ≈ the average value of M0≈ 2×10^-29 kg.

The equivalent amount of mass of the Muni Universe (×10^53 kg) comes out of the rough calculation as an average density (×10^52 kg/m^3) in an elementary volume (×10^-103 m^3), while the mean value of atomic mass [√(Mmin·Mpl) ≈ ×10^-29 kg] almost comes out of rough calculation as mean density of global volume (×10^78 m^3) according to the radius -R(H) of maximum expansion! The density of 2.0056443 ×10^-29 kg/m^3 comes out of the mass of 2.6479 ×10^52 kg to a global volume of 1.320224129 ×10^81 m^3. The volume of 1.320224129 ×10^81 m^3 comes out of a radius of 6.805392 ×10^26 m [R=3√(Vo·3/π·4)] almost as much as the maximum expansion distance (according to constants H and c). The effect of mass density per unit volume is one of many that reveal the astronomical world associated with the sizes of an atom of matter, as the limits are here defined according to universal physical constants. A listing of more results with ratios of magnitudes would contribute to more conclusions, but here already the numbers are staggering the readers.

<•> The extremely strong forces were inexplicable in physics and unrelated to the gravitational force. Here we have established that the gravitational force is the weakened nuclear, and that the nuclear is the maximum gravitational force that the Universe over a maximum period of time (as a whole) presents to itself. "Nuclear force is a property of the total amount of energy that is balanced and

shared." (p497) The attenuation of the nuclear force shows the space to the structural elements and bodies 'free' with a capacity of a certain radius. The nuclear force as we have explained it proves that the Universe is complete in every possible way, but this presents itself as space to the structural elements at radius lengths, extending far outside their structure -R>r(bohr)≈ ×10^-10m. We have explained that the binding radius -R corresponding to the mass of bodies [according to -R=√(G·M/a0)] gives the geometric dimensions of space because space is dynamically conserved as a decentralized energy as a function of energy, which it exists as a mass concentrated in bodies. We said this in the previous posts. Mass density without calculation of force reveals the inseparable relationship of space with a shared quantity of energy. Because the mass which is equivalent to the shared amount of energy appears decentralized as a larger volume of space and with a lower density, while concentrated in atomic dimensions the density is increased and appears in bodies.

Image: dynamic-multi-parts/101592_1_5- (a dark sphere with bright spots and faint lines connecting them)

A few lines in notification. Mass density in and without bodies also manifests a shared amount of energy (which balanced appears as space)

We have enclosed the astronomical world linked to the processes of an atom with numbers. We try to determine how the mass is distributed in the global space in bodies, with the space as a shared amount of energy, which is equivalent to a total amount of mass. The mass equivalent to the shared amount of energy is decentralized and is presented as a larger volume of space and with a lower density, while concentrated in atomic dimensions the density is increased and presented in bodies.

End of notification

155. A summary focused on the relationship of universal space to the distribution of matter and astronomical bodies

Do you older readers remember the cosmologists' question (in the 1980s) about the critical mass of matter of the entire universe to conclude whether its shape is closed or open? If the average mass density ρ were high (exceeding a limit) then the gravitational pull would be strong enough for the Universe to stop expanding and then go into a contraction phase until it finally collapses in the "Big Collapse". The Universe would be closed and spherical (with finite volume). If the average mass density ρ were low, then the Universe would be open like a saddle (negative curvature) and would expand forever.... The accelerated expansion of the Universe would lead to its cooling, hence the name "Big Cooling". A density value was limiting and the Universe would have Euclidean flat geometry. The “closed universe” ends in the "Big Crush" while the open and flat one will expand infinitely. The average density according to the calculations remained extremely close to the critical value and we never learned about the shape of the universe and its fate! In 1998 a group of scientists discovered that the expansion of the Universe is accelerating instead of slowing down due to gravity, as most people believed until then. Calculation of mass density from known matter was abandoned. The Big Bang was a "metaphysical" problem from the beginning, and new "metaphysical" phenomena are constantly being invented to explain natural phenomena, as has always been the case throughout history and mixed with science.

The interpretation of matter as oscillations of energy on a shared quantity, existing as dynamic space and with the Universe complete over a maximum period of time summarizes the following answer so far.

A shared quantity participates dynamically in the maintenance and formation

of the building blocks, and there is no doubt left. A multitude of high-speed and high-rate physical phenomena have been demonstrated or explained. Universal space is connected as a core (common center) to the structure of matter. Space as free and with minimum curvature is where the nuclear force is minimum as gravitational. We imagine the astronomical world spread over the surface of an imaginary volume. Astronomical masses have volume and interact with a weakened force with each other, and this weakening allows for distance and extended surface area over which bodies can have increased volume.

From the more advanced explanation, among other things we find that the universal space is the surface of a superset which is not only externally present. The common quantity which appears geometrically and externally as the absence of a world is not only characterized by its large dimensions and capacity for astronomical bodies. This energy quantity also exists as a universal center in microscopic dimensions which is common to all structural elements. The nuclear force is revealing of the power that the universal Whole has as a shared quantity of energy and internally in matter which are its oscillations at extremely high rates. The shared amount of energy exhibits a strong restoring force when disturbed. The shared amount of energy is dynamically isolated within the building blocks when the strong rebalancing force is reduced to an average value along with a perturbing force in the opposite direction. Thus space is a shared quantity that is dynamically and wave-likely maintained like matter.

Universal space is dynamically maintained by the concentrated amounts of matter of astronomical bodies. The astronomical world is maintained with weakened maximum (nuclear) force. The building blocks and imaginary surface where the bodies gather exist where the nuclear force weakens enough. But the universal space is not only their surface. It includes the common center of gravity of the entire astronomical world, and this center they detect as a nuclear force. Space is

free to astronomical bodies only on the curved surface of the imaginary sphere. The bulk of the imaginary sphere (ball) is free of matter, bodies and radiations and we imagine it as the interior of the sphere for the sake of understanding only.

The curvature of universal space is not the same for the propagation of radiation and for the motion of galaxies. Universal space has a length limit on maximum displacement and minimum curvature for a minimum amount of mass. Free space has its minimum curvature and maximum radius only for light that does not move with the increased mass of bodies (...) Free space for astronomical bodies with increased mass has a smaller radius because stronger gravitational fields limit the distance where bodies can move. When we are talking about a universe of a maximum distance around ≈10^27m then the far distance of space up to ≈10^24m is only ≈1 degree off the straight line.

From publication 124 onwards we explain the process by which space is dynamically maintained as incorporeal while at the same time shared energy is concentrated into matter in astronomical space (as corporeal). The concentration of matter in astronomical space is the removal and decentralization of energy from the shared quantity. A volume of free space is reserved and proportioned for each amount of concentrated matter. The mass M from the concentration of energy in a body is proportional to a radius -R of a volume of space through which energy is transferred at maximum speed. We have given the simple relationship and the numbers as they fit according to the physical constants. The average value a0 for the gravitational field at a -R radius appears to match the calculated distances for the astronomical bodies and large subclusters.

The shared amount of energy was always a total amount and dynamically balanced. The matter of the astral bodies appears concentrated by a slow process into a total amount of energy, which is always present as shared and balanced.

The shared quantity (from its distribution with the wave phenomena of concentration and decentralization) appears as bodies and respectively as free space. Thus the shared quantity appears to bodies as absent and inactive as free space, while it is always a total quantity of energy inseparably connected with the bodies and never absent.

In future posts we will have this explanation more clarified.

Image: ClassicOptimalHoki-size_restricted (A moving gif image. A spherical surface by pulsating waves)

156. What conclusions and what physical processes we have explained equip us for calculations of astronomical limits (in summary)

We have unified the world of the shortest delays (i.e. the microcosm) with the world of the slowest delays (i.e. the macrocosm). We have achieved unification by explaining the concentration of matter with an increased delay in the process of rebalancing the shared amount of energy, which occurs in wavelike phenomena and at extremely fast rates. We calculated an average delay of 3.6758700 ×10^-22 s per quantity h·1HZ after first rationally conjecturing such a delay also for matter as a phenomenon with the reduction of the maximum speed c in microscopic processes, from wave and ultrafast changes. Now, we can and do calculate astronomical magnitudes consistent with the atomic mass limits √(Mmin·Mpl)= √(Mmin·√(h·c/G)). Microscopic quantities are revealed in conjunction with astronomical magnitudes. Cosmology without this rational and mathematical connection of limits was blind. We have achieved a mathematical unification of the microcosm with the macrocosm because we first achieved the rational explanation of the structure of matter as irreducible oscillations of energy in a shared and balanced quantity, seen as space and by forces at a distance. The mathematical integration of the microcosm with the whole world is expanding and the laws that regulate the distribution of matter in global space have begun to be seen in numbers.

The previous lines should be an introduction to your information from a research team many decades ago. Such an event did not happen and you will find a conclusion, written in the first publications: the answers to many questions of cosmology cannot be given only with knowledge of physics and astronomy. The investigation of the Universe as a Whole and the search for a common reality need not only intelligent thinking and knowledge. It also required a way of life that imposes total impartiality on the human mind, which is naturally resisted in order

for man to survive, adapt to his social environment, work and enjoy his short life. Rational thinking is a method for impartiality, which if properly applied even to regulate behavior, then it hinders normal life. However, rational thought quickly reveals the world as it is not visible to the eye, along with a vast ignorance of what we are used to and think we know.

1) A simplified conjecture according to the Hubble constant. We have calculated some magnitudes for the global space and maximum time period based on the known constant H. Everyone uses this constant for possible conjectures of the astronomical limits. We used it (with a value of 70.1km/s /Mpc) mainly for two reasons: a) To find out if the phenomenon of the redshift is connected to other physical processes and to the processes as we have explained for matter as energy oscillations in a shared quantity, existing as dynamic space. b) We used it in order not to ignore the global research and to see if calculations with this constant H give results, which have a connection with results from calculations for other physical processes. And still to see, how much the results differ from other calculations and if these are useful for other calculations.

Calculations with the astronomical constant H had not revealed the connection of astronomical limits to processes in the structure of matter. Here, by interpreting matter and particles as oscillations of energy in a shared quantity - which exists as dynamic space - we have successfully introduced minimum and maximum limits for physical processes in the structure of an atom. We linked atomic characteristics and rhythmic changes with quantities. So we could and saw that the astronomical constant H is indeed associated with a velocity rate (6.809946 ×10^-10 m/s^2), which is an average rate and is close to rates we calculated from atomic quantities. We saw that this rate of speed from the constant H is close to rates of speed which we calculated based on the older physical constants (c,h,G) and always according to the min-max limits we introduced in the variation of the atomic

sizes (6.6725 ×10^-11 m/s^2 and V0=1.1019978 ×10^-13 m/s). The calculation of an average velocity rate V0 from atomic quantities was based on the explanation that a wave motion occurs in a direction towards the interior of the atom and slows down to the minimum radius length. The speed of "expansion" of space was shown to be associated with fluctuations in a shared quantity that are maintained around average values within the structure of matter. The inertia of the fundamental particles (the electron ≈10^-31 kg and the proton ≈10^-27 kg) are also extremely fine deviations from an average value and correspond to velocities approaching the average velocity (of ≈10^-13 m/s according to Mpl / M = c / V → -V = M·c/Mpl = √(G·M/λm)). We have seen that the Hubble constant, the G constant and average values are closely related to each other in atomic processes (within the structure of matter).

The constant H ≈ 70.1km/s /Mpc is taken into account not only out of respect for global research, but mainly because we investigated this pseudo-expansion rate (H=70.1km/s /3.086 ×10^19 km = 2.271553 ×10^-18 (m/s) /m) and we saw that this rate gives a low velocity, approaching the minimum velocity limit -Vmin ≈ 10^-34 m/s at a microscopic distance around the medium length λ0=1.101998 ×10^-13 m according to the atomic limits (min-max) introduced.* However, we doubt whether the velocity rate from the H constant is the most consistent. The question of ascertaining the rate of pseudo-expansion H entered this rational investigation from other observations. Since however we calculate an average velocity rate V0 easily and theoretically - for a global process of nature without observing galaxies - then we will prefer it, because the average rate comes out more simply and not by chance, but together with an explanation, showing the physical procedure. The average values of the quantities we calculated for atomic dimensions give an average velocity V0 from which the Universe will again have astronomical limits relatively close (even if the deviation is many thousands of times) to the limits of the rate of pseudo-expansion of space, without here talking about "expansion" of space. This convergence is encouraging for our rational re-

search. Simple calculations with the astronomical constant H give a Universe with the smallest magnitudes of total time, radius and mass. Below is a simplified exposition (≈) for the limits of the Universe according to the increasing speed given by the constant H. This estimate according to the presented cosmological interpretation gives the smallest possible Universe:

The first estimate according to the Hubble constant ≈70.1 km/s /Mpc and the velocity limit c:

• Time interval T(H) = 4.402282 ×10^17 s (=13.949989 ×10^9 years = 4.402282 ×10^17 s of light)

• Maximum radius length R(H) = 1.319768 ×10^26 m (= distance of 4.402282 ×10^17 s of light)

• Arc length for 1º degree (R·2·π·1º/360º) = 2.303428 ×10^25 m ≈ 74.641210 Mpc

• Rate of deceleration -a= (according to c·V/D =c^2/Duni = c/Tuni) of the maximum speed c : 6.80993 ×10^-10 m/s^2 (*expansion of space is for other researchers)

• The velocity at the distance of 1Mpc = 3,086 ×10^22 m according to V(D)=a·D/c: 7.01 ×10^4 m/s / Mpc

• The equivalent mass of the Universe as it corresponds according to the relations:

Muni = c^2·R(H) / G = c · R(1ls) · R(H) / G = T(H)·√(h·fpl^2·c/G) = M(1ls) · T(H) = Muni·s for universal space radius of length R(H) →

(2.997924 ×10^8)^2 · 1.319768 ×10^26 /G = 1.777666 ×10^53 kg

• The total mass as it corresponds according to the relation h·fmax^2 ·T(H) /c^2 for the whole time (for T(H) = 4.402282 ×10^17 s) is: Muni = 1.777662 ×10^53 kg.

• The equivalent mass according to the space binding radius -R = √(G·M/a0) →

-M = -R^2·a0/G and for the total radius R(H): 2,876652 ×10^49 kg.

• The volume of three-dimensional global space: Vglobal = 4·pi·(RH)^3 /3 ≈9.63 ×10^78 m^3 (for a radius of length R(H)=1.319768 ×10^26 m).

• The average free space density Muni / Vglobal ≈ 1.84 ×10^-26 kg/m^3.

• Total mass as it corresponds if the average density of global space is 2.0056443 ×10^-29 kg/m^3 from M0 = √(Mmin·Mpl):

(2.0056443 ×10^-29 kg/m^3) × 9.63 ×10^78 m^3 = 1.931435 ×10^50 kg

• Indicative radius of global space for a mass of 1.931435 ×10^50 kg according to -R=√(G·M/a0): 3.419746 ×10^26 m.

• Total number of subsets of total mass distributed in global space for all time and according to the maximum mass of an astronomical nucleus [M(1ls)=√(h·fpl^2 ·c / G) = h·fpl^2 / c^2 = Mmin·fpl / Tpl = h·f0^2 / V0^2]: Muni /M1ls = 4.4 ×10^17

• The volume for a cone with base radius r=1 light second and for height R the maximum radius: (d =c/H = 1.319768 ×10^26 m) is:

Vcone = (π·r^2·heightR) /3 = 1.242130 ×10^43 m^3.

• The ratio of this conical volume to the global volume of universal space Vglobal is: 9.63 ×10^78 m^3 / 1.242130 ×10^43 m^3 = 7.7529 ×10^35.

7.7529 ×10^35 cones could as subsets (astro-partitions) be attributed to the distribution of the astronomical world with a corresponding number of astronomical cores in the conical bases of radius 1ls where are on the surface of the spherical volume Vglobal.

• Average mass density for the conical volume of these subdivisions of a universal sphere into cones and according to the maximum mass of an astronomical nucleus M(1ls):

M(1ls) / Vcone = 4.038056 ×10^35 / 1.2421 ×10^43 = 3.251 ×10^-8 kg/m^3 → [√(h·c/G)/3.251 ×10^-8 = 1.678321]

• The equivalent mass of a cone with a height of 1.319768 ×10^26 m and a

base of radius 1ls from the average density of 3.251 ×10^-8 kg/m^3 is: 4.038055 ×10^35 kg.

• The space binding radius according to -R = √(G·M/a0)=√(g·R^2/a0) for a galactic mass ≈2.27 ×10^42 kg (where a0=1.101998 ×10 ^-13 m/s^2) is: 3.707377 ×10^22 m.

