The law which operates the world
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Закон, который управляет миром
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Abstract: *at first sight, the theme of this work is banal, but since the publication of the first essays, the author has tried to pay attention of both serious physicists and simply educated public once again to the new concept of the Universe, which changes the paradigm of interactions in the physical world cardinally, allowing closely to come nearer to the Unified field theory. At the heart of a new paradigm lies the law defining the reason of interactions in micro and macro systems of the material world. The work is intended for readers and scientists interested in physical and philosophical problems of the Universe.*

Аннотация: *тема этой работы на первый взгляд банальна, но, так или иначе, начиная с публикации первых своих эссе, автор в очередной раз пытается обратить внимание и серьезных физиков, и просто просвещенной публики на новую концепцию мироустройства, кардинально меняющую парадигму взаимодействий в физическом мире, позволяющую вплотную приблизиться к единой теории поля. В основе новой парадигмы лежит закон, определяющий причину взаимодействий в микро- и макросистемах материального Мира. Работа рассчитана на читателей и учёных, интересующихся и занимающихся физико-философскими проблемами Мироздания.*

Keywords: *proto-element, proto-medium, parton, preon offset.*
Ключевые слова: *протоэлемент, протосреда, партон, преонное смещение.*

Greatness of a scientific idea rests
upon its capability to encourage
thinking and discover new
areas for research.
Paul Dirac

Preface

Throughout the whole history of science, every physical paradigm reflected the stance of any given scientific school on the *motion* of material objects. Starting from mechanics of Newton, who set the stage for how the laws of motion are now described in science, bypassing the development stages of thermodynamics, electrodynamics and, then, quantum mechanics, man is still trying to explain what the motion is. Such insistence is quite explainable, because it deals with the intention of a thinking EGO to better understand the world order mechanisms, which in turn draws us into the inner self, that of the most advanced creature of the Creator.

I think we have a right to keep up that tradition considering that our approach is far from usual and allows us to take a fresh look at the phenomena and processes that we are submerged in and that give account of this amazing World yet to be explored. The learning process suggests that by and large there is always little left to do. A boring set of ordinary mathematical characters and formulas evokes a simple and bright, sometimes even a stunning image of a new idea. All we have to do is to follow it or to come up with another idea that will be more evident and provable.

1. Fundamental Categories of the Motion

So what is the Motion? The underlying categories of the motion are as follows: first and foremost, *structure* or topology of space, which is the geometrically organized basis (proto-medium) of the material World; *energy*, which is a motive for action wavily distributed in the proto-medium; *time* that defines order and speed of change of energy and the state of the system; and finally, *mass* as the derived aggregate of the first three categories, the primary attribute of *matter*. As it follows from the above, over the course of time energy induces an action within the organized structure of space, and this action results in wave disturbance of the proto-medium, leads to the formation of materialized (having mass) matter that also enjoys wave properties.

An excellent formalization of the above is, for example, the nonrelativistic Schrödinger equation $i\hbar\frac{\partial\psi(\vec{r},t)}{\partial t}=-\frac{\hbar^2}{2m}\nabla^2\psi(\vec{r},t)$ that describes spatial and time variations in quantum systems and includes all components of the motion. Indeed, the time change rate of the wave function $\psi(\vec{r},t)$, which is associated with the space topology, is conditional upon the transformation of spatial parameters of a particle with mass *m* as caused by changes of its motion energy defined by the Hamiltonian $H=-\frac{\hbar^2}{2m}\nabla^2$. Of course, it's not all that simple but when it comes to the first approximation, this model is quite good.

The imaginary unit stated in the left part of the equation denotes a very important feature, namely a quarter-period delay between an agitation and the response (transformation) of the material system caused by that disturbance.

Structure of space

One day, while discussing the Poincare hypothesis, I came to the conclusion that certain abstract mathematical constructions are sometimes useful. I thought that some physical significance should be added to the elements of «diversity». And this idea led me to one interesting conclusion: it is possible to significantly improve the «Multiverse» model within the concept of the «Infinite nesting of the worlds» by making it more regular from the standpoint of structuring, namely hierarchical structuring.

