Collection of properties of matter

Vladimir Pastushenko

Abstract. This collection includes separately written works. These works are included practically without changes. Some point representations of properties are clarified and presented more fully. But speaking about one work, revealing some properties of matter, it is difficult not to mention other properties, knowing their existence. Firstly, matter is one. Yes, it is presented by the diversity in the Artificially Created Axioms created by us, as properties that do not require proof, and in the models based on them. But in such diversity, we are talking about matter. It is one in the single dynamics of the visible Universe and in the depths of the physical vacuum. This is all matter. We are talking about the material world, without fantasies. Secondly, when describing the properties of matter, we avoid building fictitious ideas, hypotheses, the words "probably", "maybe", and models, projects, systems based on them. Facts of properties were taken, and the consequences of such facts. This is like cause and effect. As they say - nothing personal. And the reason for writing this collection is that, when speaking about this or that "face", it is difficult to resist showing the entire "polyhedron" of the unified matter. It is like the second derivative of a separate charge (one "face") and the electromotive force of self-induction in a circuit (the second "face") have one "polyhedron" in Maxwell's equations, when we answer the question WHY, with such a cause there is such a consequence. Or, WHY in a vacuum with zero mass, the force of gravity arises. In Newton's law there is no curved space, but the force of gravity works, and this force is derived from the equation of curved space (tensor) of Einstein, and again the question WHY. Physics answers the questions WHY. Mathematics answers the questions HOW this happens. Often, emergent properties of matter are hidden in such mathematical answers. Such a concept provides good prospects for research.

Content.

1. Popular about the unified theory

In the last days of the outgoing 2020, the idea came to write a popular presentation of the presented Quantum Gravity in the Unified Theory. Magic words. Today, behind them is the intelligence of all physicists on the planet.

There are simple rules of popularization. There are several of them. If you can explain your idea to a child, then you have coped with this task. Another rule says that each formula in the text reduces the number of potential readers, that is, people who will be able to read this book. There is also a rule of figurative or analogous representations of those things that are being presented. One way or another, I will adhere to these rules.

So, we are talking about a unified theory. We can give many examples of dramas and revolutions in people's consciousness, when understanding the properties of the surrounding world, starting with the Biblical idea of the birth of the world, to today's idea of the Big Bang of the Universe, the first seconds of its dynamics. I will only indicate here the necessary revolutionary ideas that changed people's understanding of the world around us. Much has been said and written about the mathematical representation of the surrounding world by Plato (the era of Plato), Pythagoras, Euclidean Principles, the system of numbers, geometric figures. In this regard, I will only emphasize that all this is an Artificial System of Axioms. When we talk about 10 apples, to which 5 more apples are added, we are talking about 15 apples as equal apples by analogy, that is, units. But we are not saying that each apple is different from another apple. In Nature, there are no 15 identical apples. This means that such an addition operation corresponds to reality only in an approximate form. On the other hand, if we put 3 apples on the table and then take one apple, then 2 apples remain. Note that we took the apple that we put on the table. Everything is real. And this operation of subtracting numbers corresponds to reality. As we see, even simple actions with prime numbers do not always correspond to the properties of Natural events.

When Euclid in his Elements defined a line as "...length without width...", today it is the principle of trajectory uncertainty in quantum theories. We cannot say where exactly the electron is, as "...a point that has no parts..." in the same Euclidian axiomatics. Such an electron is truly indivisible and corresponds to the point model. Where is Euclid, and where are quantum theories today. But there is a direct connection here. We will stop in such a journey into the world of mathematical models, or rather its foundations, and move on to the evolution of the physical understanding of the surrounding world.

For a long time, in the 16th and 17th centuries, Aristotle's ideas that any movement is created by some force or another dominated. Galileo's simple experiments showed that movement does not stop if no force is applied. For example, if you throw a ball down an inclined plane, then after the inclined plane the ball moves along a horizontal surface. And how far the ball moves depends on the friction force of the horizontal surface. Whether it is sand, wood or glass - the forces are different. It turned out that Aristotle was wrong. In order for a material body to move, all forces must be removed. This was a revolutionary change in the consciousness of all people.

The next revolution in understanding the world around us is connected with the study of electrical and magnetic properties. It turned out that changing one field generates another field and vice versa. These properties are very clearly presented in Maxwell's mathematical equations. All technologies that surround us today are connected with these properties. Tesla's ideas and experiments about the presence of energy in space are very tempting.

The next revolution in people's consciousness is connected with the understanding of space and time itself. As it turned out, this is similar to electromagnetic properties, when changes in space change the course of time. These properties are interconnected in a single space-time. Although the mathematical models of such transformations were known as the Lorentz transformations, their physical essence was realized by Einstein in his Special Theory of Relativity. The foundation of this theory is that the masses known to us, right down to elementary particles, the electron in particular, cannot move at speeds greater than the speed of light. It turned out that at high speeds, time slows down, and the length is reduced. There are specific formulas for such relativistic transformations, and there are precise experiments confirming the invariability of the speed of light in space-time. The length of the electromagnetic wave of light, a photon, its frequency, energy changes, but the speed of the photon does not change. It is important that people understood that space and time in Newton's theories are not absolute. That is, both space and time are different in different conditions.

At the same time, quantum mechanics was developing, which turned all the concepts of classical physics upside down. It turned out that it is impossible to simultaneously determine both the coordinate and time in the already known to us single space-time. Moreover, more and more new elementary particles were discovered that did not fit into the classical ideas of the structure of matter and various interaction fields. A number of brilliant researchers created various quantum theories based on experimental data. These theories calculate and predict the results of experiments well, but their physical meaning, as Feynman himself said, was not understood by anyone. Well, indeed, it is difficult to imagine in the Nature of matter, say, a wave function, the uncertainty principle, a wave of probability of events, a superposition of a wave function, quantum entanglement of a wave function and, most importantly, to understand the causes of all these phenomena in Nature, to find all the consequences of these causes.

The next revolution in understanding the laws of Nature was made by the same Einstein. We are talking about the General Theory of Relativity. In essence, we are talking about a freely falling elevator, a system of space-time coordinates in which there is no acceleration, as in rectilinear, uniform motion or at rest. On the other hand, free fall with constant acceleration is due to the force of gravity. Mass, as is known, is a measure of inertia in space without gravity. This means that the force accelerating the mass of a rocket in outer space and the force of acceleration of mass in a gravitational field are the same. We are talking about the fundamental principle of equivalence of inertial and gravitational mass in Einstein's General Theory of Relativity. We can talk about the principle of equivalence of the inertial and gravitational mass of two different masses connected by a thread on a fixed block. The weight of a large mass falling down and a small mass moving up is the same. Here, different masses have the same weight. This means that the acceleration of the inertial mass and the acceleration of gravity are equivalent. They can be added and subtracted.

Now about the main thing, in Einstein's General Theory of Relativity. If in a stationary elevator you direct a flashlight beam horizontally to the opposite wall, then when the elevator moves with acceleration up or down, the point of incidence of the beam will shift down or up, respectively. And in accordance with the principle of equivalence, the gravitational field will deflect the beam of light. This conclusion of Einstein's theory was brilliantly confirmed by a solar eclipse observed from Earth. A beam of light from distant stars behind the Sun curved its trajectory around the Sun and was visible on Earth. This effect was called a gravitational lens.

Now, after the theory has been confirmed in an experiment, Einstein's General Theory of Relativity itself gives us many unexpected ideas about the world around us. It turned out that gravity is caused by the curvature of space and vice versa. Mathematically, this is reflected by the Einstein tensor. Its right side indicates the energy-momentum tensor of fixed gravitational potentials. The key word here is fixed gravitational potentials. This is the condition set by Einstein, the same as the equivalence principle. But the equation of Einstein's General Theory of Relativity also indicates many other fundamentally new properties of the world around us, the Universe. We have all heard about the expanding Universe, black holes, dark matter and dark energy. All these properties have been confirmed by experiments.

When we talk about fixed gravitational potentials of Einstein's tensor, these key concepts of Einstein's General Theory of Relativity, already tested and confirmed in experiments, are directly opposed to the principle of uncertainty of coordinates in time, in quantum theories. These are fundamental contradictions of two fundamental concepts or properties of physical theories tested in practice. Einstein dreamed of creating a unified theory that would resolve these contradictions. And the main criterion of such a theory is the theory of quantum gravity, which unites Einstein's General Theory of Relativity and quantum theories.

The intensity of the research in search of such a theory is so great that sometimes the question is asked, is this theory crazy enough to be correct? These questions are relevant today. The guiding threads in the search for such theories are mathematical truths and physical facts in experiments. It is not possible to solve these problems directly. It is not possible to combine the principle of uncertainty of the position of a point in space and time, with a fixed state of quite definite gravitational potentials at a given point in space and at a given time. And here we return to the beginning of Euclid's Elements, his axioms in the definitions of a point "... having no parts ...", a line as "... length without width", and the parallelism of these lines.

In the modern axiom of parallelism, known to all, through a point outside a straight line, in a plane, there passes only one straight line OX, parallel to the original line AC.

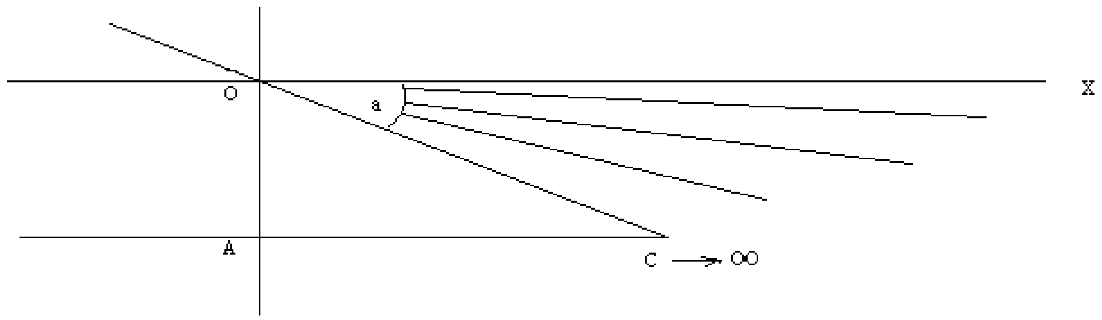


Fig. 1

Parallelism means that the lines OX and AC do not intersect at infinity. These are clear and obvious ideas. They are generally accepted. But if you look closely, then when moving along AC to infinity, within the angle α, there is a dynamic bundle of straight lines that never intersect the original line AC at infinity. This means that we are talking about parallel lines. Since infinity cannot be stopped, this dynamic bundle of straight parallel lines always exists along each XYZ axis of Euclidean space. Moreover, when moving along any trajectory line, AC in this case, there will be a space of dynamic bundles of parallel straight lines nearby, which we will not be able to get into.

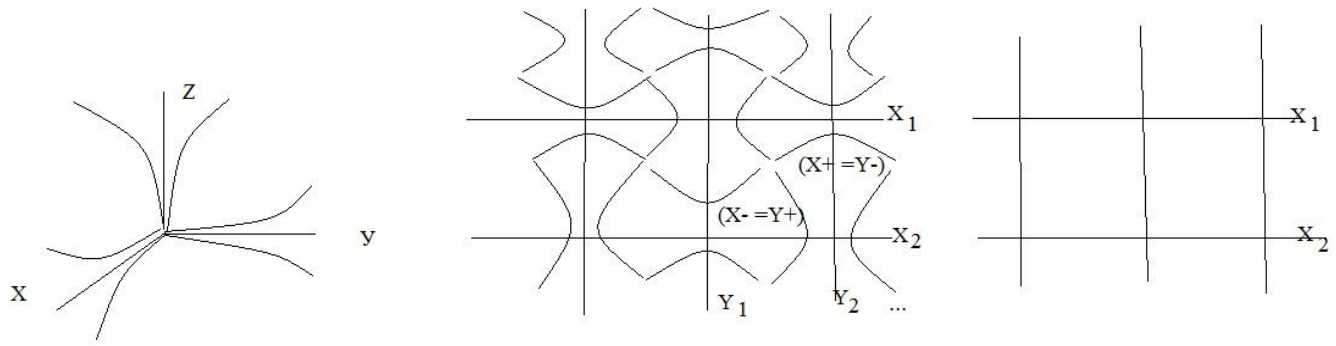


Fig. 2

As we see, the coordinate system of Euclidean space changes, and we can talk about non-stationary Euclidean space, with the same properties of isotropy in all directions. On the other hand, we can talk about a single and inseparable discrete space-matter.

Since the main property of matter – motion – follows from Galileo's experiments, we will identify the space of dynamic bundles of parallel straight lines with matter. Now, we proceed from the following fundamental fact that there is no space without matter and no matter outside of space. This means that space-matter is one and the same. Today it is difficult to fully understand this, but such are the facts of reality. In the presented lattice of Euclidean axes

On the right in Figure 2, we do not see the full picture of the dynamic space-matter on the left.

As we see, in dynamic space-matter, we can no longer take simply a line as "...length without width..." with the uncertainty principle in Euclidean axiomatics. It is either (X-) or (Y -) trajectory, with a dynamic angle of parallelism of a bundle of straight parallel lines.

The next step in understanding the properties of space-matter as a single whole is that the geometric properties, we emphasize, of dynamic space, correspond to the physical properties of matter. If we postulate the properties of space-matter as an electro (Y + = X-) magnetic field, then there are mathematical truths of Maxwell's equations for such a single electro (Y + = X-) magnetic field. The truth of these equations is that the dynamics of the electric (Y +) field generates a vortex magnetic field and vice versa. Now, in exactly the same strict mathematical truths, the equations of the dynamics of gravitational (X+ = Y -) mass fields are derived. From these equations it follows that, similar to the induction of a magnetic field in the dynamics of an electric field, inductive (Y -) mass fields arise in a variable gravitational (X+) field. No options.

The same attempt to derive the equations of the Special Theory of Relativity in strict mathematical truths of dynamic space-matter led to the equations of quantum relativistic dynamics in exactly the same mathematical truths. If in the first case the zero angle of parallelism of the Euclidean axiomatics was taken, then in the case of quantum relativistic dynamics, this angle is non-zero, and different for (X-) and (Y-) trajectories. It is fashionable now to talk about the Quantum Theory of Relativity. So, the equations of the Quantum Theory of Relativity, at the zero angle of parallelism of the Euclidean axiomatics, pass into the equations of the Special Theory of Relativity, and in strict mathematical truths. In other words, in the Euclidean axiomatics it is impossible in principle to create the Quantum Theory of Relativity. What does this lead to in practice? Let us give one example.