• The cone volume based on a binding radius -R = 3.707377 ×10^22 m and height R(H)= 1.319768 ×10^26 m is :

Vcone = (π·r^2·heightR) /3 = 1.899587 ×10^71 m^3. (A maximum volume for subdividing the total volume).

• The ratio of this conical volume to the global volume of the global space Vglobal:

9.63 ×10^78 m^3 / 1.899587 ×10^71 m^3 = 5.069523 ×10^7.

• Average mass density for the conical volume of these subdivisions: 2.27 ×10^42 kg / 1.899587 ×10^71 m^3 = 1.194996 ×10^-29 kg/m^3 [Density is close to the mean value M0=√(Mmin·Mpl): 2.0056443 ×10^-29. The ratio with Mpl is: √(h·c/G)/1.194996 ×10^-29 = 4.565908 ×10^21].

• The mass of a cone with a height of 1.319768 ×10^26 m and a base radius of 3.707377 ×10^22 m from an average density of 1.194996 ×10^-29 kg/m^3 is: ≈2.27 × 10^42 kg.

• The surface area of the Suni global volume (for radius R(H)=1.319768 ×10^26 m): 4·pi·R^2 = 2.1888 ×10^53 m^2

• The surface area of the spherical volume for the binding radius -R = 1.563652 ×10^19 m:

4·pi·R^2 = 3.072484 ×10^39 m^2 (For the base of a cone it is pi·R^ 2)

• Ratio of surfaces: Suni / 3.072484 ×10^39 m^2 = 7.123876 ×10^13 (Some three million galaxies of mass 4.038056 ×10^35 kg are proportional at the same time).

• The surface area of the spherical volume for binding radius -R = 3.707377 ×10^22 m (for galactic mass ≈2.27^42 kg): 4·pi·R^2 = 1.727201 ×10^46 m ^2

• Ratio of surfaces: Suni / 1.727201 ×10^46 m^2 = 12 672 522.77 (Million galaxies of mass ≈2.27^42 kg each one in spherical space).

• The surface area of the spherical volume for radius 1ls:

S(1ls) = 4·π·R^2 = 1.129410 ×10^18 m^2

• Ratio of surfaces: Suni / 1.129410 ×10^18 m^2 = 1.93801 ×10^35 (surfaces from volumes of radius 1ls).

• The volume of sphere with the radius of binding radius -R = 1.563652 ×10^19 m (for the space surrounding an astronomical nucleus of mass 4.038056 ×10^35 kg): 4·pi·(-R)^3 / 3 = 1.6014322 ×10^58 m^3.

• Ratio to global volume: 9.63 ×10^78 m^3 / 1.6014322 ×10^58 m^3 = 6.013367 ×10^20.

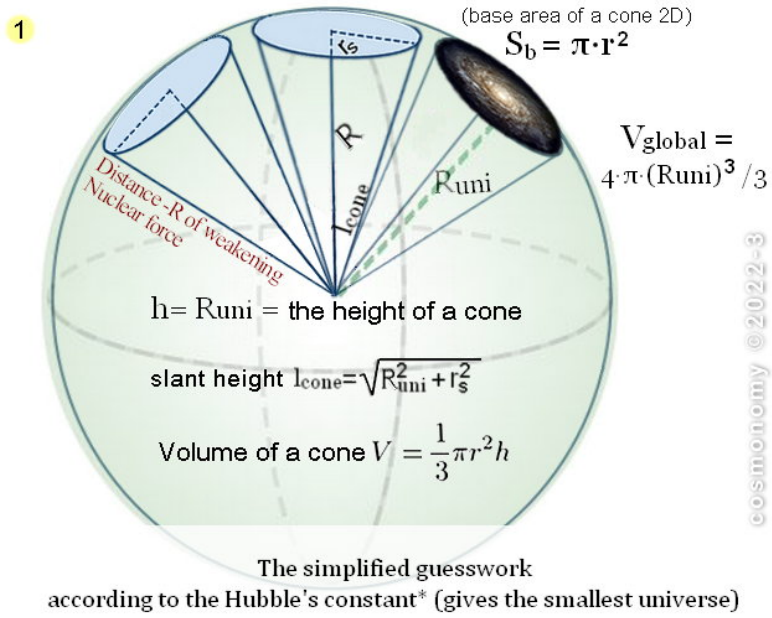
• The ratio of the total mass 1.777666 ×10^53 kg to the equilibrium mass M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg/m^3 is: 8, 863316 ×10^81

• Ratio of the maximum radius R(H) = 1.319768 ×10^26 m to the average length λ0 = 1.101998 ×10^-13 m/s: 1.1976137 ×10^39

As you see, calculations according to the interpretation of matter as oscillations of energy in a shared quantity seen as space could be run on a computer with all possible deviations of the mathematical limits and output the results for a Universe with these deviations. In the next post you will see another possible estimation without the constant H of the pseudo-expansion.

* Note: The minimum speed -Vmin theoretically is the one corresponding to the minimum inertia h·Hz/c^2 = Mmin according to the equations -Vm = M·c/Mpl = √(G·M/λm)= λpl·f and subtracted from the maximum speed c≈2.997924 ×10^8 m/s.

Image: uni-on-sphere-and-cones-from-r-txt



The simplified guesswork
according to the Hubble's constant* (gives the smallest universe)

157-2. The estimation of the astronomical limits according to the constants c and G (without H). The "middle" Universe

Simple calculations using only a few universal physical constants such as the speed of light (c), the gravitational force (G) and the elementary action (h) quickly showed that we can investigate the astronomical limits locked inside our home. Some physicists (of the 20th century) played with such a simplistic calculation of astronomical limits, without having any explanation for the close relationship between the physical forces. Some cosmologists have noticed numerical coincidences in calculated quantities for the astronomical world with certain quantities measured for the atom of matter. Those who remember the coincidences were left with the question until now. We here have easily explained how the physical forces are connected, when the building blocks are seen as oscillations of energy in a shared quantity that exists as dynamic space. This brief explanation in a minimum number of words has already unified the universal space with the particles of matter. We have seen many of the completely unexplained in the structure of matter, how they are connected with unknown processes, which are wave motions at extremely high rates. We even saw the relationship of the electric charge with two forces of opposite direction from the function of the upper and lower limits of the sizes, whose average value (F0 = 16.3574 N) is within the structure of the atom.

We have drawn many conclusions and are testing calculations for the limits of the physical world in agreement with physical constants and in full agreement with the quantities that characterize microscopic processes in the structure of an atom. **The connection of astronomical magnitudes with atomic magnitudes** is one of the greatest successes of the rational explanation of matter as oscillations of energy on a shared quantity, which exists "deceptively" as dynamic space. We use physical constants in order to remain consistent with local measurements

and taught physics. These fixed quantities may not be consistent for calculations when more forces are involved or when the phenomena are more complex. However, this potential abuse will not prevent us from producing the correct or most likely results. After all, our calculations are already rough in order to be able to apply them to the most simplified picture of the Universe. And the numbers are so large that if we confused the diameter with the perimeter it matters little at present, since the deviations of our calculations are greater than the number pi. The calculations will be corrected because ultimately everyone must produce confirmed results that agree with measurements and features within the structure of matter. That's why e.g. we do not hesitate to think of global space as a three-dimensional shape, while it is obvious that the distances in the geometric shape are also distances in time and therefore its shape is dynamic and not static. Any explanation of the world by stranger phenomena must agree with the simplest explanation of the phenomena as we observe them in our common experience. This has been a postulate from the beginning of this research effort, which has somewhat adventurously reached this point.

Below is a simplified record of limits (≈) calculated purely from only two physical constants without the astronomical constant H. The constant G is clearly associated with astronomical bodies and an attractive force is "locked" into it, which is extremely weak. We have explained the relationship of the constant G to the constants c and h and how this relationship is necessary and how the constant G appears from microscopic processes. We have selectively seen in the function of magnitudes (M,E,f,λ,c,v,F and so on) how the magnitudes change when calculated with the constant G of gravity and how they change when calculated with the constant h of electromagnetism for same mathematical result. The maximum speed c must be reduced for the same result in the equations with constant G. Gravitational force is a result of balancing opposing forces in the change of shared energy. A force of average magnitude F0 towards the minimum length within the radius of an atom of matter is extremely strong without corresponding

bodies. The most powerful force is a universal rebalancing force, it begins in the microscopic dimensions as a wave phenomenon and descends by the structure of matter. Stronger force is associated with extremely high rates of change, while weakened force or after increased mass resistance gives low rates of change.

We have calculated a rate of increase of speed which comes from the constant G of gravity and for the force that appears between two bodies of mass 1kg at a distance of 1m. The rate of increase in velocity derived from the gravitational constant G and the corresponding rate of expansion of space per Mpc (6.8685 km/s / 3.086 ×10^19 km) are close to the known astronomical redshift rate per Mpc (70, 1 km/s / 3.086 ×10^19 km), which research centers have calculated from observations of the most distant galaxies. According to the H rate, the redshift velocity per meter 2.271553 ×10^-18 (m/s) /m = 70.1 km/s /3.086 ×10^19 km (Mpc). According to the rate a of gravity, the speed per meter 2.225706 ×10^-19 (m/s) /m = 6.868530 km/s / 3.086 ×10^19 km. The two rates and corresponding speeds are approximated by a ratio: V(H) / V(G) = 10.206. The average rate of increase in velocity (expansion) we calculated from Hubble's constant H(0) per meter distance could be the average rate of increase in velocity coming out of the constant of gravity G. If the rate of the "expansion" of space were the rate of the gravitational force, then the G constant would be 6.80993 ×10^-10 m^3/kg·s^2. We found in simple calculations a relation of the "expansion of space" with the gravitational constant G [and in the 142nd publication we saw the relation H·D / 1Mpc = c·D / Dmax = D / T(H) fitted with the relation V=√(G·M/- R)] and a fundamental thought of this cosmological interpretation was strengthened: Astronomical magnitudes have a permanent dependence and function with quantities and phenomena within the structure of matter, because the structure of matter is wave processes in a shared quantity.

According to the gravitational force and the rate of acceleration of two 1kg masses at a distance of 1m and with the speed limit c:

• Time interval Tuni = 4.492954 ×10^18 s (=142.237312 ×10^9 years)

• Total straight length R(uni) = 1.34696 ×10^27 m (Distance of 4.492954 ×10^18 s of light)

• Arc length for 1º degree (R·2·π·1º/360º) = 2.350887 ×10^25 m ≈ 761.791 Mpc

• Rate of deceleration -a of maximum speed c (where space is concentrated): 6.6725 ×10^-11 m/s^2

• V(D)=a·D/c = D(1Mpc) / Tuni at the distance of 1Mpc ≈3.086 ·10^22 m: 6.868531 ×10^3 m/s. (The distance is D(V) = c·V/a)

• The rate of deceleration -a according to c·V/D =c^2/Duni = c/Tuni is: 6.6725 ×10^-11 m/s^2 at the distance of 1Mpc ≈ 3,086 ×10^22 m

• Total mass as it corresponds according to the relations Muni = c^2·R / G = c · R(1ls) · Runi / G = Tuni·√(h·fpl^2·c/G) = M(1ls) · Tuni = Muni ·s for universal space radius of length Runi →

(2.997924 ×10^8)^2 · 1.34696 ×10^27 /G = 1.814229 ×10^54 kg

The equivalent mass of the Universe as it corresponds according to the relation h·fpl^2 ·Tuni /c^2 for the whole time (for Tuni = 4.492955 ×10^18 s) is:

Muni = 1.814276 ×10^54 kg

• The equivalent mass according to the space binding radius -R = √(G·M/a0) → -M = -R^2·a0/G and for the total radius R(uni): 2,996413 ×10^51 kg.

• The mass for possible fmax = 0.452444 ×10^42 Hz (when λpl≈h) is: 6.780719 ×10^51 kg

• Volume of three-dimensional global space: Vglobal = 4·pi·(Runi)^3 /3 ≈1.02 ×10^82 m^3 (for a radius of length Runi = 1.346954 ×10^27 m).

• Average free space density Muni / Vglobal ≈ 1.78 ×10^-28 kg/m^3

• Total mass as it corresponds if the average density of global space is

2.0056443 ×10^-29 kg/m^3 from M0 = √(Mmin·Mpl):

(2.0056443 ×10^-29 kg/m^3) × 1.02 ×10^82 m^3 = 2.045757 ×10^53 kg

• Indicative radius of global space for a mass of 2.045757 ×10^53 kg according to -R=√(G·M/a0): 1.1129635 ×10^28 m.

• Total number of subsets of total mass distributed in global space for all time and according to the maximum mass of an astronomical nucleus [M(1ls)=√(h·fpl^2 ·c / G) = h·fpl^2 / c^2 = Mmin·fpl / Tpl = h·f0^2 / V0^2]: Muni /M1ls = 4.5 ×10^18

• The volume for a cone with base radius r=1 light second and for height R the maximum radius of space 1.34696 ×10^27 m is:

Vcone = (π·r^2·heightR) /3 = 1.267717 ×10^44 m^3.

• The ratio of this conical volume to the global volume of the global space Vglobal:

1.02 ×10^82 m^3 / 1.267717 ×10^44 m^3 = 8.045961 ×10^37.

8.046 ×10^37 cones could as subsets (astro-partitions) be attributed to the distribution of the astronomical world with a corresponding number of astronomical cores in the conical bases of radius 1ls where are on the surface of the spherical volume Vglobal.

• Average mass density for the conical volume of these subdivisions of a universal sphere into cones and according to the maximum mass of an astronomical nucleus M(1ls):

M(1ls) / Vcone = 4.038056 ×10^35 / 1.267717 ×10^44 = 3.185297 ×10^-9 kg/m^3 → [√(h·c/G)/3.185297 × 10^-9 = 17.129463].

The equivalent mass of a cone with a height of 1.34696 ×10^27 m and a base of radius 1ls from an average density of 3.185297 ×10^-9 kg/m^3 is: 4.038055 ×10^35 kg.

• The binding radius of space according to -R = √(G·M/a0)=√(g·R^2/a0) for a galactic mass ≈2.27 ×10^42 kg (with a0=1.101998 ×10 ^-13 m/s^2) is: 3.707377

×10^22 m.

• The volume of the cone based on the binding radius -R = 3.707377 ×10^22 m and height R(uni)= 1.34696 ×10^27 m is:

Vcone = (π·r^2·heightR) /3 = 1.938726 ×10^72 m^3. (A maximum volume for subdividing the total volume).

• The ratio of this conical volume to the global volume of the global space Vglobal:

1.02 ×10^82 m^3 / 1.938726 ×10^72 m^3 = 5.261187 ×10^9.

• Average mass density for the conical volume of these subdivisions: 2.27 ×10^42 kg / 1.938726 ×10^72 m^3 = 1.170872 ×10^-30 kg/m^3 [The density is close at the mean value M0=√(Mmin·Mpl):2.0056443 ×10^-29. The ratio with Mpl is:√(h·c/G)/1.170872 ×10^-30 = 4.659984 ×10^22].

• The total mass of a cone with a height of 1.34696 ×10^27 m and a base radius of 3.707377 ×10^22 m from an average density of 1.170872 ×10^-30 kg/m^3 is: ≈2.27 ×10^42 kg.

• The surface area of Suni global volume (for radius R(H)=1.34696 ×10^27):

4·pi·R^2 = 2.279916 ×10^55 m^2

• The surface area of spherical volume for binding radius -R = 1.563652 ×10^19 m:

4·pi·R^2 = 3.072484 ×10^39 m^2 (For the base of a cone it is pi·R^2)

• Ratio of surfaces: Suni / 3.072484 ×10^39 m^2 = 7.420433 ×10^15 (galaxies of mass 4.038056 ×10^35 kg at the same time)

• The surface area of the globular volume for the binding radius -R = 3.707377 ×10^22 m (for the galactic mass ≈2.27 ×10^42 kg):

4·pi·R^2 = 1.727201 ×10^46 m^2

• Ratio of surfaces: Suni / 1.727201 ×10^46 m^2 = 1.320006 ×10^9 (More than a billion galaxies of mass ≈2.27 ×10^42 kg each in spherical space)

• The surface area of the spherical volume for radius 1ls:

S(1ls) = 4·pi·R^2 = 1.129410 ×10^18 m^2

• Ratio of surfaces: Suni / 1.129410 ×10^18 m^2 = 2.018679 ×10^37 (surfaces from volumes of radius 1ls).

• Sphere volume from binding radius -R = 1.563652 ×10^19 m (for the space surrounding an astronomical nucleus of mass 4.038056 ×10^35 kg):

4·pi·(-R)^3 /3 = 1.6014322 ×10^58 m^3.

• Ratio of global volume: 1.02 ×10^82 m^3 / 1.6014322 ×10^58 m^3 = 6.369299 ×10^23.