In my earlier writings [2, 3, 4], I expressed this version of the concept that, as against to the well-known *discrete fractal paradigm* [1], considers the idea of *infinite hierarchical nesting* of material systems (Universes), either of which, as an infinite closed diversity, is the initial fractal element of the next level spatial isotropic medium. In this context, the SPΦ-symmetry law [5] can only be effective within a particular Universe, as a closed material system of one particular level, structured by the R_0*-distribution* law [3].

According to the R_0-distribution law, a three-dimensional sphere that infinitely and continuously expands with a step of the radius increment equal to a value that describes the size of the initial element (for example, 7/8 of its diameter), is closed and therefore finite. In such a system, infinite from its own range point of view, the initial spherical element with effective radius R_0 (*proto-element*) degenerates into a point. This is the evidence of vacuum, or *physical discrete continuous proto-medium*, that forms space of our Universe (or any other one as well). In quantum physics this evidence is described by means of a $\delta-$ *function*. With the aim of promoting simplified figural understanding, proto-elements can be represented as three-dimensional spatial pixels (although such a definition allegedly suggested by some Japanese physicists can hardly be treated as correct, in the strict sense).

The principle of infinite hierarchical nesting of material systems makes it possible to consider the infinity not in general, but within the context of a particular level. This means that the infinity is quite a relative term, irrespective of the way it is looked at. As we highlighted earlier, as the number of tightly "packed" initial system elements (proto-elements) infinitely increases, expansion of that system tends to a certain limit, i. e. that system is limited, it is as large as the initial element of the next, higher level system. From the mathematical point of view, this can be considered as a unit of the infinite next level set. On the other hand any proto-element, the size of which tends to zero, still corresponds to a unit of its set. This is an evidence of vacuum continuity, and testifies that space only meets the Hausdorff condition if a hierarchical row of nested systems is under consideration. This means that in this respect a space of a single-ranged material system (for example, our Universe) cannot be deemed a Hausdorff one.

Taking into account the principle of infinite nesting, the nature of space multidimensionality also takes another, more sensible meaning that can be found, for example, in «compactified» dimensions of the Kaluza–Klein theory [6] or transferred into the string theory, which is currently on-trend. An excited vacuum pixel can be imagined as a vibrating string tightened through other, hidden dimensions of nested worlds, the meaningful number of which is, needless to say, limited by our cognitive abilities. However, the deeper we get into the micro-world, the better we «feel the size» of the proto-elements and their internal dimensions that, by means of quantum processes of our world, are made evident in the properties of matter that we observe and study.

This magical presence appears, first of all, in the form of *preon offset* that is defined and briefly described in [4]. The preon offset caused by the retention of Compton wave length symmetry regardless of energy variations of consistently excited proto-elements forms the basis of physics of electric charge, baryon matter, antimatter, as well as all known types of interactions. In addition to that, the preon offset phenomenon is an elegant way to bypass the poorly-grounded concept of «space curvature» when it comes to describing, for example, the nature of gravitation.

To conclude our discussion of the space structure, we underscore that undisturbed proto-medium or vacuum is a scalar substance (*zero state* by Dirac), and its isotropic discrete continuous content serves as the physical basis of material (materialized) buildups formed while transferring and accumulating wave disturbances.

Time

As a general concept, the motion can be described by state variation of the material system, or variability. Variability is, first of all, a time criterion that serves as a background for physical processes we observe. Even an unchangeable state of the system can only be assessed over the course of time. In abstract discussions, mathematicians can use such nonsense as time-independent variables. In physics, the system state parameters have no meaning without taking time into account. Thus, time is an absolute background category (may relativists forgive me), while energy and matter can be defined here as fundamental categories of the variable closed physical system. It is not by chance that I've stressed the closeness of the system as I believe that time is the absolute notion in such a system (for example, in our Universe).

Relativists insist that time is a relative category capable to «alter the pace». This point of view can be well understood, because they were forced to accept this assumption as a working theory to explain a number of inconceivable physical phenomena in absence of other, more obvious concepts. However, if we assume that another acceptable paradigm formulating a new motion theory could be suggested, I am sure that the scientific society would be happy to «grab» it and surprise us by demonstrating the ability to develop it.