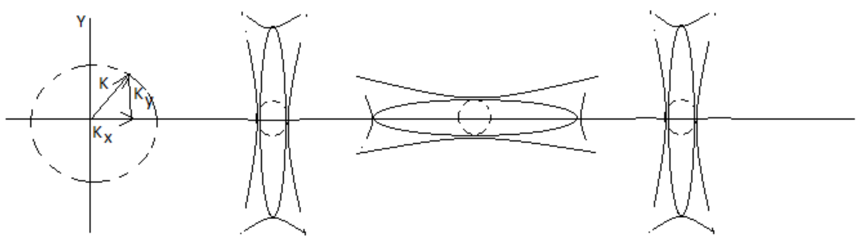


Fig. 3

From the Quantum Theory of Relativity it follows that, being inside a stationary sphere with isotropic Euclidean space, in dynamic space-matter, such a sphere has the form of a dynamic ellipsoid. Such are the mathematical truths of geometric properties. This is a very interesting case of such a state of dynamic space-matter. And there are reasons for this.

We are nevertheless on the path leading to quantum gravity. In the most general sense, the equations of quantum gravity follow from the equations of Einstein's General Theory of Relativity. In essence, as already noted, all the presented equations expand the properties of existing theories and ideas about space-time. Let's say more. Space-time itself is a special case of a fixed state of dynamic space-matter. Let's say that fixing any angle of parallelism of a discrete dynamic space-matter gives a multi-sheet Riemannian space. It is in such a fixed Riemannian space that the Einstein tensor is presented. And the Einstein tensor itself represents the mathematical truth of the difference in relativistic dynamics at two fixed points of Riemannian space, one of which is reduced to the Euclidean sphere. This is a mathematical truth that cannot be refuted in any way. And any attempts to ignore the General Theory of Relativity are attempts to ignore mathematical truths. This is nothing.

The space of a dynamic bundle of parallel lines with a fixed angle of parallelism corresponds to a space with Lobachevsky geometry. We speak of fixed states as facts of reality, recorded in experiments with a certain degree of probability of one or another state of dynamic space-matter. That is, outside the experiment, dynamic space-matter has, say, a space of Lobachevsky geometry with variable asymptotes of hyperbolas, or a sphere with non-stationary Euclidean space, and the same isotropy.

Let us move on to a closer examination of the specified properties of dynamic space-matter. The very unity of the gravitational (X+) field and mass (Y-) trajectories corresponds to the principle of equivalence of inertial and gravitational mass. And the non-zero angle of parallelism of mass (Y-) trajectories gives us the principle of uncertainty of the trajectory itself. Moreover, two points of such a trajectory, symmetrical relative to the Euclidean line with a zero angle of parallelism, give us quantum entanglement of these points, as a fact of the reality of dynamic space-matter. These two points are absolutely identical. We are now talking about two points, one of which is fixed in the experiment in space-time. But space-matter is a space of expanded possibilities. And there are many such absolutely identical points outside the experiment, that is, in reality.

As for the mathematical truth of the Einstein tensor, and with the controversial λ - correction. There is no dispute here. This is a mathematical truth and it is derived under the condition of a discrete dynamic space-matter. The question is closed. Now, in such an equation, which is derived in a dynamic space-matter, the principle of equivalence of mass (Y -) trajectories is introduced in gravitational (X+) field and the uncertainty principle of the mass (Y -) trajectory itself. In contrast to the fixed gravitational potentials of Einstein's General Theory of Relativity, it is already possible to consider the gradient of such gravitational potentials, on the wavelength of the quantum field. And such quantum gradients of gravitational potentials give quantum (X+) gravitational acceleration fields. The mathematical features of such differential solutions give quasi-potential quantum gravitational acceleration fields, which follow from the equation of Einstein's General Theory of Relativity.

These are, in general terms, the properties of quantum gravity in a unified theory. We are talking about the unified mathematical truths of Maxwell's equations for electromagnetic fields and the equations of the dynamics of gravitational mass fields. We are talking about the unified mathematical truths of the equations of Einstein's Special Theory of Relativity and the equations of quantum relativistic dynamics. And we are talking about the unified mathematical truths of the equations of Einstein's General Theory of Relativity and the equations of quantum gravity. All this is presented in one mathematical truth.

Let us briefly note the properties that follow from these mathematical truths.

1. A geometrical, as well as a physical fact of dynamic space-matter, is the fact of the presence of antimatter in the matter itself, for example, a proton and an electron.
2. The induction of relativistic mass in Einstein's Special Theory of Relativity, in accordance with the equivalence principle, is the same as the induction of gravitational mass in a variable gravitational field.
    a. If this is the field of the Strong Interaction of the proton, then we can measure this mass, closed in space, in an experiment.
    b. If these are inductive mass trajectories of quasi-potential quantum gravitational acceleration fields, then we are talking about hidden mass fields, like dark matter.
3. Black holes, due to the presence of an "event horizon" and in Einstein's Theories of Relativity, cannot absorb matter, the same positron in "Hawking evaporation", since for this, the same positron must accelerate to the speed of light, and this is impossible.

The event horizon itself appears in the relativistic representation of Newton's law, as a special case of Einstein's General Theory of Relativity. But for this, in the mathematical procedure, it is necessary to divide by zero. This is impossible neither in mathematics, nor in the Nature of such black holes. Although "black holes" exist in dynamic space-matter, as singularity objects with different energy levels of physical vacuum. There are calculations of the range of masses of such black holes, at least three types in galaxies, as well as in quasars and in the core of quasar galaxies. These are questions that go beyond the scope of this representation.

2.Unified Theory 2

Chapters

1. Space-time is a special case of space-matter
2. General equations of electromagnetic (Maxwell) and gravitational -mass fields.
3. General equations of the Special Theory of Relativity and Quantum Relativistic Dynamics.
4. Scalar bosons.
5. Spectrum of indivisible quanta of space-matter.
6. General equations of the General Theory of Relativity and quantum gravity.
7. Dynamics of the Universe.

2.1. Space-time is a special case of space-matter

Modern physics runs into many problems, facts that go beyond its theoretical concepts. The theoretical models and fundamental concepts themselves are largely contradictory. For example, they said that the Higgs field creates a mass of particles. Formally, this can be understood at the classical level, $m = \nu^2 V$ (frequency is determined by the stiffness coefficient and mass) as oscillations in the volume of the Higgs field (the energy of the boson in the Spontaneous Symmetry Breaking model), which are taken as the basis of the idea. But how the "mass of the Higgs field " creates the force of gravitational attraction of two masses, they forgot to say. There is no answer. Mathematics answers the question HOW? Physics answers the question WHY? We will look for physical reasons. This is very important.

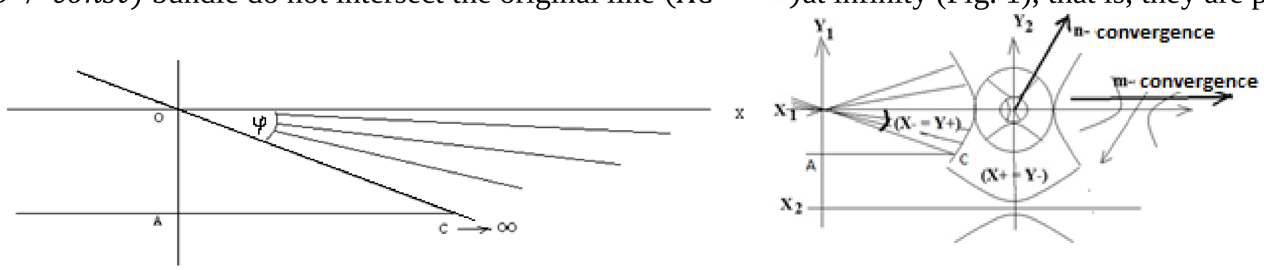
If (+) is the charge of a proton (p^{+}), in quark ($p = uud$) models it is represented by the sum: $q_p = \left(u = +\frac{2}{3}\right) + \left(u = +\frac{2}{3}\right) + \left(d = -\frac{1}{3}\right) = (+1)$, fractional charges of quarks, then exactly such (+1) charge (e^{+}) of the positron, quarks do not have. Such a model and representation of (+) charge does not correspond to reality. And the proton does not emit a photon in the exchange charge interaction with the electron of the atom, and electrons with the same charge, in exchange interaction, in the orbits of an atom do not repel each other. Euclidean axiomatics itself has its own insoluble contradictions. For example,

1. A set of points in one "part less" point gives a point again. Is it a point or a set of them, determined by elements and their interrelationships?
2. A set of lines in one "length without width" gives again a line. Is it a line or a set of them, defined similarly?

Euclidean axiomatics does not provide answers to such questions. If in the times before our era, these axioms suited everyone, for measuring areas, volumes..., then in modern research such axioms simply do not work. This, and many other fundamental contradictions, have no solutions in theories.

The fundamental fact is that there is no matter outside space and no space without matter. Space-matter are one and the same.

The main property of matter, motion, is represented by dynamic space-matter, with non-stationary Euclidean space. It follows from the properties of Euclidean axiomatics. Straight lines of a dynamic $(\varphi \neq const)$ bundle do not intersect the original line $(AC \to \infty)$at infinity (Fig. 1), that is, they are parallel.



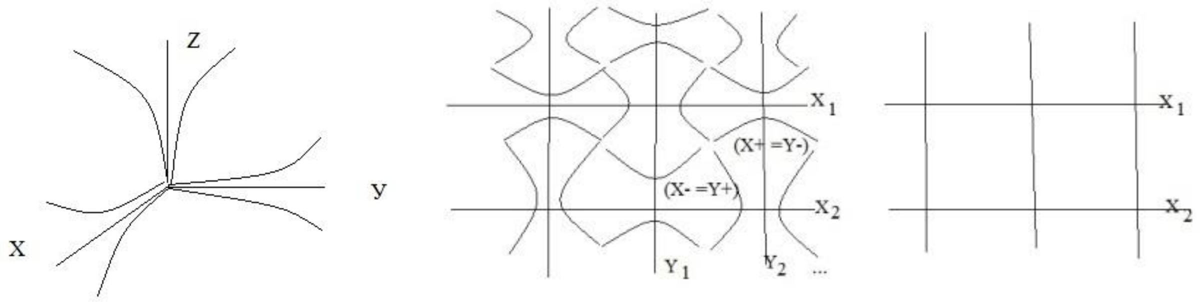


Fig. 1. Dynamic space-matter.

This means that when moving along the line AC, there is always a space (X-) that we cannot get into. Infinity cannot be stopped. Therefore, the dynamic (X-) space-matter of a bundle of parallel straight lines always exists. The second point is that Lobachevsky considered his geometry, "pan geometry", to be imaginary, that is, real at large distances. In our case, at large OA, the angle of parallelism increases, and at small values of OA, at small distances, Lobachevsky's geometry turns into Euclidean geometry. That is, the angle of parallelism converges to zero. But at small distances of the vector AC, in the microworld, on the contrary, the angle of parallelism is limiting, with the known uncertainty principle. Orthogonal bundles of straight lines-trajectories have their own external $(X+)$ fields $(Y+)$. They form Indivisible Localization Regions $(X\pm)$, $(Y\pm)$. In this case, Euclidean space with a non-zero and dynamic angle ($\varphi \neq const$) of parallelism in each of its (XYZ) axes loses its meaning. But this is a real (X-), along the axis (X), space of a dynamic bundle of straight lines, which we do not see in Euclidean space. In 2-dimensional space, the zero angle of parallelism (φ=0) for (X-) and (Y-) lines gives Euclidean straight lines. In the limiting case of the zero angle of parallelism (φ=0) in each axis, the dynamic space-matter passes into Euclidean space, as a special case of dynamic space-matter. These are deep and fundamental changes in the technology of theoretical research itself, which form our ideas about the world around us. As we see, in the Euclidean representation of space, we do not see everything. Gödel's incompleteness theorem states that any consistent formal axiomatic theory formalizing the arithmetic of natural numbers is not (absolutely) complete. This means that in any such theory there are true statements that cannot be proven within the framework of this theory. In this case there are no arguments of the truth itself, and it is questionable, and the result of the statement in Gödel’s theorem is confirmed or not as reality, only in an experiment or by the fact of reality. But even here, in both cases, Gödel’s theorem and experiment, in the dynamic space-matter there are (X-) or (Y-) areas, which we cannot penetrate in principle and by definition, neither in the Euclidean axioms, as the basis of all theories, nor in experiments. Moving, for example, along the ray (vector) AC, we can never get into the (X-) field. And this is a fact of reality, without any theorems.

So dynamic ($\varphi \neq const$)space-matter has its geometric facts as axioms that do not require proof.

Axioms of dynamic space-matter

1. A non-zero, dynamic angle of parallelism $(\varphi \neq 0) \neq const$ of a bundle of parallel lines defines mutually orthogonal parallel lines $(X-) \perp (Y-)$of the fields of lines - trajectories, as isotropic properties of space-matter.

2. The zero angle of parallelism $(\varphi = 0)$ gives "length without width" with zero or non-zero (Y_o)radius of the sphere-point "having no parts" in the Euclidean axiomatics.

3. A bundle of parallel lines with a zero angle of parallelism $(\varphi = 0)$, “equally located to all its points”, gives a set of straight lines in one “width less” Euclidean straight line. **(Mathematical Encyclopedia, Moscow, 1963, v4, p.13, p.14)**

4. Internal $(X-), (Y-)$and external $(X+), (Y+)$fields of the trajectory lines are non-zero $X_0 \neq 0$ or $Y_0 \neq 0$ material sphere-points, form an Indivisible Area of Localization $IAL(X\pm)$ or $IAL(Y\pm)$ dynamic space-matter.

5. In single $(X- = Y+)$,$(Y- = X+)$ In the fields of orthogonal lines-trajectories $(X-) \perp (Y-)$there are no two identical spheres-points and lines-trajectories.

6. Sequence of Indivisible Area of Localization $(X\pm), (Y\pm), (X\pm)$ ..., by radius $X_0 \neq 0$ or $Y_0 \neq 0$ sphere-point on one line-trajectory gives (n)convergence, and on different trajectories (m)convergence.

7. Each Indivisible Area of Localization of space-matter corresponds to a unit of all its Criteria of Evolution – CE, in a single $(X- = Y+)$,$(Y- = X+)$ space-matter on $(m-n)$ convergences:

$IAL = CE(X- = Y +)CE(Y- = X +) = 1$ and $IAL = CE(m)CE(n) = 1$, in a system of numbers equal by analogy of units.