• Ratio of the total mass 1.814229 ×10^54 kg to the equilibrium mass M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg/m^3: 9, 0456169 ×10^82.

• Ratio of maximum radius R(uni) = 1.34696 ×10^27 m to mean length λ0 = 1.101998 ×10^-13 m/s: 1.222289 ×10^40

* The time interval Tuni, the total radius length Runi, and the total mass Muni are larger in magnitude than the corresponding magnitudes with the constant H:

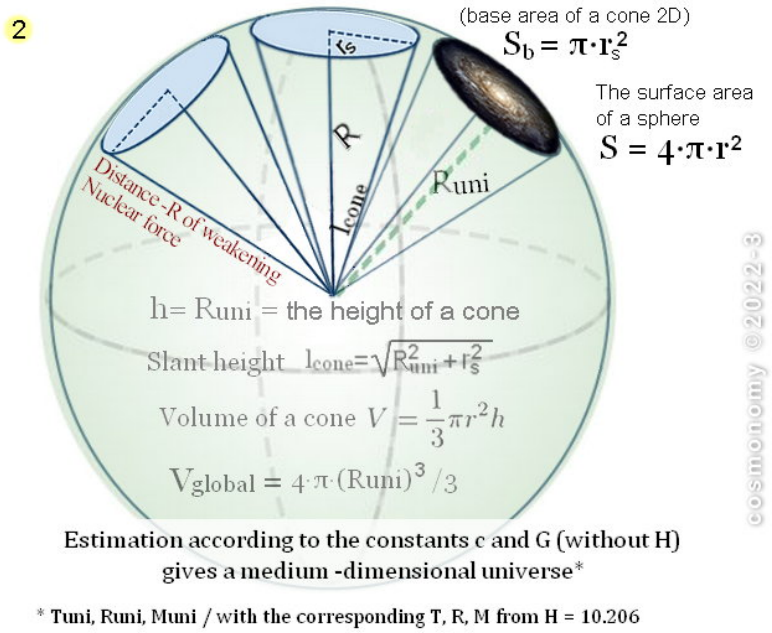
10.206 [ie as long as the velocities V(H) / V(G) and the rates -a(H) / -a(G)].

Note

* The rate of velocity from the constant H [with the value of H≈70.1km/s /3.086 ×10^19 km and according to c·D / Dmax = D / T(H)] gives a velocity of ≈2.5 × 10^-31 m/s for the average length λ0 and this is not the lowest speed according to the limits as defined. If we enter the longer time 4.492954 ×10^18 s or distance 1.34696 ×10^27 m in the same relation, again the lowest speed does not come out. The calculation at the lowest rate of 6.6725 ×10^-11 m/s^2 gives a lower velocity [even with the relationship c·D / Dmax = D / T(uni)] that is closer to the lower limit. The minimum velocity Vmin =4.0508025 ×10^-35 m/s is almost obtained from the relations Vg=G·M/-R·c = a0·-R/c and Vg=√(a0·-R^2/ Rmax). So the esti-

mate is that the "medium-sized" Universe calculated from the rate of 6.6725 ×10^-11 m/s^2 (according to the gravitational force) is more likely than the Universe of the constant H. The average velocity rate according to the constant G comes out more precisely because it has been measured from small amounts of mass, while the expansion rate measurement from distant galaxies is probably less accurate.

Image: uni-on-sphere-and-cones-from-r-txt2



Estimation according to the constants c and G (without H) gives a medium -dimensional universe*

* Tuni, Runi, Muni / with the corresponding T, R, M from H = 10.206

158-3. Astronomical limits calculated from the average velocity V0=√(Vmin·c) according to wave processes in a shared quantity. Review and estimate of the "bigger" Universe (without the H of "expansion")

The slowest rate -a is the one that would take maximum time to reach the maximum speed c smoothly. Conversely, the maximum speed c would take the maximum time to smoothly reach its minimum value at the slowest rate. *(Post 123) The slowest acceleration amin takes the maximum time Tmax to reach the highest speed c while the highest acceleration amax takes the shortest time Tmin (Applies: c = amax·Tmin = amin·Tmax). This simple reasoning allows calculating a maximum time interval and corresponding length with math for children. We can calculate as many time intervals as we want, according to the limit of the maximum speed and choosing a rate of increase or decrease. These calculations of time from a smooth rate to a change of velocity have only a connection to motion, regardless of the concept of mass or the presence of a body (t=c/a). But speed is a fundamental characteristic for physical processes and furthermore with the correspondence Mpl / M = c / V we clearly saw how speed is connected to all quantities in atomic processes. The minimum velocity -Vmin ≈ 0.405080 ×10^-34 m/s theoretically is the one corresponding to the minimum inertia h·Hz/c^2 = Mmin ≈0.73725 ×10^-50 kg according to the equations -Vm = M·c/Mpl = √(G·M/λm)= λpl·f and is subtracted from the maximum speed c≈2.997924 ×10^8 m/s. Larger inertia values correspond to increased reduction in maximum speed c.

The existence of the limits (Vmin - Vmax) on the speed change imposes the limits of a minimum and a maximum time for every other change. All moves are adjusted within speed-dependent time limits. The times within the wave processes of the structure of matter are repetition rates and periods (and therefore the time therein has a high precision for nature). The rate of change can also be

changed smoothly, and then the periodic time, frequency and rate of change of rate are entered. The unit of time is decisive also for the calculation of the energy (h·f) that is changed or transferred. We also gave a ratio of energy to time (and the relations Emin / Tmin = Emax / Tmax → t = h·f/P = E/P) as well as a scale of energy (Emin, Emax corresponding to the scale of inertia Mmin, Mmax). Ratios give calculations in agreement with the quantities and magnitudes of force as measured in the structure of an atom. When we introduce the limits of inertia in correspondence with the limits of change of speed (according to Mpl / M = c / V), then we easily calculate average values for all the quantities that change, even for the speed.

We calculated an average velocity V0=√(Vmin·c)=√(G·M0/λ0) = M0·c/Mpl =h/Mpl·λ0 = 1.101998 ×10^-13 m/s. The average velocity is related to the average values of the other physical changes, which give the average inertia value (M0 = 2.00564 ×10^-29kg). The electron (≈10^-31kg) and the proton (≈10^-27kg) are extremely subtle deviations from these average values (M0 / 22.0173 = Me and M0 · 83.3956 = Mp). (* Post 122) We have seen how subtle are the variations in the sizes by which the particles in the structure of matter appear (with their known inertia and equivalent energy). The average value of velocity V0 per sec gives a fairly slow rate of change a and reveals an important process in the foundations of nature. If the maximum speed c decreases at a rate of 1.101998 ×10^-13 m/s^2 until the minimum value of Vmin = 0.40508 ×10^-34 m/s then it takes time t = c / a = 2.720444 ×10^21 s. If the maximum speed c decreases smoothly at the rate of the minimum Vmin = 0.40508 ×10^-34 m/s every second, then the average speed will be V0 = 1.101998 ×10^-13 m/s in time t = 1s·V0 / Vmin = 2.720445 ×10^21 s. If the maximum speed c is reduced by 2.720445 ×10^21 times the minimum speed of 0.40508×10^-34 m/s every 1s (without rebounding), then the total reduction is 1.101998 ×10^-13 m/s /s (the average pace).

Speed is closely related to the time that energy is changed and transferred. The structure of matter is achieved by delaying the shared quantity to return to equilibrium, we rationally concluded. Then we saw how this delay is increased near the mean values of the fluctuations [f0=√(f·fup)]. The period of a e/m fluctuation is shortened at a higher rate of change, but the total time of the repetition is increased (t = E·tmin / Emin = h·f / Pmax). We have seen that these two times (of the period and of a unit time in the repetition) come close to equaling the equivalent energy of an electron. The times are (coincidentally) reversed at the equivalent energy of a proton: The total time (in sec) of the repetition exceeds the period time of the equivalent energy. Thus we concluded that time within the structure of matter serves in the sense of delay, and that the maintenance of the material and astronomical world is due to this subtle delay, which is somewhat multiplied. The minimum delay tmin = 0.135120 ×10-42 sec multiplied by 2.720445 ×10^21 times is an average value of 3.675870 ×10^-22 s.

In general, an average delay of ≈3.6758700 ×10^-22 s at the minimum energy amount h·1HZ gives a delay time of ≈1s for the average energy value E0=1.802582 ×10^-12J. The fine delay tmin = 0.135120 ×10-42 sec in restoring equilibrium per elementary quantity h·f and the mean value t0 = 3.675870 ×10^-22 s give the time margins for an increased amount of particles (as we said in 139-2). Later, we saw that the equation √(h·fpl^2 ·c / G) gives a multiple mass (of astronomical bodies) above the atomic mass limit √(h·c/G) and the first equation coincides with the equations h ·fpl^2 / c^2 = h·f0^2 / V0^2. Average velocity V0 in relation to e/m energy (h·f) gives more mass (h·f0^2 / V0^2 > h·f0/c^2 = E0/c^2) when conditions prevent rebalancing at maximum speed c. Thus, through other calculations we again concluded that the maximum speed c belongs to the e/m forces and the concentration of space (gravity), while matter and bodies have their increased mass due to the reduction of the maximum speed. And when we looked for what is the physical phenomenon that moves with the maximum speed c and with its slowing down particles with mass are created,

then we saw that the reduction of the maximum speed occurs in a wave motion from the concentration of space itself, which rationally we had identify with a shared amount of energy.

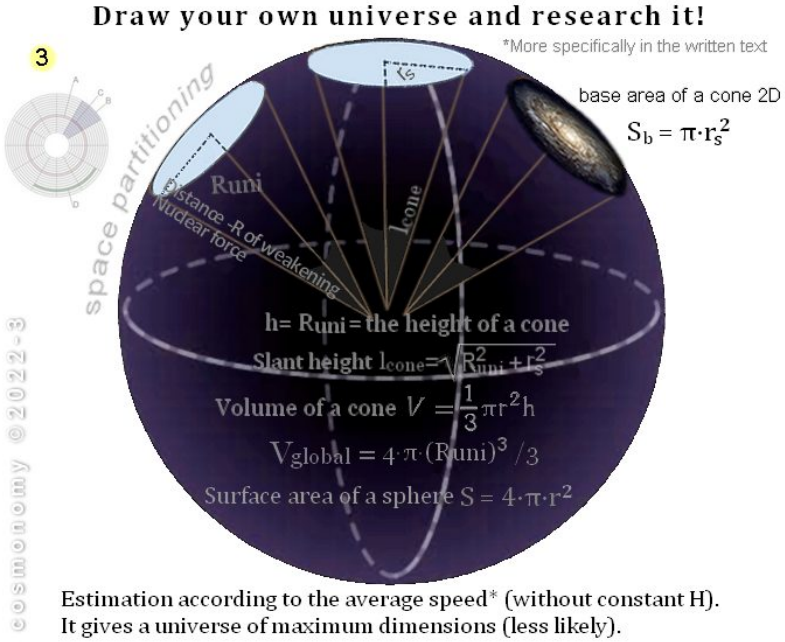
We have calculated an average velocity V0 = 1.101998 ×10^-13 m/s and a minimum Vmin speed limit that are connected to balanced procedures within the structure of an atom. Therefore, we could directly calculate a long time that these low speeds can give, without thinking of anything else. The result of a long period of time shows natural processes that are slow and does not indicate procedures in the structure of matter. We have calculated the long time according to an explanation for the structure of matter and now we know that the result is revealing for extremely subtle processes, beginning at the highest speed of nature and at extremely high rates. After all, from the explanation of how the structure of matter is associated with a shared amount (which seems to be space) we concluded that the reduction of maximum speed is a physical phenomenon that begins with the concentration of energy to the structure of matter. The reduction of maximum speed c, the minimum Vmin limit, the average V0 and the rate (-a) where the speed decreases occur on the foundations of nature and are not mathematical games. The shared amount of energy is concentrated at the maximum speed c and a smooth deceleration peaks into the structure of matter, towards the minimum radius of the space (around ≈ λpl = h/c·Mpl). The concentration around stabilized matter is detected as a gravitational field. The average V0 speed value is the result of a reduction rate of maximum speed up to a minimum value in a global process of nature. The dynamic space balances locally somewhere in this average velocity V0 where there is an atomic core ie extremely close to the average values of the phenomena).

The calculations exactly with the average values of physical sizes (changed for the structure of matter) do not take into account their subtle divergences. An

atom of matter is more complex and one body includes cores with a larger number of protons and neutron. For this reason, the calculation of astronomical boundaries based on just on the average values will give a universe that is less likely than compared to calculations according to the two other rates (the constant H and according to the gravitational force).

See in more detail the calculations in the next post. Students and tutor teachers will surely be thrilled when playing with these mathematical and geometric proportions. They will see mathematical coincidences and how easily we can design our own universe in theory, testing some deviations on the lower and upper limits of sizes. After a comparison of the features and numbers on the most possible models of the universe, some conclusions can come, which are important for choosing the theoretical model that suits the natural world.

Image: uni-on-sphere-and-cones-from-r-3-en



* $V_0 = \sqrt{(Vmin \cdot c)} = \sqrt{(G \cdot M_0 / \lambda_0)} = M_0 \cdot c / Mpl = h / Mpl \cdot \lambda_0 = 1{,}101998 \cdot 10\text{^-}13$ m/s

* Tuni, Runi, Muni / with the corresponding T, R, M from H: 6179,63 and 605,4913 from G

159-3b. Astronomical boundaries calculated from the average velocity V0 = √(Vmin·c) according to the wave processes in a shared quantity. (More specifically for students and tutors. Design your own universe and explore it!)

In the preface of the English treatise we also read the following lines: "Ultimately, if no reader values the success of this new cosmological theory, this treatise will provide, at least, an instructive work. With this work the interest in philosophy will be enhanced and also the creative thinking, while the interested thinker will have a chance to be familiar with the physical phenomena, with all the pleasure of the reading, as long as with an entertaining magazine for strange riddles and puzzles". This is a response to those who belittle work, and reveals their own arrogance. If they were well-intentioned and if they were interested in encouraging the creative thinking of young people in particular, then they would at least comment leniently, instead of seeking to question and repeat what is known as a robot, what even computers can now say.

Students and tutoring teachers will be thrilled when playing with mathematical and geometric proportions that accompany this rational theory of matter as energy oscillations in a shared quantity, which looks like space. They will see mathematical coincidences and how easily we can design our own universe in theory, testing some deviations on the lower and upper limits of sizes. By comparing the features and numbers to the most possible models we have calculated, they can draw important conclusions about choosing the theoretical model that fits the natural world.

• A rational interpretation of the conservation of the world as a whole and about the essence of things began (in 1986) and merged with physics (in 2008). They "merged" because the interpretation in general and with rational considera-

tions required the existence of fixed minimum and maximum limits on physical processes. The introduction of mathematics into this rational interpretation and the search for solutions to mathematical problems were based on a mathematical equivalence formulated by another writer (V. Karamicha) and is as follows:

Mpl/M = c/v where Mpl = √(h·c/G) and v = M·c/Mpl = √(G·M/λ) where λ = h/M·c.

• A scale of inertia was established according to this above correspondence between inertia and velocity:

Mpl= √(h·c/G)= 5.45624·10^-8 kg

Mmin= h·1Hz/c^2 = 0.73725·10^-50 kg

* Further investigation revealed that the velocity v = M·c/Mpl = √(G·M/λ) is a velocity subtracted from the maximum c. An elementary inertia is attributed even for light, and also this inertia corresponds to an extremely subtle decrease in maximum velocity. The minimum and maximum limits of sizes were tested to be associated with microscopic processes, and the calculations verified that matter maintains its structure with just such limits, even if the numbers do not seem to fit the common experience of the physical world. The two extremes on the theoretical scale of energy (×10^-34 - ×10^8 J) and the corresponding force (×10^-42 - ×10^44 N) are not seen within the structure of an atom, but we observe and measure the average values of these two invisible limits. Only certain quantities of energy around the mean values appear as fundamental particles in the structure of matter. The fundamental particles of matter are a small part of this very rapid process where a shared quantity varies according to minimum and maximum values. Small amounts of energy around the mean values of the quantities in an extremely fast process of energy oscillations appear localized as particles of equivalent mass.