In any event, a reasonable researcher must be concerned about the conclusion that it is time that moves on to a slow flow rate that results in the «slower lapse of time» in an inertial system that moves quicker than the initial one. It is clear that the clock in the so-called quick system must go slower, but how is time involved in this? Why does the time go

slow? There must be a certain general criterion to measure the lapse of time in various inertial systems. What is that criterion? There is no paradox here, this is just an absurd thing if we consider the inertial systems in motion within a common closed macrosystem (for example, our Universe). We will be discussing the motion mechanism below, and I will explain my stance on this issue.

We can refer to the time relativity only if we consider the systems of various levels. Eternity in our Universe is just a moment for the next level Universe, which our one is nested in, as a spatial pixel. Similarly, one moment in our Universe is eternity for any of its countless proto-elements that are nested universes of the previous hierarchical level.

Time is inseparably associated with the spatial topology of its material system (the Universe) and therefore must quantize, starting from a certain indivisible minimal value. The time quantum (chronon), i. e. a short moment of the existence, can be defined as the time taken to transfer the total angular momentum of disturbance between a pair of adjacent pixels with opposite spin directions. The lapse of time is always a multiple of chronon and cannot be altered within its own system. In view of the foregoing, the complete period of harmonized disturbance in closed corpuscle circuits is always proportional to the number of proto-element pairs that form those circuits, and the number of the pairs is a multiple of three. This remark is of major importance for our further discussions.

Energy

We will consider energy, first of all, as a motive for action (a measure of motion) that manifests itself as a proto-medium disturbance and embodied matter. In this respect, a value of the proto-medium (vacuum) disturbance is a function of alternation frequency (ν) of action quanta (h) or, in other words, energy $E = h\nu$. Elementary disturbances in a vacuum are transferred by means of *spinor polarization* [3], i. e. the transfer of angular momentum (*qubit* of data) via connected pixel pairs. The transfer is performed at the speed of light $c = \frac{\lambda_n}{t_n} = const$, but with different wave lengths. The polarization wave length is a multiple of the minimal $\lambda_0 = 2\pi R_0$ value, which corresponds to the repetition period of the same excited pixel states within the polarized circuit.

The physical meaning of constancy of the speed of light in a vacuum is that a data qubit is transferred via a circuit of adjacent, sequentially excited spatial pixels over a chronon multiple period. The enlargement ratio $n = 1,2,3,4,5,...,\infty$ of wave length $\lambda_n = n\lambda_0$ (with the appropriate reduction of energy) is equal to the enlargement ratio of its propagation time $t_n = nt_0$.

By the way, in spite of the commonly held opinion, I would insist that the speed of light is constant and unchangeable not only in a vacuum, but in any other material medium: because disturbance transfer path is longer, and it takes more time for light to pass the substance.

Energy can also be defined as a mass-generating category, which is formalized with the well-known expression $E = mc^2$. Tradition attributes this formula to Einstein; at various times, a number of distinguished scientists such as Lorenz, Poincare, J. J. Thomson, Usachev, Heaviside, Chernogorov et al. suggested alternative ways of defining energy.

Your present correspondent suddenly developed this attractive expression as he was analyzing the transfer of wave disturbances in a vacuum, on the assumption that under certain conditions it can result in a closed form of the angular momentum transfer, that is in the development of the connected pairs of excited pixels (proto-elements) that form stable closed circuits to obtain that very property, which physicists call Mass.

Here, it is necessary to mention the so-called *Dark Energy*, i. e. an energy substance of a complicated structure that, as a materialized disturbance, clearly makes energy and matter closely related [4]. Followed by the *Dark Matter* phase, this huge part of the Big Bang energy took a form of a wave corpuscular disturbance with enormous mass and exotic laminated structure. In the course of further energy coagulation of substance in its widening peripheral layers, the Dark Energy served as a basis for the development of other types of matter.