8. Fixing the angle $(\varphi \neq 0) = const$ or$(\varphi = 0)$ a bundle of straight parallel lines, space-matter, gives the 5th postulate of Euclid and the axiom of parallelism.

Any point of fixed lines-trajectories is represented by local basis vectors of Riemannian space:

$$\boldsymbol{e_i} = \frac{\partial X}{\partial x^i}\boldsymbol{i} + \frac{\partial Y}{\partial x^j}\boldsymbol{j} + \frac{\partial Z}{\partial x^k}\boldsymbol{k}, \qquad \boldsymbol{e^i} = \frac{\partial x^i}{\partial X}\boldsymbol{i} + \frac{\partial x^j}{\partial Y}\boldsymbol{j} + \frac{\partial x^k}{\partial Z}\boldsymbol{k}, \text{ (Korn, p. 508)},$$

with the fundamental $\boldsymbol{e_i}(x^n) * \boldsymbol{e_k}(x^n) = \boldsymbol{g_{ik}}(x^n)$ tensor (M. Korn , M. S. p.508) , and topology $(x^n = \boldsymbol{XYZ})$ in Euclidean space. These basis vectors can always be represented as: $(x^i = c_x * t)$, $(X = c_x * t)$ linear components of space-time. In this case, we obtain the usual: $\boldsymbol{v_i}(x^n) * \boldsymbol{v_k}(x^n) = (v^2) = \boldsymbol{P}$, the potential of space-matter, as a kind of acceleration (b)on the length (K), in the velocity space (v), that is: $(v^2 = bK)$. Riemannian space is a fixed $(\varphi \neq 0 = const)$ state of a geodesic$(x^s = const)$ lines dynamic $(\varphi \neq const)$ space-matter that has a variable geodesic line $(x^s \neq const)$. There is no such mathematics of Riemannian space, $\boldsymbol{g_{ik}}(x^s \neq const)$with variable geodesic. is no geometry of the Euclidean non-stationary sphere, no geometry of Lobachevsky space, with variable asymptotes of hyperbolas. A special case of negative curvature $\left(K = -\frac{Y^2}{Y_0} = \frac{(+Y)(-Y)}{Y_0}\right)$ (Smirnov, Course of Higher Mathematics, v.1, p.186) of Riemannian space is the space of Lobachevsky geometry (Mathematical Encyclopedia v.5, p.439). There are nine distinctive features of Lobachevsky geometry from Euclidean geometry (Fig. 1.2).

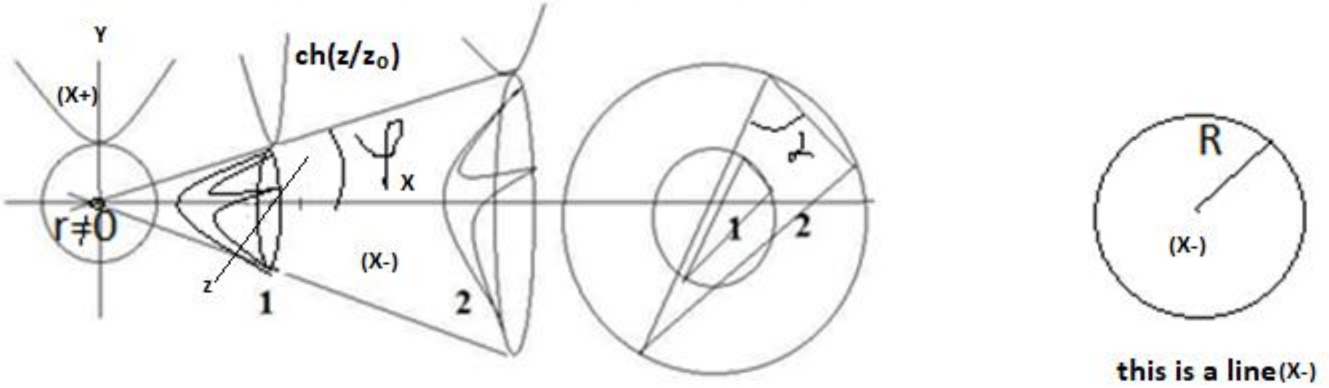


Fig. 1.2 Isotropic dynamics.

One of the features of Lobachevsky geometry is the sum of $(0^0 < \sum \alpha < 180^0)$the angles of a triangle, as opposed to their Euclidean projection $(\sum \alpha = 180^0)$onto a plane. Equal areas $S_1 = S_2$of triangles, or equal triangles in the space of Lobachevsky geometry, at equal angles of parallelism $\varphi_1 = \varphi_2$ of a bundle of parallel straight lines, give protectively similar triangles in the Euclidean plane with equal angles at the vertices. A circle in the Euclidean plane is a line in Lobachevsky geometry. Here, the Euclidean line, "length without width" is the radius of a circle in Lobachevsky geometry. The larger the radius, the longer the "line". Such circles on the surface of the Euclidean sphere are a set of straight lines in the Universe. In our case, the Euclidean sphere is also dynamic. How can we create theories of the "Big Bang" or "cyclic Universe" in such a sphere? The answer is no way. This is about nothing. The zero radius of such a circle $(r = 0)$means that there is no such circle, and there are no such lines. This is a conversation about nothing, they simply do not exist. This is about the questions of singularity with their infinite criteria and impossibilities. They are neither in mathematics nor in Nature. This gives the efficiency of conformal transformations. But by changing the quantity, the quality changes. These are philosophical categories. In their mathematical representation, we speak of different curvatures of the planes of triangles in a multi-sheet Riemannian space. The area of equal triangles in Lobachevsky geometry itself changes:

$S = \frac{1}{2}a * b * sin\alpha = \frac{1}{2}\begin{vmatrix} i & j & k \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix}$. The matrix of transformations itself changes, the matrix of symmetries, the instrument of quantum theories, but already in quantum relativistic dynamics (it is fashionable to say in the Quantum Theory of Relativity) of a dynamic sphere in this case. Equal triangles of space-matter, tangent to the surfaces of equal spheres in Lobachevsky space, but with different radii of Euclidean spheres. In a dynamic$(\varphi \neq const)$ space-matter, these Euclidean spheres of different radii, are one **sphere of non-stationary Euclidean space,** which is not in the Euclidean axiomatics. Riemannian space, at the same time, has a dynamic topology $(x^n = XYZ \neq const)$, which is not in the Euclidean $(x^n = XYZ = const)$

stationary space. These axioms already solve the problems of the Euclidean axiomatics of a set of points in one point "having no parts" and a set of lines in one "length without width".

2.1a. Unified Criteria of the Evolution of Space-Matter.

All the Criteria of Evolution of dynamic space-matter have been formed

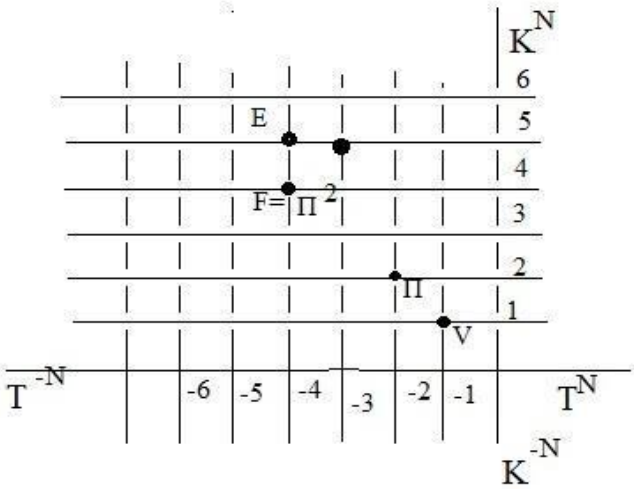


Fig.2.1. Criteria of Evolution in space-time.

in multidimensional on (m-n) convergences, space-time, as in multidimensional space of velocities: $W^N = K^{+N} T^{-N}$. Here for (N=1), V= $K^{+1} T^{-1}$ velocity, W^2 =P potential, P^2 = F force…, 2-nd quadrant. Their projection on coordinate (K) or time (T) space-time gives: charge PK=q (Y+ =X -) in electro (Y+ =X -) magnetic fields, or mass PK=m(X+=Y-) in gravity (X+=Y-) mass fields, then the density $\rho = \frac{m}{V} = \frac{PK}{K^3} = \frac{1}{T^2} = \nu^2$, is the square of the frequency, energy (E = P^2K), momentum (p = P^2T), action: (ħ = P^2KT), etc., of a single: IAL = (X + = Y -) (Y + = X -) = 1, space- matter. Every equation is reduced to these Criteria of Evolution in: $W^N = K^{+N} T^{-N}$, space-time. There are many other Criteria of Evolution in space-time that we do not yet use. For example, Einstein's energy $E = mc^2$, and Planck's energy: $E = \hbar\nu$, have a direct relationship through mass and frequency, in the form: $m = \nu^2 V$, and so on. Let's define how this approach works.

2.2. Electro (Y+ =X -) magnetic and gravitational (X+=Y-) mass fields.

In a single (X+=Y-) (Y+ =X -) =1, space - matter, Maxwell's equations [1] for the electro (Y+ =X -) magnetic field are derived. Inside the solid angle $\varphi_X(X-) \neq 0$ of parallelism there is an isotropic stress of the A_n component flow (Smirnov, v.2, p.234). The full flow of the vortex through the intersecting surface $S_1(X-)$ is in the form:

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial(A_n / \cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1 .$$

A_n component corresponds to a bundle of $(X-)$ parallel trajectories. It is a tangent along a closed curve L_2 in the surface S_2, where $S_2 \perp S_1$ and $L_2 \perp L_1$. Similarly, the relation follows:

$$\int_{L_2} A_n dL_2 = \iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 .$$

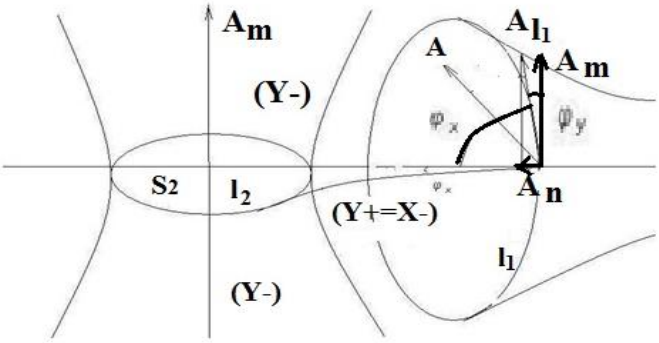


Fig. 2.2-1. Electromagnetic $(Y+=X-)$and gravitational $(X+=Y-)$fields.

Inside a solid angle $\varphi_X(X-)\neq 0$ the parallelism condition is satisfied

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 \quad + \iint \frac{\partial A_n}{\partial T} dL_2 dT = 0 = \iint_{S_2} A_m(X-)dS_2 .$$

In general, there is a system of equations of $(X-=Y+)$ field dynamics.

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial (A_n/\cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1$$

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 = -\iint \frac{\partial A_n}{\partial T} dL_2 dT \quad \text{, And} \quad \iint_{S_2} A_m dS_2 = 0 .$$

In Euclidean $\varphi_Y = 0$ axiomatics, taking the voltage of the vector component flux as the voltage of the electric field $A_n/\cos\varphi_X = E(Y+)$ and the inductive projection for a non-zero angle $\varphi_X \neq 0$ as the magnetic field induction $B(X-)$, we have

$$\iint_{S_1} rot_X B(X-)dS_1 = \iint \frac{\partial E(Y+)}{\partial T} dL_1 dT + \iint_{S_1} E(Y+)dS_1$$

$$\iint_{S_2} rot_Y E(Y+)dS_2 = -\iint \frac{\partial B(X-)}{\partial T} dL_2 dT \quad \text{, under the conditions} \quad \iint_{S_2} A_m dS_2 = 0 = \oint_{L_2} B(X-)dL_2 .$$

the well-known Maxwell equations apply.

$$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+);$$

$$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T};$$

The induction of a vortex magnetic field $B(X-)$ occurs in an alternating electric $E(Y+)$ field and vice versa.

For an open contour L_2 there are component ratios $\int_{L_2} A_n dL_2 = \iint_{S_2} A_m dS_2 \neq 0$. Under conditions of orthogonality of the components $A_n \perp A_m$ of the vector A, in non-zero, dynamic $(\varphi_X \neq const)$ and $(\varphi_Y \neq const)$ parallel angles, $A\cos\varphi_Y \perp (A_n = A_m \cos\varphi_X)$, there is a component dynamic $(A_m \cos\varphi_X = A_n)$ along the contour L_2 in the surface S_2. Both ratios are presented in full form.

$$\int_{L_2} A_m \cos\varphi_X dL_2 = \iint_{S_2} \frac{\partial (A_m(X+) * \cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2$$

Zero flux through the surface S_1 of a vortex $(rot_n A_m)$ outside the solid angle $(\varphi_Y \neq const)$ of parallelism corresponds to the conditions

$$\iint_{S_1} rot_n A_m dS_1 \quad + \quad \iint \frac{\partial A_m}{\partial T} dL_1 dT = 0 = \iint_{S_1} A_n(Y-)dS_1 .$$

In general, the system of equations of $(Y-=X+)$ field dynamics is represented in the form:

$$\iint_{S_2} rot_m A_m(Y-)dS_2 = \iint_{S_2} \frac{\partial(A_m(X+)*\cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2$$

$$\iint_{S_1} rot_n A_m(X+)dS_1 = -\iint \frac{\partial A_m(Y-)}{\partial T} dL_1 dT, \qquad \iint_{S_1} A_n(Y-)dS_1 = 0.$$

Introducing by analogy the $G(X+)$ field strength of the Strong (Gravitational) Interaction and the induction of the mass field $M(Y-)$, we obtain similarly:

$$\iint_{S_2} rot_m M(Y-)dS_2 = \iint \frac{\partial G(X+)}{\partial T} dL_2 dT + \iint_{S_2} G(X+)dS_2$$

$$\iint_{S_1} rot_n G(X+)dS_1 = -\iint \frac{\partial M(Y-)}{\partial T} dL_1 dT, \quad \text{at} \quad \iint_{S_1} A_n(Y-)dS_1 = 0 = \oint_{L_1} M(Y-)dL_1.$$

Such equations correspond to gravitational (X+= Y-) mass fields,

$$c * rot_X M(Y-) = rot_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$$

$$\text{M(Y-)} = \mu_2 * N(Y-); \qquad rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$$

by analogy with Maxwell's equations for electricity (Y+= X-) magnetic fields. We are talking about the induction of mass $M(Y-)$fields in a variable $G'(X+)$gravitational field, similar to the induction of a magnetic field in a variable electric field. There are no options here. This is a single mathematical truth of such fields in a single, dynamic space-matter. We are talking about the induction of mass fields around moving masses (stars) as well as about the induction of magnetic fields around moving charges.