• The average values were calculated and it was immediately apparent that the fundamental particles of matter are extremely fine deviations:

M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg

E0≈1.802582 ×10^-12 J, M0≈2.00564 ×10^-29 kg, F0=√(Fmin·Fpl)≈16.3574 N

Average rate of fluctuation ≈ ×10^21 Hz

M0 / Me = 22.01738 (ratio to the rest mass of the electron)

Mp / M0 = 83.39569 (ratio to proton rest mass)

• The following relationships were implemented and investigated:

-V= √(G·M/λ) = M·c/Mpl = f·λpl = h/Mpl·λ

Mpl·c·V = -V·16.3574 = E = h·f (energy)

V0 = √(Vmin·c)= √(G·M0 /λ0)= M0·c/Mpl=h/Mpl·λ0 = 1.1019978 ×10^-13 m/s

Vmin = 0.40508·10^-34 m/s

• The concentration of matter in astronomical space is the removal and decentralization of energy from the shared quantity. A volume of free space is reserved and proportioned for each amount of concentrated matter. The mass M from the concentration of energy in a body is proportional to a radius -R of a volume of space from which the energy is bound, transferred and concentrated at maximum speed c. We have introduced the binding or gathering radius -R for the space gathered in astronomical bodies, and the 3D volume of this radius is proportional to energy giving the gathered mass. This radius seems to agree with the limit of the average intensity value for g of the gravitational field of the bodies (a0) and is:

-R^2 = G·M/a0 = g·R^2/a0 → -R=√(G·M/a0) → -M = -R^2·a0/G

• The astronomical constant H is indeed associated with an average velocity rate (6.809946 ×10^-10 m/s^2) and approaches certain rates we calculated from atomic quantities. This velocity rate according to the constant H is close to veloci-

ty rates (6.6725 ×10^-11 m/s^2 and V0=1.1019978 ×10^-13 m/s^2) which we calculated based on the older physical constants (c,h,G) and always according to the min-max limits which we introduced in the variation of the atomic sizes. This rate gives a low velocity at a microscopic distance around the mean length λ0=1.101998 ×10^-13 m and approaches the minimum velocity limit -Vmin ≈ 10^-34 m/s according to the atomic limits (min - max) that have been introduced.

H=70.1 km/s /3.086 ×10^19 km = 2.271553 ×10^-18 (m/s) /m)

V(g) = 6.868530 km/s / 3.086 ×10^19 km = 2.225706 ×10^-19 (m/s) /m

V(H) / V(G) = 10.206

The rate of increase 6.809946 ×10^-10 m/s^2 = 70.1 km/s /t of Mpc

The acceleration rate from gravitational force 6.6725 ×10^-11 m/s^2 = 6.868530 km/s /t of Mpc

• Investigated if the relationship V=√(G·M/-R)] is related to the "expansion" velocity H·D / 1Mpc = c·D / Dmax.

We have found that the following relations approximate the velocity from the constant H and are investigating them:

Vg =√{(G·M/-R)·(-R·V0/c)} = √{V^2·(-R·V0/c)} = √{V^2·-R/2,7204446 ×10^21} = a0·-R/√c = (√c)·-R·V0/c.

Vg =√{V^2 ·(-R·V0/c)} /√c = √{V^2 ·(-R·V0/c^2)} = √(G·M/-R)·√ (-R·V0/c^2)= √(G·M·V0/c^2) = G·M/-R·c = a0·-R/c.

Vg =√(a0·-R^2/Rmax) for a0=1.101998 ×10^-13 m/s^2

• The equation √(h·fpl^2 ·c / G) coincides with the equations h·fpl^2 / c^2 = h·f0^2 / V0^2 = Mmin·fpl / Tpl = c^2 ·c / G and theoretically gives a maximum mass M(1ls) for radius 1ls.

We can and do calculate astronomical magnitutes in agreement with atomic mass limits √(Mmin·Mpl)= √{(Mmin·√(h·c/G)}. Microscopic quantities are revealed

in connection with astronomical quantities. The relation √(h ·fpl^2 ·c / G) gives an amount of matter multiple times the atomic limit of Mpl=√(h·c/G). The equation with the mean velocity value h·f0^2 / V0^2 can give the same amount ≈4.038056 ×10^35 kg/s and then a maximum astronomical mass comes out without the maximum speed c. The maximum speed c and the shortest time to restore the energy balance belong to the e/m phenomena with the minimum inertia (of photons) which are transferred to free space.

> Here are some astronomical bounds calculated from the average velocity V0=√(Vmin·c) according to wave processes in a shared quantity.

• Maximum time interval Tuni = c/a0 = 2.720444592 ×10^21 s (≈86.205687140 ×10^12 years).

• Total length of straight line R or Duni = 8.155687493 ×10^29 m (Distance of 2.720444592 ×10^21 s of light).

• Arc length for 1º degree (R·2·π·1º/360º) = 1.423434 ×10^28 m ≈ 461303.8 Mpc

• V(D)=a·D/c for 1Mpc: 11.343734 m/s (=D1Mpc /Tuni). (The distance D(V) = c·V/a). | *1Mpc ≈ 3.086·10^22 m

• Deceleration rate -a = (c·V/D =c^2/Duni = c/Tuni) of maximum speed c : 1.101998 ×10^-13 m/s^2

• Total mass as it corresponds according to the relations Muni = c^2·R / G = c · R(1ls) · Runi / G = Tuni·√(h·fpl^2·c/G) = M(1ls) · Tuni = Muni ·s for the radius of global space of length Runi →

(2.997924 ×10^8)^2 · 8.155687493 ×10^29 /G = 1.09853368 ×10^57 kg

• The equivalent mass of the Universe as it corresponds according to the relation h·fpl^2 ·Tuni /c^2 for the whole time (for Tuni = 2.720444592 ×10^21 s) is:

Muni = 1.09853 ×10^57 kg

• Muni / Runi = 1.098533 ×10^57 kg / 8.155687 ×10^29 m = c^2 /G → √Muni=

3.314413 ×10^28 ≈ Runi.

• The equivalent mass according to the space binding radius -R = √(G·M/a0) → -M = -R^2·a0/G and for the maximum -Runi radius: 1.09853348 ×10^57 kg.

• Volume of three-dimensional global space: Vglobal = 4·pi·(Runi)^3 /3 ≈2.272322 ×10^90 m^3 (for the radius of length Runi = 8.155687493 ×10^29 m).

• The average free space density Muni / Vglobal ≈ 4.834409 ×10^-34 kg/m^3

• Total mass as it corresponds if the average density of global space is 2.0056443 ×10^-29 kg/m^3 according to M0 = √(Mmin·Mpl):

(2.0056443 ×10^-29 kg/m^3) × 2.272322 ×10^90 m^3 = 4.557469 ×10^61 kg.

• Indicative radius of global space for a mass of 1.098533 ×10^57 kg according to -R=√(G·M/a0): 8.155686 ×10^29 m.

• Total number of subsets of the total mass distributed in global space for all time and for the maximum mass of an astronomical nucleus [M(1ls)=√(h·fpl^2 ·c / G) = h·fpl^2 / c ^2 = Mmin·fpl / Tpl = h·f0^2 / V0^2]: Muni /M1ls = 2.72 ×10^21.

• The volume of a cone with base radius r=1 light second and height R the maximum radius of space 8.155687493 ×10^29 m is:

Vcone = (π·r^2·heightR) /3 = 7.675916 ×10^46 m^3.

• The ratio of this conical volume to the global volume of the global space Vglobal:

2.272322 ×10^90 m^3 / 7.675916 ×10^46 m^3 = 2.960326843 ×10^43.

That is, ≈3 ×10^43 cones could be assigned as subsets (astro-partitions) for the distribution of the astronomical world with a corresponding number of astronomical cores in the conical bases of radius 1ls where are on the surface of the spherical volume Vglobal.

• Average mass density for the conical volume of these subdivisions of a universal sphere into cones and according to the maximum mass of an astronomical nucleus M(1ls):

M(1ls) / Vcone = 4.038056 ×10^35 / 7.675916 ×10^46 = 5.260683 ×10^-12

kg/m^3.

The equivalent mass of a cone height of 8.155687493 ×10^29 m and base of radius 1ls and according to the average density of 5.260683 ×10^-12 kg/m^3 is: 4.038055 ×10^35 kg.

• The space binding radius according to -R = √(G·M/a0)=√(g·R^2/a0) for a galactic mass ≈2.27 ×10^42 kg (where a0=1.101998 ×10 ^-13 m/s^2) is: 3.707377 ×10^22 m.

• The volume of the cone based on the binding radius -R = 3.707377 ×10^22 m and height R(uni)= 8.155687493 ×10^29 m is:

Vcone = (π·r^2·heightR) /3 = 1.173876 ×10^75 m^3. (A maximum volume for subdividing the total volume).

• The ratio of this conical volume to the global volume of the whole space Vglobal:

2.272322 ×10^90 m^3 / 1.173876 ×10^75 m^3 = 1.935742 ×10^15.

• Average mass density for the conical volume of these subdivisions: 2.27 ×10^42 kg / 1.173876 ×10^75 m^3 = 1.93376472 ×10^-33 kg/m^3 [Density is less than the mean value M0=√(Mmin·Mpl):2.0056443 ×10^-29. The ratio with Mpl is:√(h·c/G)/1.93376472 ×10^-33 = 2.821565 ×10^25].

• The total mass of a cone height of 8.155687493 ×10^29 m and base radius of 3.707377 ×10^22 m according to the average density of 1.93376472 ×10^-33 kg/m^3 is: ≈2.27 ×10^42 kg.

• Surface area of Suni global volume (for Runi radius=8.155687493 ×10^29 m):

4·π·R^2 = 8.358544 ×10^60 m^2

• Surface area of the spherical volume for binding radius -R = 1.563652 ×10^19 m (of mass M1ls):

4·π·R^2 = 3.072484 ×10^39 m^2

• Surface area ratio: Suni / 3.072484 ×10^39 m^2 = 2.720452 ×10^21 (for nuclei of mass 4.038056 ×10^35 kg).

[Since c / V0 = 2.720445 ×10^21 → (2.720452 ×10^21)^2 = Epl/h=fpl].

• Surface area of the globular volume for the binding radius -R = 3.707377 ×10^22 m (for a galactic mass ≈2.27 ×10^42 kg):

4·π·R^2 = 1.727201 ×10^46 m^2

• Ratio of surfaces: Suni / 1.727201 ×10^46 m^2 = 4.839358 ×10^14 (Several trillion galaxies of mass ≈2.27 ×10^42 kg each).

[As 1.098533 ×10^57 kg / 2.27 ×10^42 kg = 4.839353 ×10^14].

• The surface area of the spherical volume if the radius is 1ls:

S(1ls) = 4·π·R^2 = 1.129410 ×10^18 m^2

• Ratio of surfaces: Suni / 1.129410 ×10^18 m^2 = 7.400805 ×10^42 (surfaces from volumes of radius 1ls, as Epl/h=fpl).

• Sphere volume from binding radius -R = 1.563652 ×10^19 m (for the space surrounding an astronomical nucleus of mass 4.038056 ×10^35 kg):

4·pi·(-R)^3 /3 = 1.6014322 ×10^58 m^3.

• Ratio of global volume Vglobal: 2.272322 ×10^90 m^3 / 1.6014322 ×10^58 m^3 = 1.418931 ×10^32.

• Volume of sphere from binding radius -R: 1.563652 ×10^19 m / Volume of sphere radius R: 2.997924 ×10^8 m = 1.41892 ×10^32.

[That is Vglobal / 1.6014322 ×10^58 m^3 = 1.6014322 ×10^58 m^3 / Vol(1ls)].

• Ratio of the total mass 1.09853368 ×10^57 kg to the equilibrium mass M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.0056443 ×10^-29 kg/m^3: 5, 477211 ×10^85.

[The square root of 5.477211 ×10^85 is: 7.400818 ×10^42 = (c/V0)^2 as Epl/h=fpl].

• Maximum Runi radius ratio = 8.155687493 ×10^29 m with mean length λ0 = 1.101998 ×10^-13 m: 7.400818 ×10^42.

• Maximum time Tuni=2.720444592 ×10^21 / Average time T0=3.6758700 ×10^-22 : 7.400818 ×10^42.

* The time interval Tuni, the total line length Runi, and the total mass Muni are larger than the corresponding magnitudes T, R and M of the constant H:

≈6179.63 [ie as long as the velocities V(H) / V(G) and the rates -a(H) / -a(G)].

* The Tuni time interval, the Runi total line length, and the Muni total mass are larger than the corresponding magnitudes according to the G constant: ≈605.4913 [= V(G) / V0]

* The maximum time Tuni = c/a0 is simultaneously the geometric mean value of the max - min limits according to the scale of inertia Mmax =√(h·c/G) = 5.45624 ×10^-8 kg and Mmin = h·1Hz/c^2 = 0.73725 ×10^-50 kg and the equivalent energy. Therefore, we will see numbers from microcosm in calculations with multiple quantities, if these have been calculated by equations and derivative of functions.

Image: uni-on-sphere-and-cones-from-r-bl

160-4. Astronomical limits calculated according to wave processes in a shared quantity. Calculations from the magnitudes of physical force

We calculated some astronomical quantities according to the accepted theory of the expansion of space and according to two other rates which we deduced theoretically from microscopic processes and they are close to the measured rate of astronomical redshift. Next we will see simplified, that calculations from the limits of physical force give results which also approach the astronomical quantities as calculated with the velocity rates.

The explanation of the nuclear force as a maximum gravitational force due to the tendency of the shared amount of energy to return to equilibrium when disturbed is perhaps the most important conclusion for calculations of the sizes of the Universe. We explained that this same restoring force occurs universally in electromagnetic phenomena. Previously, in the first equations according to the maximum inertia limit $\sqrt{(h \cdot c/G)}$ and according to Mpl / M = c / V and -V = c·M / Mpl = $\sqrt{(G \cdot M/\lambda)}$ we had seen abstractly, that electromagnetic phenomena and particles begin with a deceleration of maximum velocity c. We saw this more clearly when we tried to equate the well-known equation M = mo /$\sqrt{1 - (V^2 / c^2)}$ with the equation mo·c/$\sqrt{(c^2 - V^2)}$ when we introduce the velocity V= c·M / Mpl = $\sqrt{(G \cdot M/\lambda)}$ in these equations. Then we wondered what physical motion exactly has the maximum speed c if visible light has an infinitesimal reduced speed from the maximum c (c-10^-20 m/s) and since the particles of matter came out of the calculations associated with an even more reduced speed (c-10^-15 m/s for the electron). After the more detailed explanation of the gravitational field as waves concentrated in the structure of matter and for the bodies as a concentration of the shared energy it was seen, that the maximum speed c is connected with a force to restore the shared quantity to equilibrium. Nothing else can happen so fast that the gravitational field, the e/m fields, and the particles appear simultane-

ously everywhere in the universe and with the same laws. Thus **all the forces of nature were united by a phenomenon as simple and well-known and as massive in effect as is the tendency to restore equilibrium to a balanced quantity** dynamically kept in equilibrium. (Fundamental principle)

The attenuation of the maximum (nuclear) force by extremely high rate (wave) processes within the structure of the atom displays the shared quantity with the minimum force as inactive and as a field of unimpeded movement and action (ie as space). The nuclear force attenuated as gravitational outside the dynamical structure of the atom shows the shared quantity as a field with a maximum radius for action and with a minimum magnitude of force between atoms at a distance. The restoring force appears extremely strong towards the minimum radius length of an energy perturbation (nuclear at r<λ0), while the gravitational force is extremely weak and exhibits the shared quantity balanced and at a long radius, extending extremely far outside the radius of an atom (r>rBohr). Calculations according to the limits of the strongest and weakest force (Fmax, Fmin, F0 =√(Fmin·Fpl) and the relations Fres= E/λpl = Epl /λ) give conclusions about the limits of astronomical space and for quantities of mass, proportional to these forces as concentrated in bodies and as decentralized in a volume of space). The quantities of mass are proportional to the volume of the potential space (according to the first ratio we derived from the radius -R^2 = G·M/a0 of the gravitational field at a distance where the acceleration g takes the average value a0). Universal space is as free as it can be at the meeting points where the gravitational fields take the average value a0. In contrast to the Universe as complete and simultaneous, which is not within space and resists with a powerful force any disturbance and permanently within the dynamic structure of matter.

The nuclear force is the universal rebalancing force, and calculating it as a single force from the simultaneous totality of nature gives astronomical limits for the

distance of maximum attenuation. The shared amount of energy is dynamically balanced in a process where it is simultaneously centralized and decentralized. We can see the astronomical limits in the simplest equations, as if the universe were a single and coherent quantity: This quantity is decentralized with a completely weakened force and appears as universal space, while at the same time the quantity as a whole is concentrated with an extremely strong force and is not in space. This conclusion also agrees with the other calculations that show average values and that the world exists simultaneously in two opposite ways: **The core is the totality of the shared quantity. The material world is the core decentralized as space together with the bodies at a distance**. **Around the mean values of the sizes is the structure of the atoms**. The total amount of energy is associated with the smallest amounts over microscopic lengths and extremely short times. At the same time the concentrated amounts of matter have room for action and connection between them within their own time limits. The total amount of energy appears decentralized from each other and non-existent as a body.