Matter

Thus, the very concept of the embodied matter is inseparably associated with the closed form of the disturbance transfer in a vacuum, which «turns» energy to mass [3]. Mass, as the primary attribute of matter, is a product of wave disturbance resonance that is transferred at the speed of light via a closed harmonized circuit of sequentially excited vacuum pixels (the number of pixel pairs is a multiple of three). So the wave disturbance uses a trajectory, with its length corresponding to the principle of minimal action and wave length $\lambda_i = 2\pi R_i$, to close on itself and form a local body or, in other words, *a corpuscle* with effective radius R_i and mass $m_i = \frac{\hbar}{cR_i}$.

Thus, my definition of corpuscle is associated with the closed form of wave disturbance, which is one of the mass-generating factors. More complicated corpuscle derivatives feature a harmonically bounded structure that includes elementary corpuscles. A corpuscle body is also a wave disturbance that is transferred in a vacuum with a certain wave length.

A self-organizing mechanism of vacuum, which is evident in wave properties and mass distribution of the substance developed as a result of fractal discretization of matter, can be described by the multilevel R_0-distribution law [4].

Our discussions make it possible to claim that *photon* and *gluon* are not corpuscles and therefore they are massless. That what we call a photon is an elementary linear wave transfer of «packaged» disturbance in proto-medium via pairs

of sequentially excited pixels (proto-elements) with opposite spin directions. In this case, such temporary excitement of the proto-elements is transient: it is transmitted wavily at the speed of light via a circuit of adjacent pixels as a «sliding» spin (spinor current), but on no account can it be treated as a corpuscle. By the way, the electromagnetic nature of such excitement is also connected with preon offset that is transferred from pixel to pixel and leads to development of an electromagnetic wave.

Gluon is an elementary harmonized wave transfer of disturbance via closed circuits of pixels constrained in elementary corpuscles or more complicated corpuscular bodies (quarks, nucleones, etc.). Disturbance is transferred via a gluon circuit the same way as in case of a photon – by pairs of pixels with opposite spin directions – and at the same speed (the speed of light). In elementary gluon circuits, the number of pairs of sequentially excited pixels is always a multiple of three and depends on intensity (energy) of corpuscular disturbance propagation in proto-medium.

Harmonization of disturbances transferred via corpuscular circuits at any level of the material hierarchy is the result of a resonance between the disturbing action and proto-medium [3]. Therefore the elementary corpuscles as well as their derivates are two- or three-dimensional stationary waves [4]. Thus, elementary particles as well as the substance they form, are stationary waves within the proto-medium that produces them. Dear Sirs, all of us (or at least our bodies) come from fractally structured stationary waves!

In view of the foregoing, specific disturbance with wave length $\lambda_0 = 2\pi R_0$ and quantum energy $E_0 = \frac{hc}{\lambda_0}$ closes on itself inside the pixels themselves to form *proto-corpuscles* – the minimal stable material particles in our World – with elementary mass $m_0 = \frac{h}{\lambda_0 c}$. These particles are embedded in non-disturbed (scalar) proto-medium and, as energy changes within the range of $\pm dE$, turn to preons with different (discrete) values and signs of offsets [4].

I call a compact set of *proto-corpuscles* harmonically distributed in space *Ideal Matter* [3] to identify it with the Dark Matter. A detailed description of the Ideal Matter can be found in [4], where I also described my view of the Cosmological Model, analyzed development and distribution of matter in the course of our Universe evolution at the initial nucleosynthesis phase. This analysis makes it possible to assess quantities of all types of matter (from DM to baryon matter) relative to the whole Universe mass, precise empirical, but quite approximate conclusions drawn by contemporary science.

Antimatter

As we talk about matter, we must say something about antimatter and, first of all, clarify, what the «mysterious» substance means. Contemporary science believes (and this belief is probably true) that, according to the symmetry laws, there must be the same amounts of antimatter and matter. And at the same time it wonders, where is all this antimatter now? There are many assumptions about the location of antimatter, more or less funny and hence hardly credible.