Thus, the rotations $rot_y B(X-)$of $rot_x M(Y-)$trajectories give the dynamics of $E'(Y+)$both $G'(X+)$the electric $(Y+)$and gravitational $(X+)$fields, respectively. And the rotations $(Y+)$of fields around $(X-)$trajectories and $(X+)$fields around $(Y-)$trajectories give the dynamics of the electromagnetic $rot_x E(Y+) \to B'(X-)$field and mass $rot_y G(X+) \to M'(Y-)$trajectories.

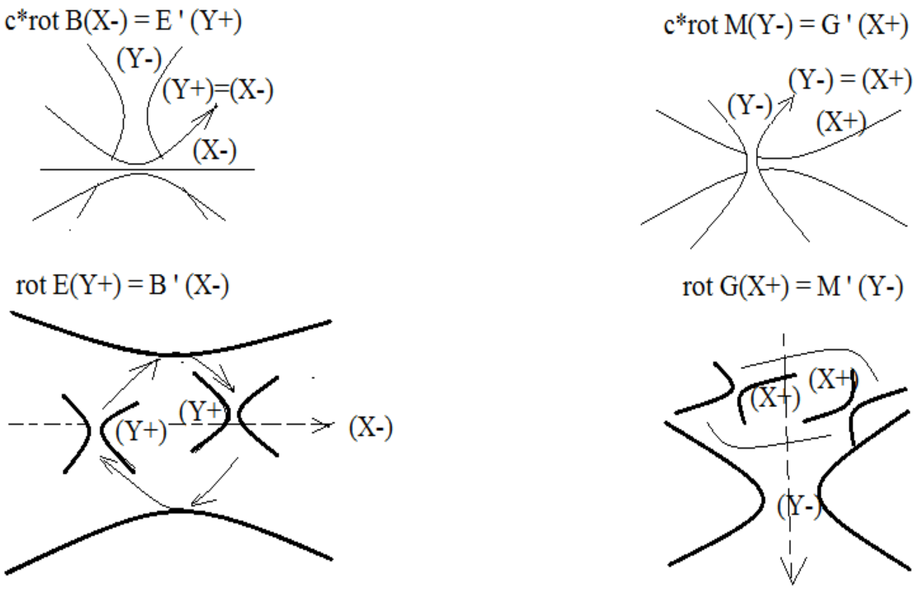


Fig.2.2-2. Unified fields of space-matter

The dynamics $E(Y+)$of the electric field generates an inductive magnetic B$(X-)$field, and vice versa. For example, a charged ball in a moving carriage has no magnetic field. But a compass on the platform will show a magnetic field. This is Oersted's experiment, which observed $(X-)$the magnetic field of moving $(Y+)$electrons of a conductor current. And the same equations of the dynamics of gravitational (X+=Y-) mass fields are derived in a unified manner:

$$c * rot_X M(Y-) = rot_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$$

$$\text{M(Y-)} = \mu_2 * N(Y-); \qquad rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$$

The dynamics of G(X+)the gravitational field generates an inductive mass $M(Y-)$field, and vice versa. Similarly, when (X+)masses (stars) move, mass $(Y-)$fields are generated in induction. Here it is appropriate to dwell on the well-known formula $(E = mc^2)$, which we will dwell on in more detail. A body with a non-zero $(m \neq 0)$mass emits light with energy (L)in the system(x_0, y_0, z_0, ct_0) coordinates, with the law of conservation of energy: $(E_0 = E_1 + L)$, before and after radiation. For the same mass, and this is the key point (**<u>the mass $(m \neq 0)$ does not change</u>**), in another (x_1, y_1, z_1, ct_1)coordinate system, the law of conservation of energy with $(\gamma = \sqrt{1 - \frac{v^2}{c^2}})$ Lorentz transformations, Einstein wrote in the form $(H_0 = H_1 + L/\gamma)$. Subtracting their difference, Einstein obtained:

$$(H_0 - E_0) = (H_1 - E_1) + L(\frac{1}{\gamma} - 1), \text{ or } (H_0 - E_0) - (H_1 - E_1) = L(\frac{1}{\gamma} - 1),$$

With separation of the difference in radiation energy. Both inertial coordinate systems are moving, but (x_1, y_1, z_1, ct_1)moves with a speed (v)relative to (x_0, y_0, z_0, ct_0). And it is clear that blue and red light have a difference in energy, which Einstein wrote down in the equation. Einstein wrote the equation itself as a difference in kinetic energies in the first expansion.

$$(K_0 - K_1) = \frac{L}{2}(\frac{v^2}{c^2} ...), \text{ or } \qquad \Delta K = (\frac{\Delta L}{c^2})\frac{v^2}{2}$$

Here ($\frac{\Delta L}{c^2} = \Delta m$)multiplier, has the properties of the mass of "radiant energy", or: $\Delta L = \Delta mc^2$. This formula has been interpreted in different ways. The energy of annihilation $E = m_0c^2$rest mass, or: $m_0{}^2 = \frac{E^2}{c^4} - p^2/c^2$, in relativistic dynamics. Here the mass with zero momentum $(p = 0)$, has energy: $E = m_0c^2$, and the zero mass of the photon: $(m_0 = 0)$, has momentum and energy $E = p * c$. But Einstein derived another law of "radiant energy" $(\Delta L = \Delta mc^2)$, with mass properties. This is not the energy of a photon, and this is not the energy $(\Delta E = \Delta mc^2)$of the mass defect of the nucleons of the nucleus of an atom. Einstein saw what no one saw. Like a moving charge, with the induction of a magnetic field of Maxwell's equations, a moving mass (the mass $(m \neq 0)$does not change) induces mass energy $(\Delta L = \Delta mc^2)$, which Einstein found. For example, a charged sphere inside a moving carriage (the **<u>charge $(q \neq 0)$does not change)</u>** does not have a magnetic field. But a compass on the platform will show the magnetic field of a sphere in a moving carriage. It was precisely this inductive magnetic field, from moving electrons of the conductor current, that Oersted discovered. Then there were Faraday's experiments, the induction of vortex electric fields in an alternating magnetic field, the laws of induction and self-induction and Maxwell's equations. By analogy with the inductive energy of a magnetic field from a moving charge, Einstein derived a formula for the inductive, "radiant" energy of mass fields, from moving non-zero masses (the **<u>mass $(m \neq 0)$does not change),</u>** including stars in galaxies. And here Einstein went beyond the Euclidean $(\varphi = 0)$axiomatics of space-time. In the axioms of dynamic space-matter $(\varphi \neq const)$, we are talking about inductive $m(Y-)$mass fields, in complete analogy with Maxwell's equations. This is what Einstein saw, and no one else.

Newton presented the formula, but did not say WHY the force of gravity arises. Writing down the equation of the General Theory of Relativity, Einstein took the gravitational potential of zero mass: $\frac{E^2}{p^2} = c^2$, in the form of $\frac{L^2(Y-)}{p^2} = Gv^2(X+) = \frac{8\pi G}{c^4}T_{ik}$ the energy-momentum tensor. The false idea of Einstein's General Theory of Relativity is that it is believed that the equation presents a non-zero mass, as a source of curvature of space-time, as a source of gravity. In the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter in full form:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = \frac{8\pi G}{c^4}T_{ik}.$$

there is no mass: $(M = 0)$, in its classical understanding. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary $(\lambda \neq 0)$Euclidean space-time. In physical truth, in the equation of the General Theory of Relativity, Einstein, in the unified Criteria of Evolution, the formula (law) of Newton is “sewn up”:

$$E = c^4K, P = c^4T, (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y = m_1)(c^2K_Y = m_2)}{c^2(c^2T^2 = K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the gravitational force acts in fields with zero mass. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$in the external potential field of gravity $c^2(X+)$, with their Equivalence $(X+=Y-)$ Principle, gives the force. Let's define how this approach works. For example, for the Sun and the Earth $(M=2*10^{33}g)$and $(m=5.97*10^{27}g)$, we get ($U_1=\frac{(G=6.67*10^{-8})(M=2*10^{33})}{R=1.496*10^{13}}=8.917*10^{12}$) gravitational potential at a distance from the Earth and $U_2=\frac{(G=6.67*10^{-8})(m=5.97*10^{27})}{R=6.374*10^{8}}=6.25*10^{11}$, the potential of the Earth itself. Then ($\Delta U=U_1-U_2=8.917*10^{12}-6.25*10^{11}=8.67*10^{12}$), or ($\Delta U=8.29*10^{12}$), we get:

$\Delta U=\frac{8\pi G}{(c^4=U^2=F)}(\mathrm{T}_{ik}=\frac{(U^2K)^2}{U^2T^2}=\frac{U^2(UK=m)^2}{U^2T^2}=\frac{Mm}{T^2})$, or $\frac{\Delta U}{\sqrt{2}}=\frac{8\pi G}{F}\frac{Mm}{T^2}$,$F=\frac{8\pi G}{(\Delta U/\sqrt{2})}\frac{Mm}{T^2}=\frac{GMm}{(\Delta U*T^2/\sqrt{2})/8\pi}$

without dark masses. It remains to calculate $\frac{\Delta U*T^2}{8\pi\sqrt{2}}=\frac{8.29*10^{12}*(365.25*24*3600=31557600)^2}{8\pi\sqrt{2}}=2.3*10^{26}$, which corresponds to the square of the distance ($R^2=2.24*10^{26}$)from the Earth to the Sun, or $F=\frac{GMm}{R^2}$, Newton's law. This approach corresponds to reality.

2.3. Transformations of relativistic dynamics.

a) Unified mathematical truths of STR and CTR

Special Theory of Relativity (STR).

Classic presentation:

$Y^2\pm(icT)^2=\left(a^2=\frac{c^4}{b^2}=const\right)=\overline{Y}^2\pm(ic\overline{T})^2$

circular $(+)$or hyperbolic $(-)$uniformly accelerated motion.

1). $\overline{X}=a_{11}X+a_{12}Y$, $Y=icT$, $T=\frac{Y}{ic}$,

$\overline{X}=a_{11}X+a_{12}\frac{Y}{ic}$

$\frac{\overline{Y}}{ic}=a_{21}X+a_{22}\frac{Y}{ic}$

$\overline{Y}=a_{21}X+a_{22}Y$, $\overline{Y}=ic\overline{T}$,

$\overline{X}=a_{11}X+\frac{a_{12}}{ic}Y$

2). $\overline{Y}=a_{21}icX+a_{22}Y$. $a_{11}=b_{11}$,

$\frac{a_{12}}{ic}=ib_{12}$, $a_{21}ic=ib_{21}$,

$a_{22}=b_{22}$.

$\overline{X}=b_{11}X+ib_{12}Y$

3). $\overline{Y}=ib_{21}X+b_{22}Y$, $\delta_{KT}=1$ for $K=T$,

$b_{11}^2-b_{12}^2=1=b_{22}^2-b_{21}^2$

conditions of orthogonality of vector components. In Globally Invariant conditions of the sphere, $b_{11}=b=b_{22}$,

$b_{12}^2=b_{21}^2$, $(\pm b_{12})^2=(\mp b_{21})^2$, $b_{12}=-\frac{a_{12}}{c}$,

$b_{21}=a_{21}c$, $b_{12}+b_{21}=0$, the following holds: $a_{21}c=\frac{a_{12}}{c}$, or for:

Quantum Theory of Relativity (QTR).

The Special Theory of Relativity is invalid under the following conditions:

1) not uniformly accelerated $(a^2\neq const)$motion.

2). Due to the uncertainty principle $\Delta Y=c\Delta T$, the very impossibility of fixing points in space-time makes Lorentz transformations hopeless.

3) The wave function of a quantum is brought to its initial state by introducing a gauge field, in the absence of relativistic dynamics, in the very process of its dynamics, that is, in the absence of quantum relativistic dynamics.

Relativistic dynamics at the angle of parallelism $\alpha(X-)$ trajectories of quantum of space - matter.

Instead of X, Y, projections K_Y, K_x, of dynamic radius K, of dynamic sphere, tangent to surface of dynamic solid angle $\alpha^0(X-)\neq const$, parallelism are considered. We are talking about material sphere with non-zero minimal radius $Y_0=1=ch0$, and wave function $\psi=K_Y-Y_O$. $Y=K_Y$, $X=K_X$.

1). $\overline{K}_Y=a_{11}K_Y+a_{12}K_X$

$\overline{K}_X=a_{21}K_Y+a_{22}K_X$, where $K_X=cT$, $T=\frac{K_X}{c}$, is the time entered.

$\overline{K}_Y=a_{11}K_Y+\frac{a_{12}}{c}K_X$

2). $\frac{\overline{K}_X}{c}=a_{21}K_Y+\frac{a_{22}}{c}K_X$, or $\overline{K}_Y=a_{11}K_Y+\frac{a_{12}}{c}K_X$

$\overline{K}_X=a_{21}cK_Y+a_{22}K_X$.

A). In external GI – Globally Invariant conditions, the components $\cos\gamma=\sqrt{(+a_{11})(-a_{11})}=ia_{11}$give the uncertainty principle, with a certain probability density $|\psi|^2$ in the experiment, and a transformation matrix:

$c = \frac{\Delta Y}{\Delta T}$, $\frac{a_{21}\Delta Y}{\Delta T} = \frac{a_{12}\Delta T}{\Delta Y}$.

4). Then two cases occur.

A). Conditions $(a_{21} = 0 = a_{12})$, zero projections, $\Delta Y = ic\Delta T$ spatial dynamics $(c = \Delta Y / \Delta T)$ time components of the photon quantum itself, and give GI – Globally Invariant Conditions.

B). The reality is that the photon, which synchronizes the relativistic dynamics, has its own volume $(a_{21} \neq 0) \neq (a_{12} \neq 0)$ in space-time. Such a reality corresponds to the reality of the uncertainty principle: $\Delta Y = 0 = (+Y) + (-Y)$. We are talking about LI - local invariance in the volume $(a_{21} \neq 0) \neq (a_{12} \neq 0)$.