This cosmological interpretation of the close relation of bodies to the shared amount of energy will be briefly seen below in the most simplified equations, according to the fixed limits of physical quantities:

The minimum magnitude of force according to the limits for the structure of an atom is:

Fmin = G·Mmin^2 / λpl^2 = G·Mpl^2 / λmax^2 = G·M0^2 / λ0^2 = 2.210208 ×10^-42 N

Fmin = h·fmin^2 /c = h /c·Tmax^2 = Emin / λmax = F0^2 / Fmax = 2.210208 ×10^-42 N

The maximum magnitude of force according to the limits for the structure of an atom is:

Fmax = h·fmax^2 /c = h /c·Tmin^2 = h·fmax/c·Tmin = Emax / λmin where according to Mpl=√(h·c/G):

Fpl = G·Mpl^2 / λpl^2 = c^2·c^2 /G ≈ 1.210586 ×10^44 N

Fpl = h·fpl^2 /c = h /c·Tpl^2 = h·fpl/c·Tpl = Epl / λpl ≈ 1.210586 ×10^44 N

The average force according to the limits for the structure of an atom is:

F0 = G·Mmin·Mpl / λpl^2 = G·M0^2 / λpl^2 = G·Mpl^2 / λ0^2 = 16.35743 N

F0 = √(Fmin·Fpl) = h·fmin·fpl /λ0 = h·f0 /λ0 = E0/λ0 = 16.35743 N

F(re-max)= 4.4499407 ×10^22 N for disturbance F(dis) ≈16.3574 N according to Fre = E / λpl = Epl / λ

F(re-min)= Fmin·F(re-max) / F0 = F0 / 2.720445 ×10^21 = 6.012771 ×10^-21 N

Next we will see some results from simple equations with these force limits, without having separated the forces from their special characteristics.

* The index 'pl' means a minimum min or a maximum value max according to √(h·c/G)

Image: uni-on-sphere-and-cones-from-r-txt4-re

161-4b. Astronomical limits calculated according to wave processes in a shared quantity. Calculations from the magnitudes of physical force

According to the scale of atomic limits for the structure of matter: The constant G of the gravitational force comes from a maximum force which is nuclear, but also from a minimum force in the same microscopic quantities. The constant G again comes from the gravitational force of astronomical masses, but at distances between bodies which are many times farther.

G = Fpl·λpl^2 / Mpl·Mpl = Fmin·λpl^2 / Mmin·Mmin = F0·λpl^2 / Mmin·Mpl = Fmin·λ0^2 / M0·M0 = Fmin·λ0^2 / Mmin· Mpl

Where:

Fmin = 2.210218 ×10^-42 N | Fpl = 1.210586 ×10^44 N | F0 = 16.35743 N |

λpl = 0.40508 ×10^-34 m | λ0 = 1.101998 ×10^-13 m |

Mmin = 0.73725 ×10^-50 kg | Mpl = √(h·c/G) = 5.45624 ×10^-8 kg | M0 = 2.0056443 ×10^-29 kg

Above in the most simplified equations of the limits of force in accordance with the constant G, we briefly see the cosmological interpretation for the inseparable relation of bodies to the shared quantity of energy: Microscopic changes occur in a shared quantity that remains constant and this quantity is many times greater and appears in astronomical dimensions as space. When the energy balance is disturbed then quantities of energy h·f are created as e/m phenomena even and as particles (at extremely rates) and the simultaneous and stabilized Universe as a shared amount of energy presents a force to restore the balance. The mass of particles and bodies is always associated with a strong force, as if they had a large amount of mass near them. The fixed particles in the structure of matter are maintained by a rapid weakening process of this nuclear force, which is extremely strong within the structure of matter (unto the minimum radius) and weakens

around the mean values of the energy fluctuations (outside of mean radius). Astronomical masses are the result of a slowdown in the shared amount of energy, and energy perturbations do not immediately return to equilibrium at the maximum speed c, as happen in e/m perturbations.

Astronomical bodies with multiplied mass are at a distance from each other, as we see with wonder in the equation of the gravitational force. Although the bodies are of multiple mass separated by a distance, the gravitational force is weaker and **their speed of movement does not need to be the maximum c to bind in orbits**. The limits of the length according to the defined limits of inertia [Mmin to Mpl] have been seen in the following proportions with the constant G and with the constant h:

From: G·Mpl /c^2 = G·Mmin /Vmin·c = G·Mmin /V0^2 = h /Mpl·c = 0.405080 ×10^-34 m

to: G·Mpl /V0^2 = G·Mpl /Vmin·c = G·Mmin /Vmin^2 = h /Mmin·c = 2.997924 ×10^8 m

In general: λ=h/M·c = G·M/V^2 when V=M·c/Mpl. The previous length limits are on wave motions, to which the constant h is normally applied. These limits on the equations with the gravitational constant G showed that an extremely fine decrease in velocity occurs from the maximum c. The velocity v = M·c/Mpl = √(G·M/λ) is a velocity subtracted from the maximum c, as we have explained. From the same formulas of the atomic limits (Mmin - Mpl) the following astronomical length comes out:

R=G·M0 /Vmin^2 = G·Mmin·c /Vmin^2·V0 = G·Mpl /Vmin·V0 = 8.155688 ×10^29 m (=c^2/a0)

The first conclusion from the immediately above formulas which give an astronomical length with these tiny amounts of mass is that **there are still weak forces**

applied at such a great distance of the space, which however correspond to masses that are of atomic dimensions, i.e. they really exist! The formula (R=G·M /V·V) gives astronomical lengths (which are many times larger than the radius of atoms and bodies) when at least one velocity in the denominator is reduced (and not the maximum c): -R= G·M/c·V. The speed c^2 in the denominator means a smaller distance R and space would then be limited and the mass at a smaller distance R would not have much room to grow, nor the time to accelerate that fast. Also the increased inertia of a mass of concentrated matter does not match with the maximum speed c, which is a speed of wave motions with minimum inertia. The movement of an astronomical body at extremely high speeds requires stronger gravitational forces to keep it from escaping its orbit. Stronger gravitational forces would limit the radius of astronomical space and its capacity, and then astronomical bodies would not be bound to low orbital velocities. But instead of the astronomical masses being closer and collapsing into each other, another law forces the bodies to be far enough apart where the gravitational field is weakened and the bodies are kept in orbits with a velocity which is lower.

If the mass in the numerator (of R=G·M /V·V) is greater with the same speed in the denominator, then the distance R between the astronomical bodies is also greater. Universal space has the long distances needed for quantities of matter to accumulate and acquire astronomical mass, without needing the highest velocities to escape from the strongest gravitational fields. This, as already shown, happens because the mass of astronomical bodies is the result of a reduction of high velocities in the shared quantity that is decentralized and available as space, and **matter is concentrated as a function of the radius of the bound space** (according to -R=√ (G·M/a0) → -M = -R^2·a0/G). This is the law that determines the increase of the radius of space in proportion to the matter where is concentrated. Matter concentrated in astronomical bodies always finds available space and a far distance from other bodies, because it corresponds to energy distributed as a shared quantity. In other words, the radius of universal space is not determined

by the amount of astronomical bodies and their mass, but on the contrary, the mass of the bodies and therefore the radius where matter is concentrated is determined by the available space (which is the invisible presence of a shared quantity). This is why there is no gravitational field strong enough to gather all matter into a small radius, and no astronomical body is the center of attraction of all the others. And if a gravitational field can be extremely strong then the distribution of other astronomical bodies will also be at a greater distance from the center of gravity, where they can be kept in orbit and at lower speeds.

The relation -R=G·M/c·V can give a large radius as needed for a large amount of matter to be concentrated at a distance from other bodies, and without the need for the highest escape velocity, from strong gravity field of the closest radius. Astronomical bodies could be in extremely close radius to each other and orbit only at extremely high speeds. We notice a "waste" of space... as has been said. So we see in these simple formulas, that an extremely large distance is necessary to have a weak interaction and a low speed, since astronomical bodies have both increased mass and a stronger gravitational field. Bodies of astronomical mass can be at astronomical distances from each other and at low velocities, without needing the highest velocities to escape gravitational fields. And so their material remains concentrated in large quantities and lower densities. Conversely, gravitational fields weaken with distance and allow the separate presence of bodies with the lowest matter densities. We would say, the universe serves as a decentralized mass and capacity to regulate the concentration of such a large number of astronomical bodies, while the most powerful forces would not allow so much capacity and movements at low speeds.

Finally, the mass in the numerator of the same formula (R=G·M /V·V) can be many times greater than the atomic limit Mpl because the velocity in the denominator is never a maximum c or it can be a maximum at extremely close radius.

This radius length (for the orbit) can be quite a bit longer than the radius of the bodies and the concentrated mass, and extends as a gravitational field many times farther than the radius of the bodies, without the astronomical bodies joining together as a continuum.

" A body has mass, volume and radius not entirely by chance. These depend on limits imposed in the first place by their structural elements. The mass and radius of bodies are related to a shared amount of energy and to the radius of a space where the energy is concentrated . This connection is seen by the gravitational field". (520) "If all astronomical bodies and their subsets have a gravitational field with the same mathematical law and these are regulated without any of them being the common center for all other astronomical bodies, this universal order with the same law and in such a large extent is achieved because it is imposed by the microscopic dimensions (by their structural elements). It is imposed by the principle of the structural elements and by the wave manner in which they are maintained..." (127)

We calculated astronomical magnitudes in agreement with the atomic mass limits M0 = √(Mmin·Mpl)= √{(Mmin·√(h·c/G)}, i.e. with a mathematical connection as it emerges from simplified equations and functions, when we use the known formulas of physics.

We calculated a maximum astronomical mass for a 1s concentration radius of light according to M(1ls)= √(h·fpl^2 ·c / G) = h·f0^2 / V0^2 ≈4.038056 ×10^35 kg /s which is an amount of matter multiple of its atomic limit Mpl=√(h·c/G). We also calculated a total Muni mass as a single body which is multiples of the astronomical M(1ls):

Muni = √(h·fpl^2·c/G)·Tuni = h·fpl^2 ·Tuni /c^2 = h·f0^2 ·Tuni / V0^2 = M(1ls)·Tuni = c^ 2·Runi / G = c · R(1ls) · Runi / G.

<·> We calculated all sizes according to the universal constants (c,G,h).

Therefore, the many times large amount of matter has almost the same proportions to the gravitational force, to the concentration radius, and to the field strength as do the tiny amounts of mass at tiny lengths. The same minimum force Fmin, the same maximum force Fmax and the average value F0 can be calculated from the total mass quantity Muni in mathematical connection with the smaller quantities, as shown in the simplified equations:

F0 = G·Muni·Mmin / Runi·λpl = G·Muni·Mpl / Runi·λmax = G·Muni·M0 / Runi·λ0

Same as: F0 = G·Mpl·Mmin /λpl^2 = G·M0·M0 / λpl^2 = G·Mpl·Mpl / λ0^2

Same as: F0 = h·c /λ0^2 = Emin /λpl = Epl /λmax = h·c^2 /G·Mpl = h·c·V0 /G·M0

All forces in the above equations of gravitational force F0 and according to the constant G are associated with maximum and minimum limits. In the total mass of the Universe we use the negative sign (-) because it does not exist as a mass of matter concentrated in a single body and the corresponding space "interferes", according to the correspondence approaching -M = -R^2·a0 /G. The equations of the gravitational force here have been somewhat irregularly used to calculate indiscriminately every physical force, and this as we have said we have done, so that we can see what changes in the physical phenomena when we calculate the same result with the constant h of electromagnetism. Note also that the well-known equation of the gravitational force in calculating a force between a body and another mass, which is not of concentrated matter (such as the total Muni, or the average mass which is atomic and its gravitational field is almost absent) has not in its denominator a radius raised to the square. In the denominator of the equation, two certain lengths are imposed as two radii, rather than one radius raised to the square, as it should normally be. This is a mathematical consequence of the proportions of sizes that gives some conclusions. We noticed two unequal lengths in this equation for the first time when we calculated a maximum gravitational force with masses Mpl at extremely short lengths and compared this

force with the electromagnetic (according to the constant k of electric charges). * "In the denominator of the equation for the gravitational force was the length of the radius squared (as we had calculated it with electric charges) and the wavelength λ of the electron's energy." (p531)

When the fundamental equations of the limits according to the gravitational constant G are solved to give force or distance or mass (according to the specified limits), then we will see results that fit nature in its large dimensions and also in its smallest dimensions. Below are some examples of calculating astronomical sizes according to the limits of a single physical force and as a function of atomic mass:

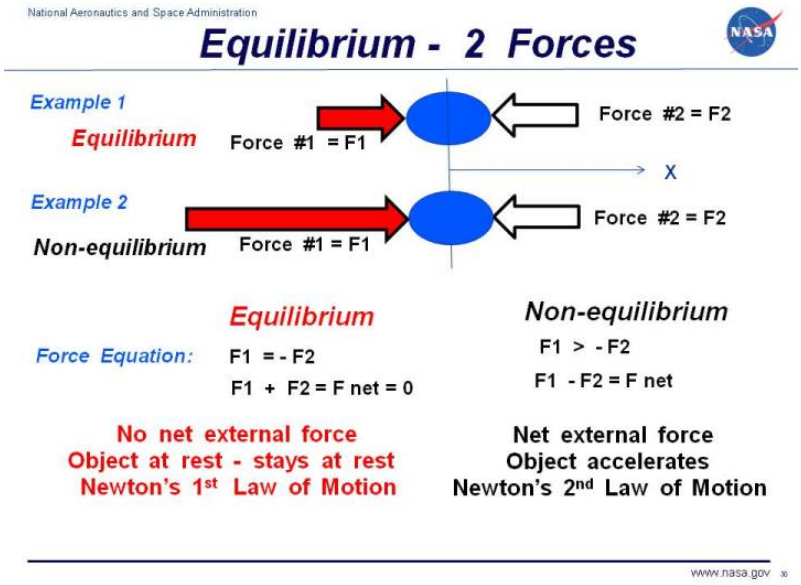
(this post continues)

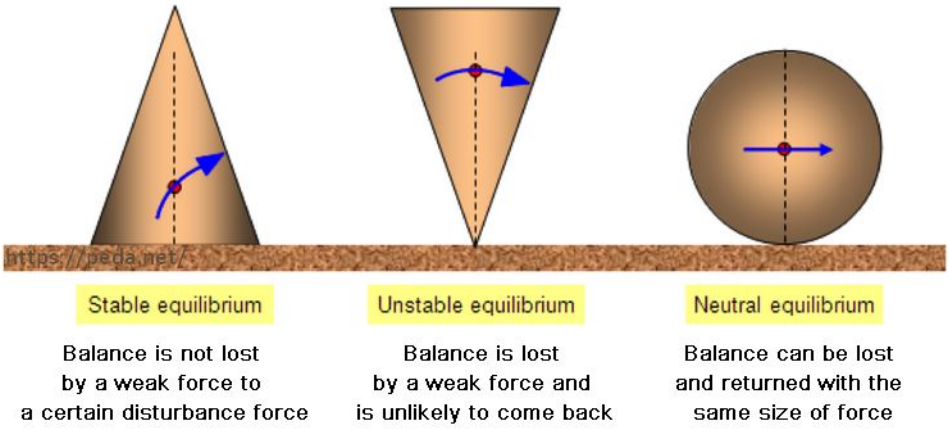
Note

** Calculating a gravitational force between certain masses that do not exist in bodies of concentrated matter, but are masses which are never absent from nature, irregularly shows in the denominator of the equation (G·M1·M2 / R1·R2) countervailing or perpendicular forces and not only the gravitational force, as we normally calculate it between two separate bodies. The first radius (in the above equations with the astronomical and atomic limits) is related to the gravitational force at a distance, while the other radius is related to the structure of matter. The two radii have a function between them, since one is a radius of binding space and decentralization of the shared energy (where space and the gravitational field are presented) and the other is a radius of concentration of bound energy as matter and oscillation within its structure. Initially, this is the explanation. We would say that the gravitational force cooperates with the nuclear force in this wave-like and high-speed gathering process. But as we have explained the gravitational force as a weakened nuclear outside the structure of the atom, their relationship is closer. Their difference is not only in size as a function of distance, but also in

the angle at which they are applied simultaneously to each other.