I think the problem lies in our misinterpretation of origin and structure of antimatter as well as in our strong belief that antimatter had to expose itself as antisubstance at the initial nucleosynthesis phase, as its more orthodox antipode did. Taking into account our knowledge of matter, the latter is not so obvious, notwithstanding the ability to synthesize antiparticles and even atoms. Moreover, let us be bold enough to say that antimatter always goes hand in hand with baryon matter or, to be more exact, exists in its structure as an invisible phantom; and antimatter is in the same way imbued with matter. Those who can take a more courageous step will assume that substance is a complex of matter and antimatter like a complex variable in mathematics: an imaginary part of an imaginary number corresponds to the antimaterial part of substance. Let us try to combine these two concepts, while keeping in mind that quantum mechanics describes a state of a material system using a state vector and the corresponding wave function of complex nature.

For more than three hundred years scientists have been trying to explain a physical meaning of imaginary numbers. For example, Gottfried Wilhelm Leibniz, the great German philosopher, mathematician and physicist, thought that «*Imaginary numbers are a fine and wonderful refuge for the divine spirit almost an amphibian between being and non-being*». Well, that was not so far from the truth.

Among contemporary scientists, the most pleasant (in my opinion), but nevertheless not indisputable attempt to explain Schrödinger's complex wave function was made by Professor G. P. Shpenkov who believed that it reflected «*contradictory potential and kinetic essence of the rest state and motion*» [7]. One of the most doubtful conclusions made by this reputable scientist is that *«…real and imaginary components of complex wave functions are both substantial*». Anyhow, mathematics is too obstinate to let us deem imaginary values substantial, regardless of whether we want it or not. Instead, we have to think about whether the cumulative result of a complex function is really «substantial». An undoubted point of this theory is that the imaginary unit «*is a measure of qualitatively diametrically opposed being (property, number, parameter), which obeys the rules of diametrically opposed algebra of signs (negative in relation to the one that usually exists and that we call positive)*». This excellent property can be proved, for example, by analysis of various energy phases of electrons.

It is well known that as a result of interaction substance and antisubstance annihilate and turn to a bare wave disturbance. This fact leads us to the conclusion that both substances are based on energy as one of the principal categories of the material World. Another very important (although, probably, also questionable) conclusion can be drawn on the basis of the opinion that, as energy of a normal substance changes within the range of $\pm dE$, antimatter exposes itself as a wave response to preon offset [4]. We talk about elementary particles (nucleons, their components

and electrons) that retain symmetry of their wave parameters regardless of preon offset. But this is only possible if the mass of such a particle would be expressed using a complex value: $\lambda_i = \frac{h}{cm_Z}$, where $m_Z = m_{\mathrm{Re}} \pm im_{\mathrm{Im}}$ is the complex mass of substance, m_{Re} is the material component of the mass, and m_{Im} is its antimaterial component.

2. Versatile Criterion of the Matter Motion

The motion of physical bodies in a vacuum is, actually, a sequential phase sublimation of fractally structured disturbances of the vacuum itself [4]. From this point of view, the famous Michelson–Morley experiment is inherently absurd, because the scientists considered matter (a body) separately from the ether, and not treated the same as its derivative substance. By the way, Albert Einstein later included those wrong beliefs in his famous *Theory of Relativity*, which is a smart trick designed to confuse the whole enlightened world for a century, and to prevent people from unraveling the secrets of the unified field theory. These wrong beliefs are still in use, shared by those who adhere to the official paradigm, as well as by followers of numerous alternative theories.

To be fair, it is necessary to say that Einstein finished his days in doubts about his theory. As one of the founders of quantum physics, he always stressed that it lacks something very important. All distinguished physicists of that time (Planck, Heisenberg, Pauli, Dirac, etc.) tried to find this «something». As their search reached an impasse, some of them decided to switch to another field of study. Some of them, like Pascual Jordan, another founder of the quantum theory, finally left science. Other physicists, who never surrendered their weapons, like Paul Dirac, remained hostages of the existing paradigm, but kept trying to find the way out by means of complicated mathematical abstractions. I am full of respect for Wolfgang Pauli, who while making a speech at the conference awarding the Nobel prize said that (using my own rendering) a correct theory should not use mathematical tricks to invent a hypothetic world, which is not more than fiction, while our physical world still lacks a correct interpretation.