5). Pauli (p. 14): "… it was precisely **assumed** … $\chi\sqrt{1-\frac{W^2}{c^2}}$ …", or Smirnov (vol. 3, p. 195): "… let's assume… $(b_{12} = ab) = -b_{21}$ … " That is, there is no initial reason for such positions. But already from these positions, for an unknown reason, according to Smirnov, mathematical truths follow:

$\overline{X} = bX + iabY$

$\overline{Y} = -iabX + bY$,

$b^2 - a^2b^2 = 1 = -a^2b^2 + b^2$, $b^2(1-a^2) = 1$,

$b = \frac{1}{\sqrt{1-a^2}}$

$\overline{X} = \frac{X + iaY}{\sqrt{1-a^2}}$, $\overline{Y} = \frac{Y - iaX}{\sqrt{1-a^2}}$.

6). Substituting the initial values $Y = icT$, $\overline{Y} = ic\overline{T}$, we obtain:

$\overline{X} = \frac{X - acT}{\sqrt{1-a^2}}$, $ic\overline{T} = \frac{icT - iaX}{\sqrt{1-a^2}}$,

$\overline{T} = \frac{T - \frac{a}{c}X}{\sqrt{1-a^2}}$, $a = \frac{W}{c} = \cos\alpha^0$,

Lorentz transformations in classical relativistic dynamics. $\overline{X} = \frac{X - WT}{\sqrt{1 - W^2/c^2}}$,

$\overline{T} = \frac{T - \frac{W}{c^2}X}{\sqrt{1-W^2/c^2}}$, $\overline{W} = \frac{V + W}{1 + VW/c^2}$.

$\overline{K}_Y = ia_{11}K_Y + (\frac{a_{12}}{c} = b_{12})K_X$

3). $\overline{K}_X = (a_{21}c = b_{21})K_Y + ia_{22}K_X$.

For angles of parallelism $\alpha^0(X-) = 0$, in GI, such that

4). $a_{11} = \cos(\alpha^0 = 0^0) = 1 = b$, $(b = 1)K_Y = K_Y$,

$a_{22} = \cos(\alpha^0 = 0^0) = 1 = b$, $(b = 1)K_X = K_X$, the following conditions hold

5). $\frac{a_{12}}{(c=1)} = b = a_{21}(c = 1)$, $b_{12} = b = b_{21}$,

period $(T = 1)$.

In Globally Invariant conditions, $ia_{11} = ia = ia_{22}$, the matrix has the form

6). $\overline{K}_Y = ia_{11}K_Y + b_{12}K_X$, $\overline{K}_X = b_{21}K_Y + ia_{22}K_X$, or $\overline{K}_Y = iabK_Y + bK_X$, $\overline{K}_X = bK_Y + iabK_X$,

$\overline{K}_Y = iabK_Y + bK_X$

$\overline{K}_X = bK_Y + iabK_X$

The same GI form of representation $K_Y = \psi = Y - Y_0$ takes place at any multiple point $T \leq \Delta T$ in time.

7). Under orthogonality conditions $\delta_{KT} = 1$, $K = T$, we have $-a^2b^2 + b^2 = 1 = b^2 - a^2b^2$,

$b^2(1-a^2) = 1$, $b = \frac{1}{\sqrt{1-a^2}}$.

matrix multiplier with the conditions: $ia_{11} = ia = ia_{22}$, or $a_{11} = a = a_{22}$.

B). Already in LI - Locally Invariant conditions, relativistic dynamics $a_{11} \neq a_{22}$, with external GI conditions, the following takes place:

$\overline{K}_Y = b(a_{11}K_Y + K_X)$

8) $\overline{K}_X = b(K_Y + a_{22}K_X)$, where: from $K_Y = \psi + Y_0$, $K_X = c(T = \frac{X}{c} = \frac{\hbar}{E})$, it follows that $A_K = b(a_{11}Y_0 + K_X)$.

This is the moment of truth of the relativistic dynamics of the quantum of space-matter, which in modern theories is represented by a gauge A_K field $\psi = \psi_0 \exp(ap \neq const) + A_K$.

9). According to the terms $a_{22} = \frac{K_X}{cT} = \frac{W}{c} = a = a_{11}$,

transition of (QTR) to (STR).

There are mathematical truths of the transition of the Quantum Theory of Relativity into the transformations of the Special Theory of Relativity.

For zero angles of parallelism in the Euclidean axiomatics, with velocities less than the speed of light $W_Y < c$, there are limiting cases of transition of quantum relativistic dynamics of vector components, $a_{22} = (\cos(\alpha^0 = 0) = 1) = a_{11}$, $a_{22} = 1$, $a_{11} = 1$, $Y = WT$,

$$(\overline{K}_Y = \overline{Y}) = \frac{(a_{11} = 1)(K_Y = Y) \pm WT}{\sqrt{1 - W^2(X -)/c^2}},$$

$$\overline{Y} = \frac{Y \pm WT}{\sqrt{1 - W^2/c^2}},, \quad \overline{T} = \frac{K_Y/c + (a_{22} = 1)T}{\sqrt{1 - W^2(X -)/c^2}},$$

$$K_Y = K(\cos\alpha^0 = \frac{W}{c}), \quad \overline{T} = \frac{T \pm KW/c^2}{\sqrt{1 - W^2/c^2}},$$

in the Lorentz transformations of classical relativistic dynamics.

GI - dynamics, $a = a_{22} = a_{11}$,

$b = \frac{1}{\sqrt{1 - a^2}} = \frac{1}{\sqrt{1 - W^2/c^2}}$, the transformation matrix takes the form:

$$\overline{K}_Y = \frac{a_{11}K_Y + cT}{\sqrt{1 - a_{22}^2}}, \quad \overline{K}_Y = \frac{a_{11}K_Y + cT}{\sqrt{1 - W^2/c^2}},$$

$$c\overline{T} = \frac{K_Y + a_{22}cT}{\sqrt{1 - a_{22}^2}}, \quad \overline{T} = \frac{K_Y/c + a_{22}T}{\sqrt{1 - W^2/c^2}},$$

$$\overline{W}_Y = \frac{\overline{K}_Y}{\overline{T}} = \frac{a_{11}K_Y + cT}{K_Y/c + a_{22}T}, \quad \overline{W}_Y = \frac{a_{11}W_Y + c}{a_{22} + W_Y/c},$$

in the conditions of LI, $(a_{22} \neq a_{11}) \neq 1$,

in extreme sports when: $a_{11} = \frac{W}{c} = \alpha = \frac{1}{137.036}$,

$W = \alpha\ c$, $\alpha = \frac{q^2}{\hbar c}$

10). The maximum speeds $W_Y = c$, under conditions $a_{22} = a_{11} \neq 1$, give $\overline{W}_Y = \frac{c(a_{11} + 1)}{(a_{22} + 1)} = c$ the constant speed of light $\overline{W}_Y = c = W_Y$, in any coordinate system.

A more profound conclusion about such quantum relativistic dynamics is that, given a constant isotropic Euclidean sphere $(K_Y)(cT = K_X)$of space-time, in the dynamic $(\uparrow a_{11} \downarrow)(\downarrow a_{22} \uparrow) = 1$, space-matter, there is an ellipsoid dynamics $(\overline{K}_Y)(c\overline{T} = \overline{K}_X)$. Conversely, looking at the dynamic ellipsoid of space-time, there is an initial stationary Euclidean sphere inside it.

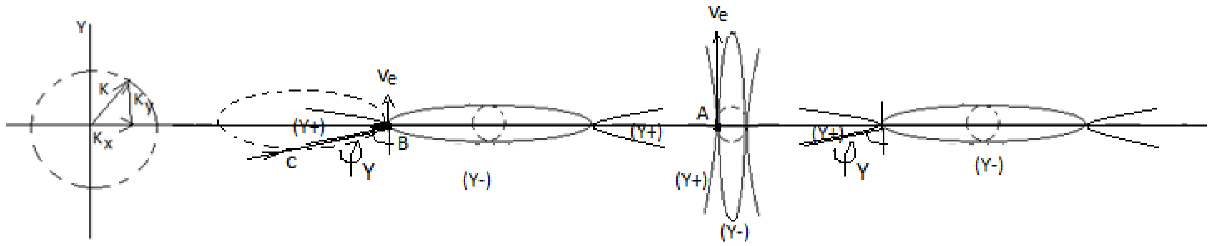


Fig.3.1. Quantum relativistic dynamics of space-matter of the electron

Such transformations in the angles of parallelism of dynamic space-matter, with the induction of relativistic mass, are impossible in the Euclidean axiomatics $(a_{11} = 1)(a_{22} = 1) = 1$. This means that in the Euclidean axiomatics, it is impossible to create the Quantum Theory of Relativity. Such quantum relativistic dynamics of velocities is determined by the dynamics $(a_{11} = cos\varphi_Y)$of the angles of parallelism (φ_Y), for example, for $(Y \pm)$a quantum. For $(Y \pm = e)$an electron, the speed of light (c)changes inside the electron within the angle of parallelism (φ_Y). In the field $(Y- = e)$of an electron at point (B), we speak of the speed of an electron $(v_e = c * cos\varphi_Y = c * (\alpha = \frac{1}{137}))$. At point (A), we speak of the speed $(c * cos(\varphi_Y = 0) = c)$of a photon inside the electron. To the question of where the space of velocities of the photon absorbed by the electron goes, the answer is - inside the electron there is the speed of light at point (A). the electron itself has a speed of $(v_e = \alpha * c)$. This is the speed of point (B) of the electron. It is clear that at point (A) the electric field of the electron $(Y+ = E)$is reduced to zero and the electron exhibits the properties of the tunnel effect. In $E(Y +)$the electric field of the electron itself, we speak about the space of velocities of this field with the effects of $(v_E = c * sin\varphi_Y = c\sqrt{1 - \frac{v_e^2}{c^2}})$the quantum relativistic dynamics of each point on $(Y- = e)$the electron's trajectory.

The quanta of space-matter have exactly the same dynamics $(X \pm)$.

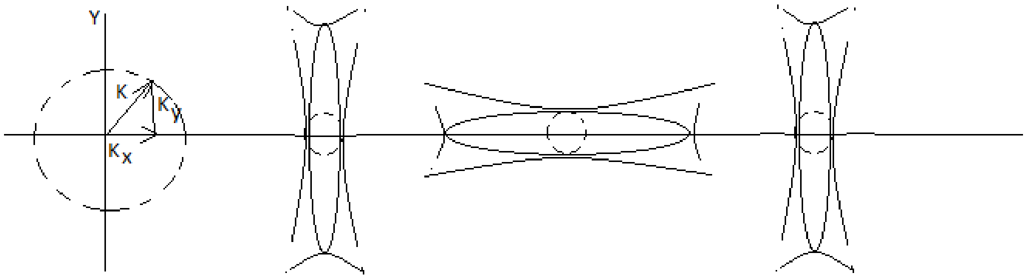


Fig.3.2. Quantum $(X \pm)$relativistic dynamics of space-matter

From the transformations of relativistic dynamics: $(c * t)^2 - (x)^2 = \frac{c^4}{b^2} = (c * \bar{t})^2 - (\bar{x})^2$, one can always move to the equations of a dynamic ellipsoid: $\frac{\rho^2}{(a)^2} + \frac{x^2}{(b)^2} = 1$, in the form: $\frac{c^4}{(ct)^2 b^2} + \frac{x^2}{(ct)^2} = 1$, or a hyperboloid: $\frac{\rho^2}{(a)^2} - \frac{x^2}{(b)^2} = 1$, in the form: $\frac{(t)^2 b^2}{c^2} - \frac{x^2 b^2}{(c)^4} = 1$, in the selected Evolution Criteria. For example, $(\alpha = 1/137)$ the constant cross-sectional area of a dynamic ellipsoid: $(S = \pi ab = 1)$, is invariant, at Planck dimensions $b = \frac{1}{(\alpha)1{,}616*10^{-33} sm} = 8{,}5 * 10^{34} sm$ for mass $(Y-)$fields. And if 1 light year is equal to $9{,}5 * 10^{17} sm$, then this $8{,}978 * 10^{16}$ light years. We are talking about the visible Universe of the order of 45.7 billion light years, then this is 1/1 965 615, that is, approximately one two-millionth part of the entire Universe, which disappears in time at the extreme radius. If we take $(X-)$the space-matter of the Universe itself, then this is: $b = \frac{1}{(\sqrt{G = 6.67*10^{-8}})1{,}616*10^{-33} sm} = 2{,}4 * 10^{36} sm$, or 1/55 000 000, part of the Universe in the same calculations. This is in brief.