Images: force-and-equilibrium, types-of-equilibrium (The angle of force and balance. Opposite and unequal forces, opposite and equal to physics)





162-4c. Astronomical limits calculated according to wave processes in a shared quantity. The limiting magnitudes of physical force in microscopic and astronomical dimensions

The second mass M from the simple equation M(2) = F·R^2 / G·M0

when the first mass is the mean mass M0 = √(Mmin·Mpl) = h·f0 / c^2 = 2.005643 ×10^-29 kg (of the mathematical principle of an atom of matter):

1) Muni = Fpl ·λ0^2 / G ·M0 = 1.098530 ×10^57 kg = Fpl / V0

2) Muni = F0 ·λmax^2 / G ·M0 = 1.098533 ×10^57 kg = Fpl / V0

3) Runi = G ·M0 ·Muni / Fres(min) ·λmax = G ·M0 ·Muni / 1.802583 ×10^-12 = 8.155677 ×10^29 m

4) Runi = G ·M0 ·Muni / F0 ·λ0 = 8.155682 ×10^29 m

5) G ·M0 ·Muni / Runi^2 = 2.210217 ×10^-42 N = Fmin

6) G ·M0 ·Muni / λ0^2 = 1.210579 ×10^44 N = Fpl (same as h·fpl/λpl)

7) Muni = Fmin ·Runi^2 / G ·M0 = 1.098533 ×10^57 kg

• In the immediately above results (1,2) we see how large the second mass is when a maximum force is introduced into the equation of the gravitational force or the force of average size in relation to an elementary atomic quantity M0.

• After (3,4) we see how much distance can separate (we would say in one dimension of the volume) the total mass Muni from the mean mass M0 which theoretically is the beginning of an atom of matter: 1) when the force between them is weak Fres(min) or mean size F0.

• We still see (in 5,6) according to the same equation how much force can connect the total Muni mass with the average mass, which is the mathematical principle of an atom of matter, when the distance is extremely large or the microscopic length in the structure of matter (average length λ0).

• At the end (7) we see that even when the atomic mass is associated with an

extremely weak force at an extremely large distance, then this force according to the constant G of gravity still needs an extremely large amount of mass.

If we thought with the illusory image of a world of innumerable astronomical bodies spaced outwards from each other then we would not dare to think these simple equations about the limits of the Universe. It is difficult for a competent physicist to think in such simple mathematics about the Universe!

• If we introduce the minimum force Fmin = Emin / λmax = F0^2 / Fmax = 2.210208 ×10-42 N for the average length λ0 in the same equation M(2) = F·R^2 / G·M0 then the mass M(2) = M0. That is: Fmin ·λ0^2 / G ·M0 = 2.005645 ×10^-29 kg. If we introduce the restoring force F(re-max)= 4.4499407 ×10^22 N then the result is:

F(re-max)·λ0^2 / G ·M0 = 4.038056 ×10^35 kg = M(1ls), which is a mathematical limit of astronomical mass.

The simplest calculations which are undoubtedly based almost on the average values of physical quantities and according to the constant G of the weakest force reveal a large mass, which is not a body, nor a particle within the structure of matter. But this mass is not lacking and instead the particles present themselves and have their forces with a shared and equivalent mass which is invisible. The structure of matter is connected to this simultaneous quantity at microscopic lengths after a process of lowering the maximum force and slowing down to extremely high rates. This universal force in the direction of the structure of matter has the characteristics of a nuclear and e/m force. At the same time, the building blocks (matter) have this same shared quantity on their exterior in an opposite direction, but visible things start at reduced speeds and at slow times. If the distance R in the numerator of the equation M(2)=F·R^2 / G·M0 increases while keeping the minimum force Fmin, then the mass M(2) will increase. The mass would be M(2) = 2.876644 ×10^49 kg for the length R(H) = 1.319768 ×10^26 m.

"We see the limits of the Universe in its tiny and astronomical dimensions in the simplest equation and with calculations for children, because we have correctly interpreted the structural elements as fluctuations of a common amount of energy". (An excerpt from the last lines of the English treatise, p530).

Below are some selected relations of force with maximum c, average V0 and minimum velocity Vmin of nature:

-> F(re-max) / c = 1.484341 ×10^14 kg/s (approximately 22 times less mass than the mass that would keep an electron in an orbit with radius length λ = h/Me·c and with speed of light).

-> Fmax / c = 4.038081 ×10^35 kg/s = √(h·fpl^2 ·c / G) = M(1ls)

-> F0 / c = 5.456243 ×10^-8 kg/s =√(h·c/G) = Mpl

-> Fmin / c = 7.372488 ×10^-51 kg/s = Mmin/s

-> F(re-min)/ c = 2.005645 ×10^-29 kg/s = (M0/s)

-> F(re-max) / V0 = 4.038067 ×10^35 kg/s = M(1ls)

-> Fmax / V0 = 1.098537 ×10^57 kg/s = (M1ls·2.72 ×10^21)

-> F0 / V0 = 1.484341 ×10^14 kg/s (about 22 times less mass...)

-> Fmin / V0 = 2.005645 ×10^-29 kg/s = (M0/s)

-> F(re-min)/ V0 = 5.456244 ×10^-8 kg/s =√(h·c/G) = Mpl

-> F(re-max) / Vmin = 1.098534 ×10^57 kg/s = (M1ls·2.72 ×10^21)

->

-> F0 / Vmin = 4.038070 ×10^35 kg/s = M(1ls)

-> Fmin / Vmin = 5.456245 ×10^-8 kg/s = Mpl=√(h·c/G)

-> F(re-min)/ Vmin = 1.484342 ×10^14 kg/s (about 22 times less mass...)

-> F(re-max) · Vmin = 1.802582 ×10^-12 J/s = (E0/s)

-> Fmax · Vmin = 49.03841 ×10^8 J/s = (Epl/s)

-> F0 · Vmin = 6.62606 ×10^-34 J/s = (Emin/s)

->

->

We have calculated some astronomical quantities according to the accepted theory of the expansion of universal space, despite the objection that the constant H is not a rate for the expansion of space. This objection was strengthened when we calculated the astronomical quantities according to two other rates: the rate of change given by the gravitational force and the average rate we discovered in the microscopic processes of the structure of matter. The results are coincidentally close to the astronomical redshift rate measured from galaxy observations. The first calculations from the limits of the physical force also give results that approach the astronomical magnitudes calculated with the velocity rates. The above calculations are simplified and do not give the final results for the limits of astronomical space and the distribution of matter in global space and total time. But here simplified calculations connect the magnitudes of nature in microscopic dimensions with the whole of the world as a simultaneous quantity according to mathematical proportions, such as are imposed by the minimum and maximum limits of magnitudes. These proportions are the mathematical principle of the laws of nature and confirm the wave processes, which explain the conservation of the world and its structure. Simplifying and shortening thought was the greatest difficulty for the answers to cosmological questions. The simplicity of these equations and boundary functions in advanced mathematics will be lost and then these physical laws will be understood only by trained physicists and mathematicians. Of course, space appears more complex and with a variety of bodies. Astronomical bodies are moving and have centrifugal tendencies that divide them into many bodies and are not concentrated as a single body. But understanding

and solving problems about the structure of the universe begins with such a rational simplification of the universe as here presented.

Image: uni-on-sphere-and-cones-from-r-txt4c-res (or part)

Astronomical limits calculated according to wave procedures in a shared quantity. Simplified calculations according to the limits (min-max) of physical forces

Scale of inertia:

Mpl= $\sqrt{(h \cdot c/G)}$ = 5.45624 ·10^-8 kg - Mmin= h·1Hz/c^2 = 0.73725 ·10^-50 kg

M0 = $\sqrt{(Mmin \cdot Mpl)}$ = h·f0 / c^2 = 2.0056443 ·10^-29 kg

E0 = 1.802582 ·10^-12 J | F0= $\sqrt{(Fmin \cdot Fpl)}$ = 16.3574 N | λ_0 = 1.101998 ·10^-13 m

The second mass M from the equation M(2) = F·R^2 /G·M0 when the first mass is the average mass M0 (of the mathematical principle of an atom):

1) Muni = **Fpl** ·λ0^2 / G ·M0 = 1.098530 ×10^57 kg

2) Muni = **F0** ·λmax^2 / G ·M0 = 1.098533 ×10^57 kg

3) Runi = G ·M0 ·Muni / **Fres(min)** ·λmax = 8.155677 ×10^29 m

4) Runi = G ·M0 ·Muni / **F0** ·λ0 = 8.155682 ×10^29 m

5) G ·M0 ·Muni / Runi^2 = 2.210217 ×10^-42 N = **Fmin**

6) G ·M0 ·Muni / λ0^2 = 1.210579 ×10^44 N = **Fpl**

7) Muni = **Fmin** ·Runi^2 / G ·M0 = 1.098533 ×10^57 kg

Tiny quantities are revealed in connection to astronomical sizes because the building blocks are energy oscillations and wave processes in the shared quantity that exists as space

cosmonomy ©2022-3

163-5. The volume of space with the average density of energy or equivalent mass which is bound for any amount of concentrated matter

Astronomical bodies move around each other in orbit as fast as is necessary to keep them apart while they are attracted. This is not an occasional phenomenon, but a universal process according to a law. The contradictory phenomenon (attraction and dynamic balancing) was explained by the dynamic process by which, space exists as a decentralization of the shared amount of energy and accompanies the bodies, which respectively exist from concentrated energy as matter. One of the phenomena in this wave process of decentralization - concentration of the shared amount of energy we have left out of the calculations and is the movement of astronomical bodies in orbits and self-rotation around their imaginary axis. When we introduce it into the calculations for the distribution of astronomical bodies, then the estimates of the limits of the universal space will be more accurate.

The rational explanation of matter as oscillations of energy and of space as a shared quantity gathering at the maximum speed (c) of nature gave to our thought mathematical relations of physical phenomena, which no one had thought of. Thus we were able to make the first calculations of the limits of nature with different methods. We have seen that the Hubble constant is not for the expansion of universal space, but that this constant (like c,G,h,k) is indeed connected to a wave process, by which the structure of matter is dynamically maintained and balanced . That's why we didn't ignore it.

• We calculated some astronomical dimensions according to an "expansion" rate that research centers have given according to galaxy observations. We calculated astronomical magnitudes according to two other rates as well:

• According to the rate of change a that the gravitational force gives to the masses according to the constants G and c and approaches the rate of the con-

stant H.

• According to the mean velocity rate (V0/s) as calculated (with minimum and maximum values repeating at extremely high rates) in wave processes that preserve the microscopic structure of matter.

• Simple calculations according to the minimum and maximum limits of a single physical force (Fmin, F0, Fmax) also give astronomical values, which are close to the values calculated with the velocity rates.

The wave explanation of matter and its microscopic relationship to dynamic space was strengthened. Simplified calculations by these four methods and according to the explanation of the wave structure of matter and its inseparable relation to dynamic space connect the microscopic magnitudes of nature with the whole of the nature as a simultaneous quantity. **In general, we have calculated multiple large results, which have a logical and mathematical connection and function with the quantities calculated for the structure of matter**. All calculations here use the universal physical constants and the results agree with these constants. It turns out that the constants come out of the limits of physical quantities and because the quantities change as a function of each other (velocity, change of speed, inertia, force, energy, etc.). We could do the calculations with these constants hidden since these are proportions in selected measures, which come out as a function of the magnitudes or quantities when they vary with upper and lower bounds and at a rate dependent on the bounds. And as shown in simple mathematics for school, a multitude of values repeat themselves in natural processes and give many other constant ratios to dependent quantities and values opposite to each other. Quantities change according to other rules, when zero and infinity are absent from their fluctuations, and when processes are reversed and have equilibrium values. Such fluctuations of magnitudes and functions with limits and contrasts, with average values and with constant relations, with determining rate and with phenomena of synchronization and dynamic balance are in-

herent in wave change.

• Another important and unlikely consideration for calculations of the sizes of the Universe was the ratio of a volume of space to an average density of mass or energy. We dared this too! It was logical to think of such an analogy from the explanation of building blocks as energy oscillations to a shared quantity that exists as dynamic space. Besides, a volume of space is reserved for each amount of concentrated matter, and a proportion for this connection of space as decentralized energy with the astronomical bodies as concentrated matter was needed. We sought such a proportion that would match the large distances in the distribution of astronomical bodies and a universal space. The first calculations and relations (-R^2 = G·M/a0 → -M=a0·R^2/G and Vol=-R^3·π·4/3 and dens = M/Vol) were based on the intensity g of the gravitational field at a marginal radius R, where the field weakens and takes on a universal and common value (a0) related to the structure of matter (as calculated according to the atomic limits Mmin - Mpl). The radius (-R) of binding space according to this average value of intensity (a0) is the first approximation to calculate a proportion between a mass concentrated as a body and a volume which accounts for the decentralization of the mass, where is distributed in a average value as volume of space.

Describing a volume of space with an average mass density is perhaps not the most realistic, but let's not forget that mass is proportional to an amount of energy. We chose "mass density" proportional to a volume of space in order to immediately find the mass of concentrated matter, which we know and calculate in bodies, which seem to us quite unrelated to a shared quantity. We have seen that the space binding radius -R= √(G·M/a0) according to the mean intensity value (a0) gives a satisfactory ratio of space volume for microscopic amounts of mass and for the total amount of mass of the universe (satisfactory if we appreciate the simplicity of the ratio and that it gives results within the specified limits).

We have seen according to this calculation for the binding radius of space, that the average mass density of space is lower the longer the binding radius and the larger the volume of space. Calculating the volume (as decentralized energy) where it is proportional to the concentrated energy (as body mass) according to the radius where the intensity g of the gravitational field is of average value (a0) does not give volumes of space with the same average mass value. But in the 137-11 publication we said: "Equal amounts of energy h·f are proportional to equal volumes of equal radius -R ". That is why it is useful to see the ratio between volume of space and concentrated mass by calculating the binding radius -R according to the volume of space which will always have the value of mean mass M0=√(Mmin·Mpl) as density.

The binding radius of space can be calculated according to the mean mass value M0 which with an extremely fine deviation (Me·Mp ≈ M0^2) gives the rest masses of the fundamental particles of matter. We will consider the length of the radius -R which will give such a volume of space V3D as to give the mean value of mass M0 per cubic meter, when in the numerator of the fraction will be the concentrated mass of an astronomical body. That is, we ask (M0/m^3) = M/Vol. So we should calculate the volume V3D = M/(M0/m^3). The bound volume V3D will simply be the ratio of the body mass M to the mean value mass per cubic meter. According to the relation (M0/m^3) = M/Vol a volume is always proportional to any large mass and gives the average mass density. While the volume from the radius according to the relation -R = √(G·M/a0) as it increases gives a lower mass density M/V3D. We will take the same mass samples as for the radius calculation -R = √(G·M/a0) and add a few more.

Mass of proton Mp: 1.672621 ×10^-27 kg

Average mass M0=√(Mmin·Mpl): 2.0056443 ×10^-29 kg

Sample mass Mdemo: 1.65155159 ×10^-3 kg

Mass of Earth Mearth: 5.973 ×10^24 kg

Mass of the Sun Msun: 1.99 ×10^30 kg

Limit mass M(1ls)=h·f0^2 / V0^2: 4.038056 ×10^35 kg

Galactic mass Mgal: 2.272706 ×10^42 kg

Muni(H) total mass: 1.777666 ×10^53 kg

Total mass Muni(G): 1.814229 ×10^54 kg

Total mass Muni(a0): 1.09853368 ×10^57 kg

The volume -Vol= -R^3·π·4/3 resulting in the average mass value M0/m^3 will be:

V3D= Пр / (M0/m^3) = 83.394626 m^3

V3D= M0 / (M0/m^3) = 1 m^3

V3D= Mdemo / (M0/m^3) = 8.2345189 ×10^25 m^3

V3D= Earth / (M0/m^3) = 2.978095 ×10^53 m^3

V3D= Msun / (M0/m^3) = 9.9219986 ×10^58 m^3

V3D= M(1ls) / (M0/m^3) = 2.013346 ×10^64 m^3

V3D= Mgal / (M0/m^3) = 1.133155 ×10^71 m^3

V3D= Muni(H) / (M0/m^3) = 8.863316 ×10^81 m^3

V3D= Muni(G) / (M0/m^3) = 9.045616 ×10^82 m^3

V3D= Muni(a0) / (M0/m^3) = 5.477210889 ×10^85 m^3

The space binding radius -R for the corresponding volumes according to R=3√(Vol·3/π·4):

-R(Mp)= 2.710295273 m

-R(M0)= 1 m

-R(Mdemo)= 2.698878474 ×10^8 m

-R(Mearth)= 4.142699529 ×10^17 m

-R(Msun)= 2.871906564 ×10^19 m

-R(M1ls)= 1.687628009 ×10^21 m

-R(Mgal)= 3.001928604 ×10^23 m

-R(Muni(H))= 1.283815644 ×10^27 m ≈ 135.6994 ×10^9 ly

-R(Muni(G))= 2.784731334 ×10^27 m

-R(Muni(a0))= 2.355901201 ×10^28 m

The space binding radius -R for the corresponding masses according to the relation √(G·M/a0) was:

-R(Mp)= 1.006358 ×10^-12 m

-R(M0)= 1.101998 ×10^-13 m

-R(Mdemo)= 1m

-R(Mearth)= 6.013816 ×10^13 m

-R(Msun)= 3.471206 ×10^16 m ≈ 1 pc ≈ 3.669 ly

-R(M1ls)= 1.563652 ×10^19 m ≈ 506.74 pc ≈ 0.51 kpc ≈ 1652.78 ly

-R(Mgal)= 3.709587 ×10^22 m ≈ 1.202 186 Mpc = 3 921 036.75 ly

-R(Muni(H))= 1.037478 ×10^28 m ≈ 1.0966 ×10^12 ly

-R(Muni(G))= 3.314362 ×10^28 m

-R(Muni(a0))= 8.155687 ×10^29 m

We notice that the space binding radius from the relation -R = √(G·M/a0) is extremely smaller for small amounts of matter compared to the radius from the relation (M0/m^3) = M/Vol. The binding radius -R from these two relations come close to equalizing at extremely large amounts of mass.