So what did all of these great scientists look for? What are our equally eager and gifted contemporaries still looking for?

Let us give a simple answer to this question: they looked for and are still looking for *a source of action, or that very versatile criterion that allows explaining the motion as an evidence of interactions at all levels of the material hierarchy.*

Let us try to define this criterion by considering a material system where the alteration of the disturbance propagation volume causes a discrete change of the wave length of its previous fractal bodies, starting from the minimal value λ_0 and further in accordance with the R_0-distribution law: $\lambda_1 = 2\lambda_0 \Rightarrow \lambda_2 = 4\lambda_0 \Rightarrow \lambda_3 = 6\lambda_0 \Rightarrow \lambda_4 = 8\lambda_0 \Rightarrow \ldots.$

Such transformation of the structure and mass (wave length) of the initial system fragments, as energy changes within the range of $\pm dE$, must be governed by some fundamental law. The primary meaning of this law is described in my earlier writings [2, 3, 4] and can be briefly summarized in the manner as follows:

Similar to the transfer speed of elementary linear wave disturbance (the speed of light), the transfer speed of corpuscular disturbance (materialized substance) in a vacuum can be calculated as the ratio between the wave length $\lambda_n = \frac{i}{3}\lambda_0$ of that disturbance, which is a multiple of λ_0, and its propagation period $t_n = \frac{i}{2}t_0$, which is a multiple of chronon t_0, where i - 3, 6, 12, 24, 30 …, etc. – even multiples of three.

It is necessary to make one important and definitive remark here. According to the principle of minimal action, the multiplicity of the period in closed circuits formed by excited three-dimensional pixels amounts to the number of pairs $i/2$ or proto-elements with opposite spin direction. Therefore ***the transfer speed of the formed corpuscular disturbance in proto-medium of any level of the material hierarchy is constant and amounts to two thirds of the speed of light****:*

$$\left|v\right| == \frac{2\lambda_0}{3t_0} = \frac{4\lambda_0}{6t_0} = \frac{6\lambda_0}{9t_0} = \frac{8\lambda_0}{12t_0} = \frac{10\lambda_0}{15t_0} = \ldots = \frac{\lambda_n}{t_n} = \frac{2}{3}c = const \qquad (1)$$

In other words, a «reserved» impulse of harmonized disturbance is transferred in elementary and other derivative corpuscles via circuits of proto-element pairs with opposite spin direction as fast as the speed of light. However, in accordance with law (1), to keep this speed constant, the corpuscular disturbance itself must be transferred in proto-medium it is originated from one third slower than the speed of light. It means that this speed must also be constant.

Thus, according to law (1), ***the existence of any kind of matter (i. e. the material World itself) is conditional upon the ability to retain the constant value of corpuscular disturbance (substance) transfer speed in proto-medium of the Universe at various levels of its fractal hierarchy.***

This is the primary criterion of the matter motion! And any kinds of interactions can be defined as responses to «attempts to violate» this law.

It is possible to describe the density alteration mechanism of fractally structured matter (as energy changes within the range of $\pm dE$) relative to the equilibrium edge of its absolute speed in a vacuum (this or other way) as a function of alteration speed of angular momentum (L) that causes the corresponding change of force moment (τ):

$$\pm\frac{dL}{dt}=\mp\tau \qquad (2)$$

This mechanism magically becomes evident, for example, in case of beta-decay, which, by the way, can be used as a perfect tool to demonstrate law (1) in case of various energy alteration directions.

3. Spatial Distribution of Matter (Energy)

To analyze properties of spherical wave of disturbance in a homogeneous medium, let us assume that:

R_0, ρ_0, m_0, V_0 – respectively, radius, density, mass and volume of the excited anomaly sphere; R_1, ρ_1, m_1, V_1 – respectively, radius, density, mass and volume of the spherical shell that encloses the anomaly.