Both theories of STR and CTR allow for superluminal ($v_i = N*c$) velocity space:

$$\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c, \qquad \overline{W_Y} = \frac{a_{11}Nc+c}{a_{22}+Nc/c} = \mathrm{c}, \text{ For } a_{11} = a_{22} = 1.$$

In quantum relativistic dynamics (Quantum Theory of Relativity) we have:

$$(\uparrow a_{11} \downarrow)(\downarrow a_{22} \uparrow) = 1, \qquad \bar{K}_Y = \frac{a_{11}K_Y + (cT = K_X)}{\sqrt{1-a_{22}^2}}, \qquad (c\bar{T} = \bar{K}_X) = \frac{K_Y + a_{22}(cT = K_X)}{\sqrt{1-a_{22}^2}}$$

For example, the $E(Y+) = (\rho\bar{K}_X)$electric $(Y+)$field strength and the acceleration field of the gravitational $G(X+) = (\rho\bar{K}_Y)$field are represented by the dynamics of the cosines of the angles of parallelism $(a_{11} = \cos\varphi_Y)$ and $(a_{22} = \cos\varphi_X)$. Then: $(\cos\varphi_Y * \cos\varphi_X = 1)$or $\cos\varphi_Y = \frac{1}{\cos\varphi_X}$, we substitute into the formulas and construct simplified graphs: $(y = \bar{K}_Y) = f(\varphi_X = x = \omega t)$.

$$\bar{K}_Y = \frac{\frac{1}{\cos\varphi_X}K_Y + K_X}{\sqrt{1-\cos^2\varphi_X}}$$

$$\bar{K}_Y = \frac{K_Y + \cos\varphi_X * K_X}{\sqrt{1-\cos^2\varphi_X}}$$

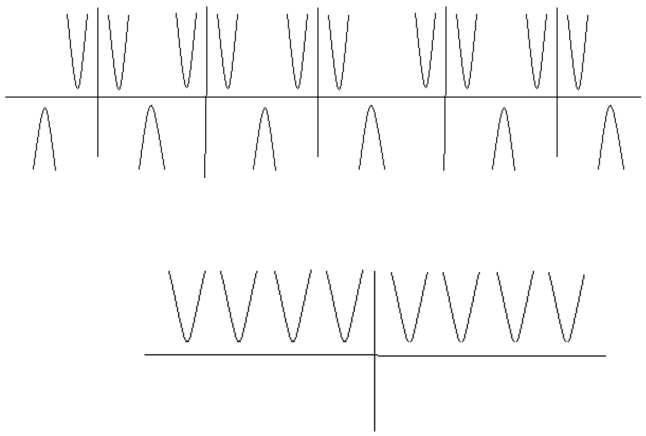


Fig.3.3. graph of the dynamics of quantum fields

This is in good agreement with the symmetry of the proton, which we will discuss further. We are talking about quantum relativistic dynamics $(Y+ = X-)$,$(X+ = Y-)$ quantum fields. Their normalization gives $(m-n)$the convergence of the physical vacuum in a single $(X \pm = Y \mp)$and dynamic, already in the quantum space-matter. These graphs give grounds to speak about quantum, wave dynamics of radiation and absorption ($e_j \leftrightarrow \gamma_i$)and $(p_j \leftrightarrow \nu_{i)}$quanta in $(\pm)$ entropy of dynamic space- matter of all $(m-n)$

convergence of the Universe, with relativistic dynamics $(\varphi = \omega T)$of periods of dynamics in $(m - n)$levels of physical vacuum.

b) Einstein's **General Theory of Relativity** (GTR) in space-matter.
The theory is characterized by the Einstein tensor (G. Korn, T. Korn), as a mathematical truth of the difference in the relativistic dynamics of two (1) and (2) points of Riemannian space, as a fixed $(g_{ik} = const)$state of dynamic $(g_{ik} \neq const)$space-matter. (Smirnov V.I. 1974, v.2).

$$R - \frac{1}{2}R_i a_{ji} = \frac{1}{2}grad(U), \quad \text{or} \quad R_{ji} - \frac{1}{2}Rg_{ji} = kT_{ji}, \quad (g_{ji} = const).$$

In this case, the transformation matrix is in uniform units of measurement

$$R_1 = a_{11}Y_1 + 0, \quad R_Y = 0 + a_{YY}Y_Y, \qquad a_{11} = a_{YY} = \sqrt{G}, \qquad R^2 = a_{YY}^2 Y_Y^2 = GY_Y^2,$$

gives Newton's classical law in the form $Y_Y^2 = \frac{m^2}{\Pi^2}$, $R^2 = G\frac{m^2}{\Pi^2}$, or $F = G\frac{Mm}{R^2}$.
For relativistic dynamics in space-time we have the relations:

a) in the unified Criteria of Evolution

$$c^2T^2 - X^2 = \frac{c_Y^4}{b_Y^2}, \qquad b_Y = \frac{F_Y}{M_Y}, \qquad c_Y^4 = F_Y, \qquad c^2T^2 - X^2 = \frac{M_Y^2}{F_Y},$$

$$F_Y = \frac{M_Y^2}{c^2T^2(1 - W_X^2/c^2)}, \qquad c^2T^2 = R^2 = \frac{R_0^2}{(cos^2\varphi_X = G)}, \qquad F_Y = G\frac{Mm}{R^2(1 - W_X^2/c^2)},$$

This is a relativistic representation of Newton's law, for mass (Y -) trajectories,

$$\frac{mW^2}{2} = \frac{GMm}{R}, \qquad W^2 = \frac{2GM}{R}, \quad \text{or} \quad F_Y = G\frac{Mm}{R^2(1 - 2GM/Rc^2)}, \qquad (1 - 2GM/Rc^2) > 0, \quad (R > \frac{2GM}{c^2}) \neq 0$$

b) in the case of the General Theory of Relativity, it is not forbidden to represent the fundamental tensor of Riemannian space (Korn G., Korn T. (1973) p.508, 535) $(g_{ji} = \boldsymbol{e}_j(x^n)\, \boldsymbol{e}_i(x^n)$by local basis vectors $\boldsymbol{e}_j(x^n)$and $\boldsymbol{e}_i(x^n)$in any (x^n)coordinate system in the form of a vector space of velocities (Korn G., Korn T. p.504). Then the tensors themselves $(g_{Ji}(1) = P_1)$are $(g_{Ji}(2) = P_2)$represented as gravitational potentials at points 1 and 2. Their difference $(\Delta g_{ji} = \Delta P)$in the equation of the General Theory of Relativity, gives the energy-momentum tensor in the unified Evolution Criteria in the form:

$$\Delta P = \frac{8\pi G}{c^4}\left(T_{ji} = \frac{P^4K^2}{P^2T^2} = \frac{P^2K^2}{T^2}\right) \text{or } \Delta P = P_1 - P_2 = \frac{8\pi G}{c^4}P_1^2P_2, \text{ or} \qquad c^4 = F = \frac{2*4\pi R^2 GP_1P_2}{R^2\left(1 - \frac{2G(\Pi_2 * R = M)}{R * c^2}\right)},$$

where $(4\pi R^2)$ is the surface of the sphere, $(P_1R = M_1)$and $(P_2R = M_2)$the final form of $F = \frac{GM_1M_2}{R^2\left(1 - \frac{2G(M)}{Rc^2}\right)}$ the same relativistic representation of Newton's law, as a special case of the General Theory of Relativity. From these relations it follows only that $(1 - 2GM/Rc^2 \neq 0)$.

c) in the laws of classical physics, the formulas of Laplace and Kepler follow from simple relationships: $\frac{v^2}{R} = \frac{GM}{R^2}$, $\frac{R^3}{T^2} = \frac{GM}{(2\pi)^2}$, $\frac{R_1^3}{T_1^2} = \frac{R_2^3}{T_2^2}$, and $\frac{S_1}{t_1}(\omega_1R_1) = \frac{S_2}{t_2}(\omega_2R_2)$, $\frac{S_1}{t_1} = \frac{S_2}{t_2}$, $S_1t_2 = S_2t_1$, and $(\omega_1R_1 = \omega_2R_2)$, in Kepler's laws. The ellipse itself is obtained from the movement of the Sun with a speed of W = 217 km / s, then the Earth moves in the plane of the section of the surface of a conventional cylinder with a speed of: v = 30 km/s, already along an ellipse at an angle to the speed of the Sun, which is in focus.

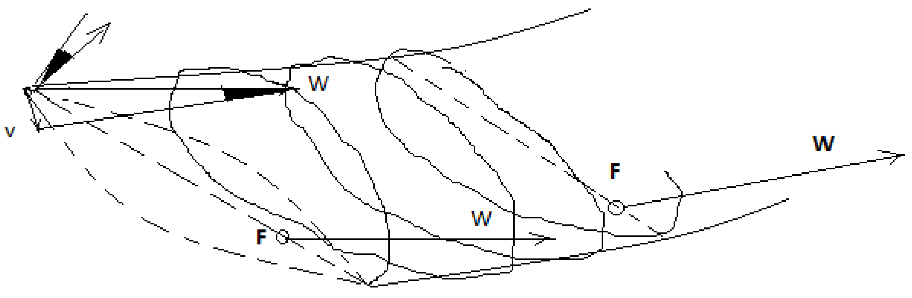


Fig.3 a. Earth's motion around the Sun in an ellipse with a precession of 23.5 ^{0}

In this case, the angle of precession of the Earth is calculated.

$\pi\,\frac{v}{W} = \pi\left(\frac{30}{217}\right) = \pi * 0{,}138249 = 0{,}4343216 = tg\omega$. Where from $\omega = arc\, tg 0{,}4343216 = 23{,}5^0$ precession angle. From: $(\omega_1R_1 = \omega_2R_2)$, and $IAL = (ch1) * (cos45^0)$ follow:

$$\omega_1 = \frac{1}{t_1}, \omega_2 = \frac{1}{t_2}, \qquad \frac{R_1}{t_1} = \frac{R_2}{t_2}ch1 * cos45^0, \qquad \text{or:}$$

$$t_2 = \frac{R_1}{t_1} = \frac{R_2 = 150420000\text{км}}{R_1 = 6371\text{км}}(t_1 = 1year) * 1{,}543 \div 1{,}414 = 25764\, years, \text{ or: } \frac{25764}{12} = 2147\, years,$$

the period of precession and the " era of Plato". Next, $v^2 - v_0^2 = 2gh$, for $v_0^2 = 0$, $g = \frac{GM}{R^2}$the kinetic energy is equal to the potential energy: $\frac{mv^2}{2} = mgh$. From: $h = R$, it follows $v^2 = \frac{2GM}{R}$. In Einstein's postulates, the speed of light is the limit. To accept "black holes" with an event horizon equal to the speed of light, one must divide by zero. The mistake here is that under the conditions of the "arrow of time", the impossibility of the cause (division by zero in mathematics) is replaced by an impossible consequence (singularity at a Euclidean point) $g = \frac{2GM}{(R=0))^2} = \infty$. If there is no division by zero, cause, then there is no singularity or consequence $(R = 0) = \frac{2GM=0}{c^2=conat}$. And this: $c^2 = \frac{2GM=0}{(R=0)} = 0$, does not correspond to Einstein's theory. Here, the initial premises are wrong. On the contrary : $R_0 = \frac{2G(M\neq0)}{c^2}$ inside $(R < R_0) = \frac{2G(M\neq0)}{(v>c)^2}$ "black sphere", there must be a superluminal space $(v > c)$of velocities, without violating Einstein's laws $(v = Nc)$, when the velocities inside the "black sphere" $\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c$, have the speed of light for us. In this case, we are talking about the trajectory of an external photon $(x = ct)$, with the fixation of electromagnetic dynamics in the coordinate plane $(K^2) \perp (ct)$, orthogonal to the trajectory of the photon. A photon, approaching the "black sphere" cannot enter the sphere, into superluminal space, just as a photon cannot enter the physical vacuum in the vastness of the Universe. In the gravitational "well", the photon circles around the already "black hole", since nothing flies out from there, for us. The trajectory of the photon $(x = ct)$rotates on the surface of the sphere, like its geodesic. In this case, (ct)time and coordinate space (K^2)in the radial direction change places. We $(t \to \infty)$circle around the "black hole" infinitely long, and in mathematical formalism $(R \to 0)$, the geodesic lines of the photon inevitably converge to the center of the "black hole", where $(K \to 0)$the space itself disappears. But in physical reality, there is a limiting Planck length for a photon $l = \sqrt{\frac{\hbar G}{c^3}}$, so that $(K \to 0) \to 1{,}616 * 10^{-33} sm$. This situation is called an $\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c$, inevitable singularity in the center of a "black hole" that does not exist in Nature. This contradicts $(R < R_0) = \frac{2G(M\neq0)}{(v>c)^2}$, Einstein 's laws of physics. For superluminal $(v > c)$ velocities $(v = Nc)$, the minimum radius $l = \sqrt{\frac{\hbar G}{(Nc)^3}}$ is less than the Planck dimensions and a photon cannot get into such a superluminal $(v > c)$ velocity space. A sphere with such a velocity space will be “black” for photons.

On the contrary, all the laws of physics work in this area as in a physical vacuum. We are not saying here that this is a zero singularity. A "black hole" cannot absorb mass because this mass must accelerate to the speed of light to overcome the event horizon $M \to 0$. Even if you break an atom into protons and electrons or electron-positron pairs in Hawking radiation, they cannot reach the speed of light of the event horizon. Even if a positron was "born" under the Euclidean line, "long without width", the event horizon. This is outside the Euclidean axiomatics of space-time, outside Einstein's postulates. And this means that Hawking radiation by "black holes" is impossible. Observed "black holes" have other causes and properties within the framework of the axioms of dynamic space-matter. This is beyond the scope of this article. (« Vacuum structures » https://vixra.org/abs/2412.0098 „ "Black holes" http://viXra.org/abs/2312.0018). But if we are talking about "black holes" here, then we will briefly note here, and then we will justify that on $(m - n)$the convergence of the axioms of dynamic space-matter, we are talking about a sequence of Indivisible Quanta:

... $(p_6; e_6)(p_5; e_5)(p_4; e_4)(p_3; e_3)(p_2; \boldsymbol{e_2})(p_1; e_1)(p; e)(\nu_\mu; \gamma_0)(\nu_e; \boldsymbol{\gamma})(\nu_1; \gamma_1)(\nu_2; \gamma_2)(\nu_3; \gamma_3)(\nu_4; \gamma_4)$.

matter consisting of antimatter and vice versa, for example a proton and an electron, in the form: $(X\pm= p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$ And$(Y\pm= e^-) = (\boldsymbol{X}+= \nu_e^-)(Y-= \gamma^+)(\boldsymbol{X}+= \nu_e^-)$ **.**

The calculation of the mass spectrum of Indivisible Quanta is performed and from the ratios: $(2\alpha p_1^- = 238p^+ = {}^{238}_{92}U)$, as an argument, we speak about the quanta of the core **of the planets:** (p_1^-/e_1^+) giving the spectrum of atoms in the decay of uranium, ordinary matter and quanta of the core **of stars** (p_2^-/e_2^+), with a solid surface of the spectrum of "stellar" atoms (p_1^+/e_1^-)without contact with the atmosphere $(p/e)$of hydrogen of stars. At the same time, there are surprising ratios of their masses:

$IAL = M(e_2 = 3{,}524\ \mathrm{E7})(k = l/d = 3.13)M(\gamma = 9{,}07\ \mathrm{E}-9) = 1$,
$IAL = M(e_4 = 1{,}15\ \mathrm{E16})(k = l/d = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E}-17) = 1$. Similarly, further quanta of the core of **galactic "black spheres"** (p_3^+/e_3^-), quanta of the core of galactic "black holes", as **the core of stellar galaxies** (p_4^+/e_4^-), quanta of the core of **extragalactic "black spheres"** (p_5^+/e_5^-), quanta of the core **of quasars** (p_6^-/e_6^+), **extragalactic stars** $(p_7^-/e_7^+)$and the core of quasar galaxies (p_8^+/e_8^-), similarly further, with their limiting masses in the corresponding calculations.