Notes:

* The average value M0=√(Mmin·Mpl) according to the limits of minimum and maximum inertia is the mathematical principle of an atom. One of the average values is the velocity V0 which is associated with a rate of decrease of the maximum velocity c within the structure of matter. We notice that these average values from calculation for atomic processes appear again outside the structure of matter in the structure of space and in the whole of space as a decentralized quantity. The structure of a single atom is relatively highly concentrated in energy and according to the relation (M0/m^3) = M/Vol its mass gives a spatial binding radius much larger than -R = √(G·M/a0) . The total mass of the Universe is not concentrated in a single body and gives a space binding radius extremely close to the radius -R = √(G·M/a0). These two simplified ways of calculating the volume (according to the a0 and M0/m^3 values) will serve to describe more precisely the distribution of the shared amount of energy in astronomical subsets and to precisely define the boundaries of global space. Principles in science and technology are always simple, but when principles are missing then progress is impossible.

Image: moving-balls (4tJ4-txt)

Description: A moving gif image. Balls move limited in a larger ball. Bottom notes: Astronomical bodies rotate each other at as much speed as needed to keep them at a distance while they are attracted. This contradictory phenomenon was explained by the dynamic process that the space exists as decentralization of the shared amount of energy and accompanies the bodies, which respectively exist from concentrated energy as material.

To notification:

The volume of space that is bound for any amount of concentrated matter. As it turns out, physical constants come out of the limits of all physical sizes and because the sizes change in relation to each other (speed, speed change, inac-

tivity, inertia, force, energy etc). The wave explanation of matter and its microscopic relationship with the dynamic space was enhanced. Simplified calculations with four methods and according to the explanation of the wave structure of matter and its inexperienced relationship with the dynamic space link the tiny sizes of nature to the whole universe as a simultaneous quantity.

End of notification

164. A review of rational interpretation without mathematics. The Unification of the fundamental forces of nature and the microcosm with the Whole

<·> This cosmological theory has rationally begun by thinking of the Universe as a complete Whole (in all possible ways) within a maximal time span that simultaneously presents itself as space. World space is interpreted as a balanced amount of energy from the simultaneous presence of the nature as a whole. Thus global space has the utility of a shared amount of energy in addition to capacity. Then the building blocks (matter) are revealed as energy oscillations of this shared quantity, which remains in balance. The structure of atoms is interpreted by wave changes at extremely high speeds. A shared quantity of energy appears as empty space, while by this total quantity the building blocks are maintained as fluctuations of kinetic and potential energy. Space has the properties and behavior of a shared amount of energy, and matter particles are closely associated with it as pico-bangs along with extremely high-speed wave phenomena.

The rational explanation of matter as oscillations of energy and space as a shared quantity constantly accumulating at maximum speed (c) is a sweeping explanation by reducing a multitude of physical phenomena to a few fundamental phenomena (such as the perturbation of a quantity, the resistance to perturbation, returning to equilibrium and maintaining equilibrium with balanced and counterbalanced forces). When the minimum (min) and maximum (max) limits were introduced for the change in the fundamental phenomena (mass, speed, energy, rate of change, wavelength, etc.), then we succeeded in calculating the change of one quantity to the change of the others (as simplified functions) according to the specified limits. The mathematical limits have been derived according to the rules of physics and are based on measurements, which are used in the calculations for a number of phenomena as physical constants (c,G,h,π,k). From the first we saw the mathematical principle of an atom of matter when we calculated quanti-

ties that balance around average values. The fundamental particles of matter are trapped amounts of energy and oscillations around average values.

The shared amount of energy presents a resistance and a restoring force when is disturbed. After the more detailed explanation of the gravitational field as waves concentrated in the structure of matter and for the bodies as a concentration of the shared energy it was seen, that the maximum speed c is connected with a force to restore the shared quantity to equilibrium. We explained that this same rebalancing force occurs universally in electromagnetic phenomena. Electromagnetic phenomena and particles begin with a deceleration of the maximum speed c and we have seen clearly what relation gives the speed reduction and how subtle this reduction is. The rebalancing force towards the minimum radius within the core of the matter structure appears extremely strong. Nuclear force is a property of the total amount of energy that is balanced and shared.

The attenuation of the maximum force by (wave) processes of extremely high rates within the structure of an atom shows the shared quantity as inactive and as a field of unimpeded movement and action (ie as space). Building blocks really are natural switches and attenuators of extremely high rate force. The shared amount of energy is dynamically isolated within the building blocks, and the strong rebalancing force is reduced to an average value, while at the same time a perturbing force is in the opposite direction. The strong forces we calculate from electric charge are not explained by the amount of particle mass. These forces are explained purely by the rebalancing force of the shared amount of energy, the equivalent mass of which is extremely large without being concentrated in the radius of a single body. A quantity where is not limited within the structure of matter exists as a carrier of the force of concentration while in bodies it appears as space. The average values of physical quantities come out of two opposite processes of nature (concentration and decentralization of energy) and thus ex-

plained, that the electric charge is positive (+) and negative (-) and the electric force. The gravitational force was explained as a remnant from the weakening of the stronger restoring force at a radius larger than the mean value (≈e-13m) where is within the wave structure of an atom. The nuclear force is the maximum gravitational force of the shared amount of energy at a radius smaller than the average value. The explanation of the fundamental forces of nature was simplified by a common process, such as the tendency of a quantity to return to equilibrium, which is dynamically kept in equilibrium, and thus revealed how these forces are related to each other ("unification" as it is called).

Explaining matter as oscillations of energy and space as a shared quantity gathering at maximum speed (c) facilitated calculations of the sizes of the Universe. The nature exists simultaneously with two opposite processes: The totality of the shared quantity behaves as a nucleus (for the building blocks). The material nature is the core decentralized as space together with local concentrations of astronomical bodies. The structure of atoms are wave processes around the mean values of the quantities, which fit their microscopic lengths. The shared amount of energy interrupted at extremely high rates by the structural elements exists at a larger radius from their structure ($r > e\text{-}11m$) as space, while at a smaller radius ($r < e\text{-}13m$) within their structure the shared amount exists as a shared core. The Universe is simultaneously absent and entirely present, and this feature makes it difficult to interpret its existence.

The presence of large amounts of matter that make up the astronomical world cannot be explained by processes that are extremely fast as in e/m phenomena, we have seen. The presence of large amounts of matter is explained by the presence of the total amount of energy, which is simultaneous but not in the form of particles. Equilibrium is restored (or relatively lost)* with a multiple delay, and this delay gives the long time needed for more matter to be present. The concentra-

tion of matter in astronomical space is the removal and decentralization of energy from the shared quantity at the maximum speed of nature. A volume of free space is reserved and proportioned for each amount of concentrated matter. The mass M from the concentration of energy in a body is proportional to a radius -R of a volume of space through which energy is transferred at maximum speed. The maximum velocity of accumulation of the shared energy slows down to only the last fractions of a sec at the microscopic radius lengths. Thus space is a shared quantity that is dynamically and wave-preserved and balanced like matter.

The magnitudes of the astronomical world were adjusted to the magnitudes of the microscopic processes and are calculated in relation to them. "Minor quantities are revealed in connection with astronomical magnitudes, and **this connection was missing from cosmology, because the interpretation of physical laws and the correct interpretation of the structure of matter was missing**". We can see the astronomical limits in the simplest equations, as if the universe were a single and coherent quantity: This quantity is decentralized with a completely weakened force and appears as universal space, while at the same time the quantity as a whole is concentrated with an extremely strong force. "In fact, the Universe is complete, the total energy is balanced and space exists as a possibility of movement for material bodies that interact with each other in slow times. The "age" of the Universe is the maximum period of time that it remains the same and stable or relatively absent externally to the structural elements. Nature for the longest time (~ 1e17 s) is absent and appears interconnected and complex with interactions of matter that occur in the shortest intervals of time. That is, its "age" is a phenomenon of lack of time for the Universe that remains the same for most of the universal time (as opposed to the description of nature as a result that evolved within a maximum period of time). Nature exists in few fractions of time that the Universe is missing!" (p512)

The shared amount of energy from its distribution with the wave phenomena of concentration and decentralization (associated with force as nuclear, gravitational and e/m) appears as bodies and respectively as free space. The astronomical world has always had its distances and distributed amount of energy in a maximum time and over extremely long distances and large subsets of bodies. We do not see the expansion of space and a displacement of the positions of the astronomical bodies where would have started from a common point of approach. We do not see an increase in the distance between galaxies with the passage of time, nor a disorganization in the distribution of energy, such that it destroys the quality of the Whole and its laws, which dissolves the distribution of matter and results in a homogeneous quantity (entropy). Instead, the energy that seems lost returns to the shared quantity, which in turn is concentrated as a gravitational field on the bodies. We see the simultaneous Universe absent as space. We see the concentration of a shared amount of energy at the maximum speed (c) that restores the balance as a gravitational field and as the centripetal motion of the astronomical bodies. We see the disturbance of the energy balance and its increased delay as bodies and interactions of bodies in slow times.

Image: 2f502ccc592c66cb389d1cdc53f402a (animation gif. Field lines revolve around a black core)

165. The universal Whole at the same time is the shared quantity that participates as a space for matter with wave phenomena and forces

<·> This explanation came out of the first thoughts, confirmed by the latest conclusions and leads the research. In the first thoughts of this rational inquiry we thought about reality as a common whole and as a part. We quickly concluded the double presence of the one and shared reality. Common reality has this characteristic, that it is direct to its total self and at the same time it is not only directly connected to its total self. Reality is simultaneously absent and incomplete and its minimal parts exist as building blocks (matter). Explaining free space as a phenomenon from the complete Universe that is always in all possible ways we conclude, that the complete universe is simultaneously absent in the form of free space to matter. Thus it was immediately revealed that the Universe, although it is single and complete, is not a single body of ordinary matter. Of course, this is how the closest relationship of space with the Whole of the nature and with the structure of matter at microscopic lengths also appeared. "The behavior of space is opposite to the behavior of material bodies. It is in a state of equilibrium without being in any distinct position and returns to its equilibrium state with its minimum inertia." (Excerpt from the first volume of 2012 edition)

"The affinity of space to bodies simplifies the explanation for the preservation of nature, whereas if space were entirely different and without any substance then our rational interpretation would not have proceeded. In our interpretation it is important to explain and account for how the universal space is concentrated in many astronomical nuclei and how the energy balance is restored so that universal space with its total volume remains massless as a quantity of energy in equilibrium (and distributed in an average value)" (535)

After broadening the interpretation of the close relationship of the building

blocks to a shared quantity and directly to the Whole of nature we can think again about reality as a common Whole and as a part observing with wonder the following contrasts: The Universe is complete and balanced over a maximum period of time (≈e18sec) and absent for extremely short periods of time (around e-21sec) where elementary amounts of energy oscillate and disturb its equilibrium. The reverse description from our point of view in time is not wrong: the Universe is complete and present for a minimum time (around e-21sec and we detect its nuclear force) and at the same time the Universe is absent for a maximum time (≈e18sec where we detect free space, the nuclear force weakened as gravitational, and concentrations of matter at astronomical distances from each other). The nuclear process and forces at microscopic lengths are associated with the shortest timescales, while the gravitational field and the process of formation of astronomical bodies are associated with the longest timescales. The total energy is concentrated as a universal core in the maximum time (≈e18sec) in which the Universe is complete, while in the shortest time (around e-21sec) that the Universe is absent, the total energy is decentralized. From our point of view through time: The total energy is concentrated in the short period of time (around e-21sec) that the Universe is complete. While at the maximum time interval (≈e18sec) that the Universe is absent, the total energy is decentralized and appears as three-dimensional space without a center.

After all, the total amount of energy whether concentrated or decentralized is the same at the maximum time interval (≈e18sec) and is presented as shared and uniform (and regulatory for its distribution): **The total amount of energy is core as concentrated and free space as decentralized**. Anything that occurs between a minimum and maximum time of e-21sec to e18sec occurs within 3D and astronomical space and with the building blocks. If there is some subtle variation between the shortest times e-21sec – e-42sec then it is not happening within the astronomical space and by the structural elements. They are nuclear fluctuations that simultaneously affect the whole of the building blocks of the nature and come

from the global Whole as a single one. (First thoughts on p. 505 – 506)

We have seen in 164 publications (amounting to a few hundred pages) how such a connection between a shared quantity and matter exists and that **the shared quantity has the characteristic of capacity**. It would be easier and faster to admit this connection and this interpretation of the nature without calculations and physics. Many conclusions are easily drawn, and many physical phenomena are connected and explained without introducing unknown physical forces and unexplained properties. But the scientific community is waiting for the interpretation of nature with a detailed description of the processes, in agreement with measurements and with the consistency of calculations. The preceding pages are addressed to demanding readers and researchers and therefore contain the most certain conclusions and the necessary thoughts that lead the research to even more discoveries. But this interpretation of nature from the beginning was and remains at the level of understanding for anyone who cares to learn with his school level of knowledge. The simplicity of the explanation of matter as oscillations of energy and of space as a shared quantity accumulating at maximum speed (exactly c) and the success of rational thought discredit the efforts of leading researchers for a century. Its formulation demonstrates defects in the educational system and in human intelligence that is not pure, and is influenced by expediencies and by the needs of everyday life for work, survival and social relations.

The cosmological theory published in detail (over two years) is a pillar of a wider research, not limited to physical phenomena, and its development is impossible to stop. The entire work of writing includes the relationship of nature with human behavior and demonstrates the leading role of thought in human life and behavior and in all fields of social life. Investigating man as an observer of the natural world and how forms knowledge, the dependence of all fields of research on human choices and on mental divisions, which nature has not made, is also proven.

Remember this concise view of the inseparable relation of a shared quantity to structural elements and physical space. In future publications we will introduce the phenomenon of life into the interpretation and some "metaphysical" thoughts about the Universal Whole, which is incorporeal and at the same time present as a God. Your patience will be rewarded and your thinking will be enriched with observations and conclusions about the relation of the nature to life, which you have never heard. Anyone who will question the phenomenon of shared quantity and its relationship with physical space and matter or the simultaneous presence of the universal Whole will be referred to the cosmological interpretation (for matter as energy oscillations and physical space as a shared quantity). The 165 posts will be offered to readers as a digital book of the cosmological interpretation exactly as it was formulated and shared (in the period March 2021 - April 2023) here on the FB blog named "Philosophy and Cosmology".