Let us calculate the ratio of mass m_0 and m_1 provided that $R_1 = 2R_0$ and $\rho_0 = 2\rho_1$. Because $V_0 = 4/3\,\pi R_0^3$, the volume of the spherical shell will be $V_1 = 7V_0$. Taking into account densities of the anomaly $\rho_0 = m_0/V_0$ and its shell $\rho_1 = m_1/7V_0$, we find: $m_0/V_0 = 2m_1/7V_0$ or $7m_0 = 2m_1$. Therefore the total mass of the anomaly and its shell will amount to: $m = m_0 + 7/2\,m_0$ or $m_0 = 2/9\,m$, hence $m_1 = 7/9\,m$.

What an interesting distribution!

And it underlies all wave processes that occur in proto-medium, including the global process that contributed to the formation of the Universe itself [4] from the *Primary Perturbation* with the formation of a Dark Matter area $M_{DM} = 2/9\,M$, where M is the total mass of our Universe, to the wave distribution of the *Big Bang* energy $E_{BB} = 7/9\,Mc^2$:

$$E_{PP} = E_{DM} + E_{BB} = 2/9\,Mc^2 + 7/9\,Mc^2[2/9 + (2/9)^2 + (2/9)^3 + ... + (2/9)^{n-1} + (2/9)^n], \text{ at } n \to \infty. \qquad (3)$$

In view of the foregoing, a disturbance transferred at the speed of light as spinor polarization via sequentially excited proto-elements with opposite spin direction, combined in closed corpuscle circuits, is that very substance that features *mass* and that we gladly call *matter*. The famous equation $E = mc^2$ becomes almost tangible. Moreover, let us develop it by taking into account the concepts that arise out of law (1). For example, we will consider photoelectric emission (as we know, Albert Einstein was granted the Nobel Prize for the explanation of that emission).

The primary idea of this phenomenon can be described using the equation: $h\nu = \varphi + \frac{mv^2}{2}$, which, according to the official version, means that an energy quantum $h\nu$ is spent for "electronic work function" φ and kinematic energy it receives $\frac{mv^2}{2}$.

In our interpretation, if we rewrite the equation of photoelectric emission taking into account the electron speed constancy $v = \frac{2}{3}c$, we will receive the following interesting equation: $E = \varphi + \frac{2}{9}mc^2$, from which it follows that $\varphi = \frac{7}{9}mc^2$, or

$$h\nu = \frac{7}{9}mc^2 + \frac{2}{9}mc^2 \qquad (4)$$

Taking into account the above-mentioned analysis of spherical wave structuring in a homogeneous medium, we can draw a conclusion that such a proportion (4) is natural for the formation of an energy anomaly in a spherical area with radius $2R_e$, that has a double density area with radius R_e in its center.

When it comes to the photoelectric effect that we are discussing, this can be unambiguously interpreted: an electromagnetic disturbance quantum with a certain wave length dissipates at a homogeneous energy shell of an atom and excite a spherical wave (blistering) in it. This results in the formation of a quasi-spherical bubble, in other words, a «hollow» particle that is called a *free electron*. The energy shell of this particle must be two times thicker than the atom shell. Booms! as a pebble thrown into water causes a small attractive round drop to appear.

This conclusion correlates with a humble, but more detailed analysis of the electron structure that can be found in [4].

4. Some Words about the Indeterminacy Principle, or Putting an End to «Plazar's Doubts»

Once I maintained correspondence with one obviously gifted but quite haughty man (being more of a dilettante than a scientist). In the course of the discussion we had, I thought about the way I could eliminate his doubts about my spatial structure concept. He was upset with a question of how proto-medium can be continuous if it consists of spherical proto-elements with certain initial dimensions. In my papers I've marked this critical feedback as the «Plazar's doubts» (after the name of my respected opponent – Alexander Plazar). In what follows, I will present some considerations that would help me to solve this challenging issue.

The fundamental Heisenberg's indeterminacy principle $\Delta p_x \Delta x \geq \frac{\hbar}{2}$ tells us that the least possible variance (indeterminacy) of an impulse measuring result must be equal to or exceed a half of the reduced Planck's constant. Let us apply law (1) $v = \frac{2}{3}c = const$ to the indeterminacy principle in an attempt to understand why such limitation exists, and how small or large the value Δx is, for example if we compare it with effective radius R_0 of a vacuum pixel (proto-element).