AL_{+3}	○○ quasars 2 genera	$2\alpha * p_6^- = 25 p_5^+$	4	$p^-_6 = 2e_5/G$ $p^-_6 = 1.19$ E2 7 MeV	$e^+_6 = 2p_4/\alpha^2$ $e^+_6 = 6.48$ E 23 MeV
	Intergalactic black spheres	$2\alpha * p_5^- = 290 p_4^+$		$p^-_5 = 2e_4/G$ $p^-_5 = 3.4\ 47$ E 23 MeV	$e_5 = 2p_3/\alpha^2$ $e_5 = 3.97$ E1 9 MeV
	● star Galactics	$2\alpha * p_4^+ = 238 p_3^-$	3	$p^+_4 = 2e_3/G$ $p^+_4 = 1.7$ E1 9 M eV	$e^-_4 = 2p_2/\alpha^2$ $e^-_4 = 1.15$E+1 6 M eV
AL_{+2}	Galactic black spheres	$2\alpha * p_3^+ = 25 p_2^-$		$p^+_3 = 2e_2/G$ $p^+_3 = 1.057$ E 15 MeV	e3 $= 2p_1/\alpha^2$ $e_3 = 5.7\ 55$ E 11 MeV
	○ Stars	$2\alpha * p_2^- = 290 p_1^+$	2	$p^-_2 = 2e_1/G$ $p^-_2 = 3.0\ 5$ E 11 MeV	e2 $= 2p/\alpha^2$ e2 = 3,524 E7 M eV
	Planets	$2\alpha * p_1^- = 238 p^+$		$p^-_1 = 2e/G$ $p^-_1 = 1{,}532$ E7 M eV	$e_1 = 2\nu_\mu/\alpha^2$ $e_1 = 10\ 178$ M eV
AL_{+1}	level	$2\alpha * p^+ = 25 \nu_\mu^-$	1	$p^+ = 2\gamma_0/G$ $p^+ = 938.28$ MeV	$e^- = 2\nu_e/\alpha^2$ $e^- = 0.511$ MeV
		$2\alpha * \nu_\mu^+ = 292 \nu_e^-$		$\nu_\mu = \alpha^2 e_1/2$ $\nu_\mu = 0.27\ 1$ MeV	$\gamma_0 = G p/2$ $\gamma_0 = 3.13*10^{-5}$ MeV
			0	$\nu_e = \alpha^2 e/2$ $\nu_e = 1.36*10^{-5}$ M e.V.	$\gamma = G\nu_\mu/2$ $\gamma^+ = 9.07*10^{-9} MeV$
AL_0	Physical vacuum level			$\nu_1 = \alpha^2\gamma_0/2$ $\nu_1 = 8.3*10^{-10}$ M e.V.	$\gamma_1 = G\nu_e/2$ $\gamma_1 = 4.5*10^{-13}$ M e.V.
			-1	$\nu_1 = \alpha^2\gamma/2$ $\nu_2 = 2.4*10^{-13}$ M e.V.	$\gamma_2 = G\nu_1/2$ $\gamma_2 = 2.78*10^{-17}$ MeV
				$\nu_3 = \alpha^2\gamma_1/2$ $\nu_3 = 1.2*10^{-17}$ M e.V.	$\gamma_3 = G\nu_2/2$ $\gamma_3 = 8.05*10^{-21}$ MeV
AL_{-1}	Physical vacuum level		-2	$\nu_4 = \alpha^2\gamma_2/2$ $\nu_4 = 7.4*10^{-22}$ M e.V.	$\gamma_4 = G\nu_3/2$ $\gamma_4 = 4.03*10^{-25}$ MeV

And at the same time, the cores of stars are immersed in the energy level (**γ**)of photons of the physical vacuum. The cores of galaxies are immersed in the energy level of superluminal photons of the physical vacuum $(v_2 = \alpha^{-1} * c = 137 * c = \gamma_2)$, similarly to quasars $(v_6 = \alpha^{-2} * c = 137^2 * c = \gamma_4)$ and so on.

Limit mass of planets, for: $1MeV = 1.78 * 10^{-27} g$:

$\frac{1}{\gamma_0} = \frac{1}{3.13*10^{-5} MeV * 1.78*10^{-27} g} = M_1(p_1^-/n_1^-) \approx 1.8 * 10^{31} g \approx \frac{M_s}{100}$, where $(M_s = 2 * 10^{33} g)$is the mass of the Sun.

Next is the maximum mass of stars with an antimatter core:

$\frac{1}{\gamma} = \frac{1}{9.07*10^{-9} MeV * 1.78*10^{-27} g} = M_2(p_2^-/n_2^-) \approx 6.2 * 10^{34} g \approx\ 31 M_s$, or within the range of $\frac{M_s}{100}$ to $31 M_s\ mass$.

Similarly, the maximum mass$(p_3^+/n_3^0 = e_{*3}^+)$ "black spheres" with a core made of matter:

$\frac{1}{\gamma_1} = \frac{1}{4.5*10^{-13} MeV*1.78*10^{-27} g} = M_3(p_3^+/n_3^0) \approx 1.25*10^{39} g \approx \ 625220 M_s$
maximum mass of a galaxy,$(p_4^+/n_4^0 = e_{*4}^+)$ with a core made of matter:
$$\frac{1}{\gamma_2} = \frac{1}{2.78*10^{-17} MeV*1.78*10^{-27} g} = M_4(p_4^+/n_4^0) \approx 2*10^{43} g \approx 10^{10} M_s$$
the maximum mass of an extragalactic megastar,$(p_5^-/n_5^- = e_{*5}^-)$ with an antimatter core:
$$\frac{1}{\gamma_3} = \frac{1}{8.05*10^{-21} MeV*1.78*10^{-27} g} = M_5(p_5^-/n_5^-) \approx 7*10^{46} g \approx 3{,}5*10^{13} M_s,$$
maximum mass of a quasar,$(p_6^-/n_6^- = e_{*6}^-)$ with an antimatter core:
$$\frac{1}{\gamma_4} = \frac{1}{4.03*10^{-25} MeV*1.78*10^{-27} g} = M_6(p_6^-/n_6^-) \approx 1{,}4*10^{51} g \approx 7*10^{17} M_s,$$
……………………………………………………………………………………………

Each core of such objects$ОЛ_{ji}(n)$ convergence, generates a set of corresponding quanta $(2*\alpha*p_j^{\pm} = e_{*j}^{\mp} = N\, p_{j-1}^{\mp})$indicated in the table, and emits $(p_j^{\pm} \to p_{j-2}^{\mp})$. This set$(N)$ quanta of the core of planets, stars, galaxies, quasars…. For example, the core of the Sun, like a star, emits hydrogen nuclei $(p_2^- \to p^+ \to \nu_e^-)$ and electron antineutrino, but generates$(2*\alpha*p_2^- = e_{*2}^+ = N\, p_1^+)$ quanta, so to speak, of "star matter"(p_1^+/e_1^-) in the solid surface of a star. This is "star matter"(p_1^+/e_1^-) cannot interact with hydrogen (p^+/e^-), but can emit a muon antineutrino $(p_1^+ \to \nu_\mu^-)$, which in the Earth's atmosphere forms muons, which in decays give: (e^+) positrons: $(Y\pm = \mu) = (X- = \nu_\mu^-)(Y+ = e^+)(X- = \nu_e^-)$. Or, quanta of the core of a megastar with$(p_5^-/n_5^- = e_{*5}^-)$ emit quanta $(p_5^- \to p_3^+)$of matter, but the nuclei of galaxies generate quanta $(2*\alpha*p_5^- = e_{*5}^+ = N\, p_4^+)$. Similarly, further. $IAL = M(e_6 = 6{,}48\text{ E}23)(k = 3.83)M(\gamma_4 = 4{,}03\text{ E}-25) = 1$. We are talking about quanta$(Y- = p_6^-/n_6^- = e_{*6}^-)$ the cores of quasars, which also emit individually(p_4/e_4) quanta of the galaxy core. In other words, the core of the quasar is surrounded by quanta of the galaxy core. They say that the quasar is in the center of the galaxy. Such quasars plunge into the level of physical vacuum to superluminal speeds $w_i(\gamma_4 = \alpha^{-2}\text{c}) = 137^2*\text{c}$. This is deeper than the level of physical vacuum of the galaxy. These are completely different objects. We see, as it were, the "surface" of the galaxy, but the core of such an object$ОЛ_{ji}(n)$ convergence, has a mass in the range from$(10^{10} M_s)$ to$(3.5*10^{13} M_s)$ masses of the Sun.

This means that the mass velocity space $(\sqrt{G}W2(2\pi R)\sqrt{G}W = 2GM)$cannot have the speed of light. We obtain for the proton mass ($M = 1{,}67*10^{-24}$г) , with a conditional circle($2\pi R$) sphere and maximum speed $(W = \text{c})$we have$\left(R = \frac{GM}{2(2*3.14)c^2} = \frac{6.67*10^{-8}*1.67*10^{-24}}{2*(2*3.14)*9*10^{20}} = 0.98*10^{-13} cm\right)$ radius of the proton. This is the minimal "black hole" that does not emit a photon, with the quantum velocity space $(\gamma_0 + \nu_e + \gamma_0) = p$being less than the speed of light. And this is proof that the neutrino has a non-zero mass. The infinities obtained in this way do not exist, either in mathematics or in nature.

It is essential that the gravitational constant $a_{11} = a_{YY} = \sqrt{G}$ is a mathematical truth of the limiting ($a_{11} = a_{YY} = \cos\varphi_{MAX} = \sqrt{G}$) angle of parallelism, which is not in Einstein's General Theory of Relativity ($k = 8\pi G/c^4$) . The second point is the strict conditions of fixing the potentials $(g_{Ji} = const)$, reducing them to Euclidean space $(g_{ii} = 1)$. The introduction of the coefficient (λ) into the equation, changing the $R_{Ji} - \frac{1}{2}Rg_{Ji} - \frac{1}{2}\lambda g_{Ji} = kT_{Ji}$ vacuum energy, does not change the conditions of its fixation.

2.4. Scalar bosons.

The action of a quantum cannot $\hbar = \Delta p\Delta\lambda = F\Delta t\Delta\lambda$ be fixed in space $\Delta\lambda$ or time Δt. This is due to the non-zero $(\varphi \neq const)$angle of parallelism $(X-)$or $(Y-)$trajectory $(X\pm)$or $(Y\pm)$quantum of space-matter. There is only a certain probability of action. Transformations of the relativistic dynamics of the wave ψ function of a quantum field with the probability density ($|\psi|^2$) of interaction in $(X+)$the field (Fig. 3) correspond to the Globally Invariant $\psi(X) = e^{-ia}\overline{\psi}(X)$, $a = const$ Lorentz group. These transformations correspond to rotations in the plane of the circle S, and relativistic - invariant Dirac equation.
$$i\gamma_\mu \frac{\partial\psi(X)}{\partial x_\mu} - m\psi(X) = 0, \quad \text{and} \quad \left[i\gamma_\mu \frac{\partial\overline{\psi}(X)}{\partial x_\mu} - m\overline{\psi}(X)\right] = 0.$$
Such invariance gives conservation laws in the equations of motion. For transformations of relativistic dynamics in hyperbolic motion,
$$\psi(X) = e^{ax}\,\overline{\psi}(X), \qquad ch(aX) = \tfrac{1}{2}(e^{ax} + e^{-ax}) \cong e^{ax}, \qquad (aX \neq const)$$

$$e^{i\omega t} \equiv (cos\,\omega t + i\,sin\,\omega t), \qquad i\,sin\,\omega t = \sqrt{(+\,sin\,\omega t)(-\,sin\,\omega t)},$$

Imaginary(i) in general, means the presence $(Y-)$or$(X-)$ fields, in this case.

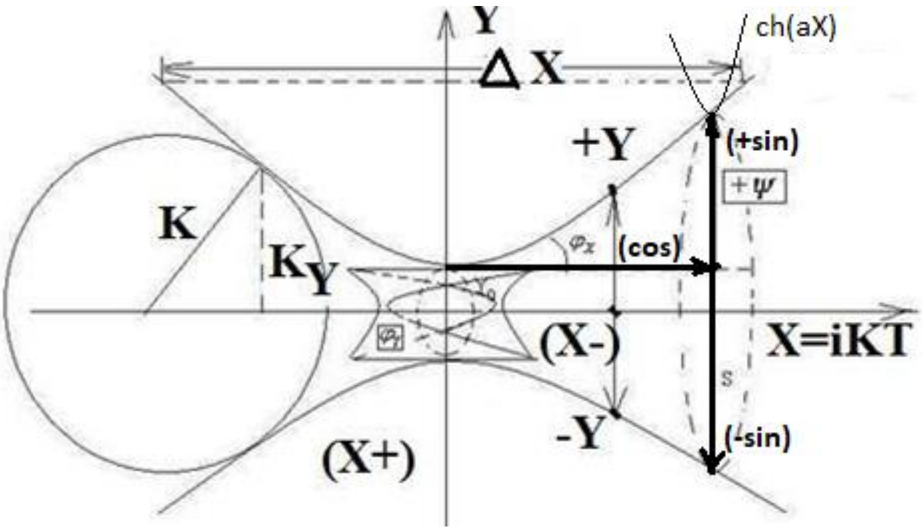


Fig. 3. Quantum $(X\pm)$ of dynamic space-matter.