Image: 7570264f5861f2ee46a105b9a69d148c (rays appear to be concentrated in a bright center resembling the pupil of an eye)

166. A summary and how the treatise was divided, as written in the treatise itself

This theory began without the discoveries of physics or recourse to previous theories. I emphasize for all thinking people and especially skilled researchers and professors of physics, the opposite direction of research in this treatise that was a conscious choice in philosophy and was named reductio ad absurdum and deductive reasoning. For the teaching and research of science, we usually remove the wholeness of reality and a lot of associated phenomena, which we temporarily ignore. We observe phenomena even when they are not fundamental or necessary for the existence of all other things and we rather observe them accidentally and they are related closely to the field of research. An example is when we observe the movement of a water droplet on a smooth surface with a certain slope. Here in this treatise, we have removed the accidental, the occasional, the instantaneous phenomena and a multitude of specific things with their details, in order to distinguish and describe the phenomena, which are fundamental and necessary for the existence of all other things. In a few words, it is a rationalistic theory that directs the research by beginning with fundamental phenomena and utilizes physics selectively. (p33-34)

<·> From the first attempts to explain how nature began to exist, we thought that structural elements are quantities of energy that fluctuate in a shared amount presented as space. We have seen from many points of view that it is inappropriate to we think about matter as separate particles that have hidden properties and create the world simply by their approach. That is why when we saw the known and simple relations of the gravitational field and the gravitational force then we quickly realized that there is some proportion of mass not only with the radius of the body but also with the shared energy of space. When we used the constant G for calculations of microscopic phenomena then we saw how neces-

sary it is. Energy according to the constant h and the maximum speed c could not explain the formation of particles. We quickly realized that the formation of particles is related to the reduction of the maximum speed c. We understood that some motion of space is at the maximum speed c and that its deceleration is related to a variety of wave phenomena. We understood that a reduction of speed and energy is related to a shared amount of energy that space hides. We have used with extreme caution a few concepts that describe common observations of the most prevalent and repeated natural phenomena. These first thoughts were separated for the first part of this treatise. After correlating inertia with reduced velocity (Mpl /M = c/V) and with the limit of the maximum inertia (which comes out with the constants h, c and G), a study began on how particles are created from a maximum amount of energy that decreases and the connection that particles have with each other. We started the investigation with calculations for quantities, sizes and values that are most easily observed nearby and in the structure of matter. We separated this investigation for the second part of the dissertation. We have left for the end the explanation for the large concentrations of matter and for the increased mass of celestial bodies, here in the third part. We could not start directly with calculations for astronomical magnitudes and for the Universe as a total quantity and then explain the quantities we measure in the structure of matter. Here in the last pages we utilize the calculations for the tiny quantities so that these quantities are linked to calculations that will explain the astronomical distances and the large amounts of matter where are concentrated". (p477)

This relation of the universal constants (c,h,G) with the minimal and the maximum limits on the movement and the rate, at which the energy changes, confirms that there are fluctuations in the microscopic space for the structure of matter (that start from a maximum speed and at the fastest pace). These very fast movements at tiny distances, which begin everywhere with the same limits and same mathematical proportions are not body movements (mechanical and

straight) and do not start by separate or independent particles. These movements are fluctuations, in other words, oscillations and wave movements. (p525)

Space is maintained as the nucleus of a shared amount of energy and at the same time is maintained as a free and extensive space with a process of high speeds and rates (which have their average values in the structure of matter). (...) The structure of an atom is a process where a wave disorder which occurs in the total energy of the Universe is at its peak and returns extremely quickly to equilibrium. The whole variety of nature, even human life, can all be considered as deviations from the average and as short disturbances of the permanent equilibrium. (p527)

Image: rational-fields-txt-res (The division of the treatise into three large cycles. The first cycle contains key concepts, the second contains formulas for atomic mass limits, and the third contains formulas for astronomical limits)

COMPLETE UNIVERSE, DYNAMIC SPACE & WAVE PHENOMENA. How the natural laws and forces are applied. The fundamental concepts and relations for a rational Cosmology (Cosmonomy)

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The Headings under which cosmological theory was presented:

Serious answers with the credibility of direct observation of nature, logical explanations by physical procedures and conclusions in an understandable language

1. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy

2. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Rules of Logic

3. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Common characteristics and logical processes in nature

4. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

5. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

6. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

7. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

8. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

9. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy.

10. The answers to many questions of cosmology can not be given only with knowledge of physics and astronomy. Everything changes, but how... they change

11. A summary and the forced passage of logical thoughts about the complete Whole into the knowledge of physics

12. Summary and the forced passage of logical thoughts about the complete Whole into the knowledge of physics. (The lack of help and cooperation)

13. The Forced Transition of Reasonable Thoughts for the Universal Whole into the Knowledge of Physics (An Unexpected Acquaintance!)

14. The forced passage of rational thoughts about the universal Whole into physics. (Equilibrium and wave motion. Research with the correct interpretation...)

15. Some QUOTES which summarize ...

16. Some clarifications on concept of "shared amount of energy"

17. Review and some QUOTES summarize...

18. Review and first revealing calculations

19. The adventure of physics until it is discovered that the structure of the atom is purely a work of wave phenomena and not a union of particles

20. A "shared amount of energy" where (electromagnetically) seems as “free space” and was ignored to research because it was observed as a lack of reality

21. A great failure will go down in the history of physics

22. The particles as quantities with mass and corresponding energy and in correspondence to a velocity. The attempt to utilize the equations

23-2. The particles as quantities with mass and corresponding energy and in correspondence to a velocity. The attempt to utilize the equations (2/23, 2008-2012)

24-3. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (3/24, 2008-2012)

25-4. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (4/25, 2008-2012)

26-5. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (5/26, 2008-2012)

27-6. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (6/27, 2008-2012)

28-7. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (7/28, 2008-2012)

29-8. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (8/29, 2008-2012)

30-9. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (9/30, 2008-2012)

31-10. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (10/31, 2008-2012)

32. The particles as quantities with mass and corresponding e/m energy and in correspondence to a velocity (32, 2008-2012)

33. Our correct answers must satisfy even those who specialize in relevant issues and the most skeptical

34. Wave and rapid changes in a global amount of energy. (First thoughts that led to

the mathematical investigation)

35. How does the quantum physics of the microcosm unite and harmonize with the Newtonian physics of the macrocosm?

36-1. Brief information on the three physical constants c, h and G

37-2. Brief information on the three physical constants c, h and G. The constant h

38-3. Brief information on the three physical constants c, h and G. The constant G

39-3.1. Brief information on the three physical constants c, h and G. The constant G

40-3.2. Brief information on the three physical constants c, h and G. Information through the gravity constant G

41. The shortest path of thought from which we lead to the required solutions and answers

42. Wave and rapid changes in a global amount of energy. Many physical phenomena are mathematically interconnected

43-2. Wave and rapid changes in a global amount of energy. Many physical phenomena are mathematically interconnected

44. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process by which matter is retained

45-2. Interpretation of particles as quantities of energy with inertia in a shared quantity. The process by which matter is retained

46-3. Interpretation of particles as quantities of energy with inertia in a shared quantity. The coincidences

47-4. Interpretation of particles as quantities of energy with inertia in a shared quantity. The coincidences

48-5. Interpretation of particles as quantities of energy with inertia in a shared quantity. The process of conserving the structural elements (around average values)

49-6. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter

50-7. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter

51-8. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter

52-9. Interpretation of particles as quantities of energy with inertia in a shared quantity. The wave process of conserving matter

53. The shortest course of thinking and explanation that give reliable answers

54. A summary of a few lines to remember the path of rational interpretation:

55. A summary of a few lines to recall some of the conclusions of the interpretation, which came after calculations:

56. What about the oscillations and energy fluctuations that maintain the structure of matter? (The image as is formed in our minds so far)

57-1. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Comparison and mapping of sizes)

58-2. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

59-2b. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

60-2c. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

61-2d. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

62-2e. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

63-2f. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

64-2g. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

65-2h. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

66-2i. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles)

67-2j. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles. In conclusion)

68-2k. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Strong forces without particles. In conclusion)

69. Ionizing radiation and health (a break with a related subject)

70-3. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Periodic forces)

71-3b. What happens at extremely high rates of change and a quantity of energy is trapped? (Objective of investigation. Periodic forces)

72. Periodic motions and forces on a shared quantity of energy

73-2. Periodic motions and forces at extremely high rates on a shared quantity of energy

74-3. Periodic motions and forces at extremely high rates on a shared quantity of energy (Minor fluctuations and information)

75-4. Periodic motions and forces at extremely high rates on a shared quantity of energy (Useful thoughts before calculations)

76-5. Periodic motions and forces at extremely high rates on a shared quantity of energy (A maximum force is attenuated by wave processes in the structure of matter)

77. Oscillations and energy fluctuations maintain the structure of matter. Wave motions and forces in two opposing directions. (The new image from calculations)

78. What differentiates h·f as radiations from h·f as particles? (We still haven't explained ...)

79. Wave motion toward the direction of a center. (A conclusion that leads to solutions to the problem of preserving the structure of matter)

80-2. Wave motion toward the direction of a center. (The first thoughts)

81-3. Waves of reverse direction in the structure of matter are associated with a strong force (Useful Thoughts for research specialization)

82-4. What exactly is the motion at maximum speed c and from which motion is the velocity -V reduced? The answer shows the relationship between nuclear force and gravity and electromagnetic force. (The most important secret of nature for physicists!)

83-5. Waves of reverse direction in the structure of matter are associated with the strongest force

84-1. The delay in resetting the balance. (Thus a global force of shared amount of energy was initially revealed)

85-2. Movement due to resistance, repetition of the same resistance and periodic movement and tendency to restore balance. The delay in reset balance (the foundations of nature)

86-3. The delay in restoring balance and the principle of maintaining power (For physicists. Ratio of hf quantity of energy, period and total equilibrium time)

87-4. The delay in restoring balance and the principle of maintaining power (A global force of shared energy is a force for concentration and restoration of balance. The struc-

ture of matter with this force is maintained)

88. The most important conclusions

89. Summary focused on the last 6 posts (A universal amount of energy constantly returns to equilibrium)

90. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

91-2. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

92-3. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

93-4. A universal force of shared energy is a force of concentration and re-balancing. [F(restore) and F(disturbance)]

94-5. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (For all readers)

95-6. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

96-7. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear

97-8. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge and atomic radius)

98-9. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge, atomic radius and angular momentum)

99-10. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Electric charge, atomic radius and angular momentum)

100-11. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter it appears as nuclear (Atomic radius, angular momentum, counterforces and e/m field)

101-12. A universal force of shared energy is a force of concentration and re-balancing. Within the structure of matter (=fluctuations of the shared quantity) it appears as nuclear (Conclusions and explanations strengthened after calculations)

102-13. The global space (=shared amount of energy) pulsates at a tiny radius (around ≈10^-13m and the average period of 10^-21 sec) with a force of concentration

and rebalancing

103. The force to restore balance within the structure of matter appears as nuclear, while between bodies it is gravitational. Nuclear perturbations are e/m forces. (Conclusions and explanations confirmed by calculations)

104-2. What happens between the structural elements delays the rebalancing of the shared amount of energy. (Conclusions and explanations confirmed by calculations)

105-3. Conclusions and explanations confirmed by calculations

106. Explanation and first calculations of the astronomical limits of the universe and the amount of matter

107. If the astronomical observation of the redshift does not show expansion of space, then what does it show?

108. Introductory thoughts on the phenomenon of pseudo-expansion of space

109-2. Introductory thoughts on the phenomenon of pseudo-expansion of space

110. A reminder of the relationship of the gravitational field to a shared quantity of energy and to matter. (From a microscopic point of view)

111-2. The relation of the gravitational field to a shared quantity of energy and to matter. (From a macroscopic point of view)

112. Investigation of the relationship that the astronomical observation of redshift has with space and matter

113-2. Investigation of the relationship that the astronomical observation of redshift has with space and matter. The Hubble's constant for distance 1m away and for shorter length than this

114-3. Investigation of the relationship that the astronomical observation of redshift has with space and matter. Hubble's constant and its relation to the G constant

115-4. Investigation. Hubble's constant and its relation to the G constant as shown in the first calculations. (A few calculations are a thousand words!)

116-5. Investigation. Hubble's constant, its relation to the G constant and both to average values in the energy fluctuations of space

117-6. Investigating the astronomical redshift. An extremely subtle speed difference in radiation after extremely long time intervals

118-7. Investigating the astronomical deviation of light (redshift). The relation of the velocity from the Hubble rate to the velocity $V=\sqrt{(G\cdot M/R)}$ and to a total mass

119-8. A first investigation of astronomical magnitudes according to the Hubble rate of

≈70.1 km/s / Mpc and their relation to the structure of matter

120-1. The fundamental principles for the structure of the astronomical world

121-2. The fundamental principles for the structure of the astronomical world

122. The Universe is not a sum of separate bodies. Maintaining natural balance presupposes a ready and shared Whole

123. The G constant regulates the microscopic and astronomical phenomena of all nature. It is related to an average rate of change

124-2. The G constant regulates the microscopic and astronomical phenomena of all nature. It is related to an average rate of change

125. The shared energy that is concentrated in matter and at the same time offered as disembodied space. The process explanation (1)

126. The shared energy that is concentrated in matter and at the same time offered as disembodied space. The microscopic process (2)

127. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Power and energy of nature from its simultaneous Totality

128-2. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Triumph of rationalism in cosmology!

129-3. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. Astronomical masses and the maximum equilibration delay...

130-4. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. The average speed and maximum balancing delay...

131-5. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. The average speed, the maximum balancing delay and relationships with mass limits

132-6. The maximum amount of energy that can be missing from the shared energy and is concentrated in matter. (Unified theory)

133-7. The distribution of the shared amount of energy in astronomical nuclei. Proportions of the limiting astronomical mass M(1ls)

134-8. The distribution of the shared amount of energy in astronomical nuclei. Ratios of the M(1ls) mass to the total Muni amount according to the Hubble constant

135-9. The distribution of the shared amount of energy in astronomical nuclei. The volume of free space that accounts for each amount of concentrated matter

136-10. The distribution of the shared amount of energy in the global space. Ratio of gravitational field intensity, radius and volume of potential space

137-11. The distribution of the shared amount of energy in the global space. The volume of space where is reserved for each amount of concentrated matter

138-12. Volume of space in proportion to energy density or equivalent mass

139-1. A more recent review on passing theory to calculations of astronomical magnitudes. (Summary from publication 104-3 onwards)

140-2. The continuation of the review on the passage of rational thought to calculations of astronomical quantities (according to the interpretation of the structure of matter as energy fluctuations of a shared quantity that exists as space)

141-3. The completion of the review for the theory that prepared us to make calculations of astronomical magnitudes (according to the interpretation of the structure of matter as fluctuations of energy on a shared quantity that exists as space)

142. The "expansion" velocity $H \cdot D / 1Mpc = c \cdot D / Dmax = D / T(H)$ calculated from the relation $V=\sqrt{(G \cdot M/-R)}$ adjusted for space as a shared quantity of energy with equivalent mass

143. "Broken twigs... that leave their new trunk without causing any harm to it"

144. What are the maximum magnitudes that impose such a structure of the Universe, such dynamic processes at such rates and speeds and such proportions between limits?

145. No astronomical body is the center of the universe. The astronomical world exists on a curved surface

146-2. The astronomical world exists at the periphery of an imaginary volume. The common center is the complete Universe and acts as a nucleus for matter (outside astronomical space... ie from microscopic lengths)

147-3. The common center is the complete Universe and acts as a nucleus for matter (ie from microscopic lengths). The astronomical world exists in the periphery

148-4. The amount of matter of the astronomical world and its relation to a shared quantity that is always dynamically distributed

149-5. A question that has no answer unless matter is interpreted as fluctuations in a shared quantity of energy (which appears as space)

150-6. Did the Universe need to be so big with countless stars and galaxies, outnumbering the grains of sand on Earth's beaches? What is the use of being so large or even infinite?

151-7. Did the Universe need to be so big? What is the use of this being so great or

even infinite?

152-8. Did the Universe need to be so big? What is the use of this being so great or even infinite? The relation of the universal whole to matter

153. A review focused on the relationship of nuclear power to the shared amount of energy (keys for physicists and cosmology)

154-2. Mass density in and without bodies also manifests a shared amount of energy (which balanced appears as space)

155. A summary focused on the relationship of universal space to the distribution of matter and astronomical bodies

156. What conclusions and what physical processes we have explained equip us for calculations of astronomical limits (in summary)

157-2. The estimation of the astronomical limits according to the constants c and G (without H). The "middle" Universe

158-3. Astronomical limits calculated from the average velocity V0=√(Vmin·c) according to wave processes in a shared quantity. Review and estimate of the "bigger" Universe (without the H of "expansion")

159-3b. Astronomical boundaries calculated from the average velocity V0 = √(Vmin·c) according to the wave processes in a shared quantity. (More specifically for students and tutors. Design your own universe and explore it!)

160-4. Astronomical limits calculated according to wave processes in a shared quantity. Calculations from the magnitudes of physical force

161-4b. Astronomical limits calculated according to wave processes in a shared quantity. Calculations from the magnitudes of physical force

162-4c. Astronomical limits calculated according to wave processes in a shared quantity. The limiting magnitudes of physical force in microscopic and astronomical dimensions

163-5. The volume of space with the average density of energy or equivalent mass which is bound for any amount of concentrated matter

164. A review of rational interpretation without mathematics. The Unification of the fundamental forces of nature and the microcosm with the Whole

165. The universal Whole at the same time is the shared quantity that participates as a space for matter with wave phenomena and forces

166. A summary and how the treatise was divided, as written in the treatise itself