The maximal excitement of the pixel (proto-corpuscle) within the scope of *three-dimensional* space is limited by the Compton wave length $\lambda_0 = \frac{h}{m_0 c}$. This is the minimal possible wave length in our World [4].

Further excitement of the proto-corpuscle (with retention of the wave symmetry) is compensated by a discrete preon offset, so the proto-corpuscle turns to a heavier particle, preon, with a potential pit around it [4]. In case of the first order offset (i. e. from our World's point of view), physics of this particle can be described with as many as six spatial dimensions. The second order offset requires that another three dimensions are added, and so on.

Taking the above-mentioned condition into account, it is possible to add several formal consequential assumptions:

$$\Delta p = \Delta m V = \frac{2}{3}\Delta m c;\ \ \Delta m \Delta x \geq \frac{3}{4}\frac{h}{2\pi c};\ \left[m_0 = \frac{h}{\lambda_0 c} \right]\ \ \Delta m \Delta x \geq \frac{3}{4}\frac{\lambda_0 m_0}{2\pi};\ \left[m_0 = \Delta m; \lambda_0 = 2\pi R_0 \right],$$

and this results in:

$$\Delta x \geq \frac{3}{4} R_0$$

That's an amazing result, isn't it? This equation not only defines the minimal significant distance in our Universe, but also shows the edge where a discrete medium turns to a continuous three-dimensional space. The necessary and sufficient condition of continuity is met if the «packed» spatial pixels mutually intersect by a quarter of the radius of their spherical envelope.

Conclusion

In the conclusion, I would like to repeat once again:

Material bodies of any level of the structural hierarchy move in a vacuum (proto-medium) at the constant speed that amounts to two thirds of the speed of light. This is the primary regulator of the material world existence that exposes itself through interactions.

The relative motion of bodies that we can observe and measure in space are nothing more than the sequential alteration of the phase state of a fractally structured set of excited pixels of a vacuum itself. It is a set that we call substance, from elementary particles to tangible bodies, because we can assess their motion via relative phase speeds. That's why, if we return to the conclusions we drew in the first chapter about the motion of inertial systems and bodies located inside of them, it may safely be said that the speed of such motion is always constant, regardless of energy variations. The only thing that changes is the repetition frequency (period) of the same phase states of the system and its fractally dependent components, or (if we may say so) the «photoscript» of the system in space. The growth of energy results in an increase of the system «photoscript» frequency, while that of its fractally dependent components, in accordance with law (1), decreases respectively. This means an increase in the phase state repetition period, which gives an impression that time «goes slower», which, in turn, misleads respected relativists.

Simple and bright confirmation of the foregoing is, for example, behavior of an atom (as an elementary physical system) in a crystalline grid. When the atom consumes energy, its oscillation frequency increases. But at the same time, an increase in the wave length (period) of parton clusters [4], in accordance with law (1), results in the expansion of an energy shell of the atom.

If we talk globally, the balance of gravitational astronomy is caused not by universe attraction, but by this universe attraction law. Gravity does not exist on its own. Like other kinds of interactions, it is the result of a wave response to an attempt to «disrupt» the balance defined by this law. The universe attraction appeared at the beginning of our Universe evolution, when formerly solid hydrogen became gas due to a decrease in the atomic protium density caused by corpuscular disturbance spherical wave front expansion [4]. This process was accompanied by the contraction of local fragments of substance, which became more and more intensive as the frontal density decreased. By the way, «light», in a form of hard gamma radiation, appeared simultaneously with the attraction. So, according to our visions, accelerated recession of galaxies is not a wonder at all, and there is no need to imagine various Dark Energy tricks. This

recession is caused by the expansion of the material Universe front and, in turn, causes formation of the consolidating fragments in a thin layer of its peripheral part, where all the fractally structured baryon matter is located. And this does not contradict to observations made by our stargazers. To say it simply, stars shine because they consolidate, and they consolidate because the galaxies recess.

The Fundamental Conservation Law of the corpuscular disturbance transfer speed can form the basis of the *Unified field theory*.

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