Under Local Invariance (LI) conditions, for (Indivisible Area of Localization) $IAL = CE(X- = Y+)CE(Y- = X+) = 1$; IAL = ch $(\frac{X}{Y_0})$(X+)cos (φ)(X-)=1, φ≠90 ^{0} , at: φ=0, cos (φ)=1, we have ch$(\frac{X}{Y_0})$=1, ch$(\frac{X=0}{Y_0})$=1, or: ch$(\frac{X}{Y_0\to\infty})$=1. For (±ψ) wave (ψ= Y-Y_0) function, let's clarify. For simple reasons, we take $Y = e^{ax+i\omega t}$ for $i\omega = \sqrt{(+\omega)(-\omega)}$constant extremals $(ax = 0)$, in the form: $Y = e^{i\omega t}$. $e^{i\omega t} \equiv (cos\,\omega t + i\,sin\,\omega t)$ and $(i\,sin\,\omega t = \sqrt{(+\,sin\,\omega t)\,(-\,sin\,\omega t)}\,)$. Here are (ω) the rotations in the YZ plane of the section of the trajectory (X-) with Lorentz invariance, of the quantum field of the wave, in the form $\omega = \frac{W}{\hbar}$, and $\hbar = pr$with energy $W = \frac{p^2}{2m} + U$. Dynamics within a quantum $\psi = Ae^{i\omega t} = Ae^{-\frac{i}{\hbar}(Wt+pr)}$ in time: $\frac{\partial\psi}{\partial t} = -\frac{iW}{\hbar}\psi$, or: $\frac{i\hbar}{\psi}\frac{\partial\psi}{\partial t} = W$ in space: $grad(\psi) = -\frac{ip}{\hbar}\psi$, and $div\ grad(\psi) = \frac{p^2}{\hbar^2}\psi$, from where: $p^2 = \frac{\hbar^2}{\psi}\Delta\psi$, or: $\frac{p^2}{2m} = \frac{\hbar^2}{2m*\psi}\Delta\psi$, in the final form we get: $\frac{i\hbar}{\psi_{max}}\frac{\partial\psi}{\partial t} = \frac{\hbar^2}{2m*\psi_{max}}\Delta\psi + U$, the dynamics of the energy of the entire $(\psi_{max} = 1)$quantum, with the mass of (m), for example, an electron. The ratio $\frac{\psi}{(\psi_{max}=1)}$, gives us the fixation point$(\psi = Y)$ quantum in the experiment, in any Evolution Criteria. Finally, we obtain $i\hbar\frac{\partial\psi}{\partial t} = \frac{\hbar^2}{2m}\Delta\psi + U\psi$, the Schrödinger equation. The key point is that we have: $\frac{\pi\psi^2}{\pi(\psi_{max})^2} = b$, the ratio of the cross-sectional area of the trajectory $(X-)$or $(Y-)$quantum of space-matter at a given moment in time (fixations in experiments) to the maximum interaction cross-section, already in the form of the probability of an event. This can be the Feynman integral over$(X- = \psi)$ trajectories, $(\frac{\psi^2}{2} = \int \psi d\psi)$ as a sum all meanings (ψ). Here, $\psi \equiv \frac{\psi}{(\psi_{max}=1)} = i * sin\varphi_x = \sqrt{(+sin\varphi_x)(-sin\varphi_x)} = i\sqrt{1 - (cos^2\varphi_x = \frac{v_x{}^2}{c^2})}$, with a change in the angle of parallelism (φ_x), a relativistic correction immediately arises in quantum relativistic dynamics $(cos\varphi_x = a_{11})$ (quantum theory of relativity). And this is already a mathematical truth of the probabilistic interpretation of the wave function in space-matter, without options. Then for $i\psi = \sqrt{(+\psi)(-\psi)}$), we obtain for (X±): $i\psi = Ae^{ax}e^{i\omega t} = Ae^{ax+i\omega t}$. In this case the space of velocities: (X-)´= v (X)= v (cos φ+ i sin φ). Or: $iv(X) *\ sin\varphi =\ v\sqrt{(+\sin\varphi)(-\sin\varphi)}$, an additional term appears in the Dirac equation.

$$\left[i\gamma_\mu\frac{\partial\overline{\psi}(X)}{\partial x_\mu} - m\overline{\psi}(X)\right] + i\gamma_\mu\frac{\partial a(X)}{\partial x_\mu}\overline{\psi}(X) = 0$$

The invariance of conservation laws is violated. Gauge fields are introduced to preserve them. They compensate for the additional term in the equation.

$$A_\mu(X) = \overline{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}, \quad \text{And} \quad i\gamma_\mu\left[\frac{\partial}{\partial x_\mu} + iA_\mu(X)\right]\psi(X) - m\psi(X) = 0$$

Now, by substituting the value of the wave function into such an equation $\psi(X) = e^{a(X)}\overline{\psi}(X)$, $a(X) \neq const$ we obtain the invariant equation of relativistic dynamics.

$$i\gamma_\mu \frac{\partial \psi}{\partial x_\mu} - \gamma_\mu A_\mu(X)\psi - m\psi = i\gamma_\mu \frac{\partial \overline{\psi}}{\partial x_\mu} + i\gamma_\mu \frac{\partial a(X)}{\partial x_\mu}\overline{\psi} - \gamma_\mu \overline{A}_\mu(X)\overline{\psi} - i\gamma_\mu \frac{\partial a(X)}{\partial x_\mu}\overline{\psi} - m\overline{\psi} = 0$$

$$i\gamma_\mu \frac{\partial \overline{\psi}}{\partial x_\mu} - \gamma_\mu \overline{A}_\mu(X)\overline{\psi} - m\overline{\psi} = 0 \quad , \quad \text{or} \quad i\gamma_\mu \left[\frac{\partial}{\partial x_\mu} + i\overline{A}_\mu(X)\right]\overline{\psi} - m\overline{\psi} = 0 .$$

This equation is invariant to the original equation

$$i\gamma_\mu \left[\frac{\partial}{\partial x_\mu} + iA_\mu(X)\right]\psi(X) - m\psi(X) = 0$$

under conditions $A_\mu(X) = \overline{A}_\mu(X)$, And $A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$,

the presence of a scalar boson $(\sqrt{(+a)(-a)} = ia(\Delta X) \neq 0) = const$, within the gauge $(\Delta X) \neq 0)$ field (Fig. 3). These conditions $(\frac{\partial a(X)}{\partial x_\mu} \equiv f'(x) = 0)$yield constant extremals $(f_{max})$of the dynamic $a(X) = f(x) \neq const$ space-matter in global invariance. And there are no scalar bosons here. These are: $A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$, the known gauge transformations. $a(X)$– 4-vector (A_0, A_1, A_2, A_3)r electromagnetic scalar $(\varphi = A_0)$ and vector $(\vec{A} = A_1, A_2, A_3)$potential in Maxwell's electrodynamics: $\vec{E} = -\nabla\varphi - \frac{\partial \vec{A}}{\partial t}$, and $\vec{B} = -\nabla \text{x} \vec{A}$, gradient and rotor, or $F_{\mu\nu} = \partial_\mu A_\nu - \partial_\nu A_\mu$, with tensor ($F_{\mu\nu}$),$(E_X, E_Y, E_Z, E_X, E_Y, E_Z)$ components and Lorentz transformations. To such a potential is added the derivative of a scalar function, which does not change the potential itself. This is the key point. In the Yang- Mills theory it is represented by the symmetry group, $A_\mu = \Omega(x)A_\mu(\Omega)^{-1}(x) + i\Omega(x)\partial_\mu(\Omega)^{-1}(x)$, where $\Omega(x) = e^{i\omega}$, and ω, is an element of any SU(N), SO(N), Sp(N), E $_6$, E $_7$, E $_8$, F $_4$, G $_2$) Lie group, $A_\mu \to A_\mu + \partial_\mu\omega$. In reality, this is a fixed state of the dynamic function: $K_Y = \psi + Y_0$, in quantum relativistic dynamics. Conventionally speaking, at each fixed point: $a\left(\frac{X\equiv Z}{Y_0}\right) = const$, there is its own (angle of inclination of branches) hyperbolic cosine, $K_Y = Y_0 ch(\frac{X\equiv Z}{Y_0}) \equiv e^{a\left(\frac{X\equiv Z}{Y_0}\right)}$, already in the orthogonal $(YZ \perp X)$ plane, and, beyond the dynamic (Y_0), in quantum relativistic dynamics. Thus, scalar bosons in gauge fields are created artificially to eliminate the shortcomings of the Theory of Relativity in quantum fields. In general, $(K_Y = Y)$, and $\frac{Y}{Y_0} = ch(\frac{X\equiv Z}{Y_0})$, we have curvature $\left(K = -\frac{Y^2}{Y_0} = \frac{(+Y)(-Y)}{Y_0}\right)$ (Smirnov, Course of Higher Mathematics, v.1, p.186-187) in the form: $\frac{Y}{Y_0} = ch(\frac{X\equiv Z}{Y_0})$, $K = -\frac{Y^2}{Y_0} = (Y)\, ch(\frac{X\equiv Z}{Y_0})$, $(X+)$fields, in this case. And this: $\psi = Ae^{ax+i\omega t}$, wave function, can be applied in quantum gravitational $(X+)$fields, which are measured by the curvature of space-matter, in this case.

2.5 Spectrum of indivisible quanta of space-matter.

Will correlate $IAL(Y\pm)$the Indivisible Areas of Localization $IAL(X\pm)$with the indivisible quanta of space-matter: $(X\pm = p)$, $(Y\pm = e)$, $(X\pm = \nu_\mu)$, $(Y\pm = \gamma_0)$, $(X\pm = \nu_e)$,$(Y\pm = (\gamma)$ in a $(X- = Y+)$ single, $(Y- = X+)$ dynamic space-matter, as with the facts of reality. They form the first AL_1 Areas of Localization of indivisible quanta at their $(m-n)$ convergences (Fig.4).

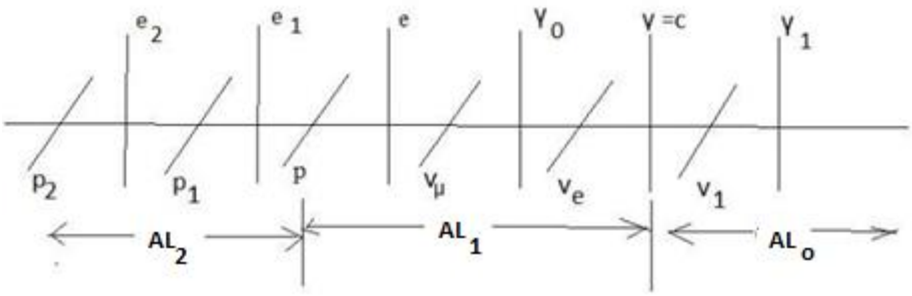


Fig. 4. Indivisible quanta of space-matter.

To maintain the continuity of a single $(X- = Y+)$, $(X+ = Y-)$space-matter $(Y\pm = \gamma_0)$, a photon is introduced, similar to $(Y\pm = \gamma)$ a photon. This corresponds to the analogy of the muon $(X\pm = \nu_\mu)$ and electron $(X\pm = \nu_e)$ neutrino. In this case, both neutrinos (ν_μ), (ν_e) and photons (γ_0), (γ), can accelerate, like a proton or electron, to speeds (γ_1), ($\gamma_{2\ldots}$), according to the same Lorentz transformations, just as protons and electrons are accelerated. To the ultimate speed of light $(\gamma = c)$. Having a standard, outside any fields, electron speed $W_e = \alpha * c$, emitting a standard photon outside any fields: $V(\gamma) = c$, we have a constant: $\alpha = \frac{W_e}{c} = \cos\varphi_Y = \frac{1}{137.036}$. An orbital electron, with an angle of parallelism to the $\varphi(Y-) = 89{,}6^0$ "straight " trajectory $(Y-)$ of the field in Lobachevsky geometry, with its uncertainty principle, such an electron does not emit a photon, as in rectilinear, without acceleration, motion. **This postulate of Bohr, as well as the uncertainty principle of space-time and the equivalence principle of Einstein, are axioms of dynamic space-matter.** The dynamics of mass fields within the limits of $\cos\varphi_Y = \alpha = 1/137$, $\cos\varphi_X = \sqrt{G}$, interaction constants, gives the charge isopotential of their unit masses. $m(p) = 938{,}28 MeV$, $G = 6{,}67 * 10^{-8}$. $m_e = 0{,}511\ MeV$, ($m_{\nu_\mu} = 0{,}27\ MeV$),

$$\left(\frac{X=K_X}{K}\right)^2 (X-) = cos^2\varphi_X = \left(\sqrt{G}\right)^2 = G, \qquad \left(\frac{Y=K_Y}{K}\right)(Y-) = cos\,\varphi_Y = \alpha = \frac{1}{137{,}036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y = m_Y}{\left(\frac{Y^2}{K^2} = \frac{G}{2}\right)}, \qquad \text{where} \qquad 2m_Y = Gm_X ,$$

$$m = \frac{F=\Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X = m_X}{\left(\frac{X^2}{K^2} = \frac{\alpha^2}{2}\right)}, \qquad \text{where} \qquad 2m_X = \alpha^2\, m_Y$$

$$(\alpha/\sqrt{2}) * \Pi K * (\alpha/\sqrt{2}) = \alpha^2 m(e)/2 = m(\nu_e) = 1{,}36 * 10^{-5} MeV, \qquad \text{or: } m_X = \alpha^2 m_Y/2,$$

$$\sqrt{G/2} * \Pi K * \sqrt{G/2} = G * m(p)/2 = m(\gamma_0) = 3.13 * 10^{-5} MeV, \qquad \text{or: } m_Y = Gm_X/2$$

$$m(\gamma) = \frac{Gm(\nu_\mu)}{2} = 9{,}1 * 10^{-9} MeV.$$

In a single $(Y\pm = X\mp)$or $(Y+ = X-)$, $(Y- = X+)$space-matter of indivisible structural forms of indivisible quanta $(Y\pm)$and $(X\pm)$:

$(Y\pm = e^-) = (\boldsymbol{X}+= \nu_e^-)(Y-= \gamma^+)(\boldsymbol{X}+= \nu_e^-)$ electron, where $IAL(Y\pm)$= CE (Y +) * CE (Y -), and

$(X\pm = p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$proton, where $IAL(X\pm)$= CE (X +)*CE(X -),

We separate $(Y+ = X-)$ electromagnetic fields from mass fields $(Y- = X+)$in the form:

$(X+)(X+) = (Y-)$ And $\frac{(X+)(X+)}{(Y-)} = 1 = (Y+)(Y-)$; $(Y+= X-) = \frac{(X+)(X+)}{(Y-)}$, or: $\frac{(\boldsymbol{X}+=\nu_e^-/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(\boldsymbol{X}+=\nu_e^-/2)}{(Y-=\gamma^+)} = q_e(Y+)$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\boldsymbol{2}} * \boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36 * 10^{-5})^2 * \sqrt{2} * 6{,}67 * 10^{-8}}{4 * 9{,}07 * 10^{-9}} = 4{,}8 * 10^{-10} SGSE$$

$(Y+)(Y+) = (X-)$ And $\frac{(Y+)(Y+)}{(X-)} = 1 = (X+)(X-)$; $(Y+= X-) = \frac{(Y-)(Y-)}{(X+)}$, or: $\frac{(\boldsymbol{Y}-=\gamma_0^+)(\boldsymbol{\alpha^2})(Y-=\gamma_0^+)}{(\boldsymbol{X}+=\nu_e^-)} = q_p(Y+= X-)$,

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3{,}13 * 10^{-5}/2)^2}{2 * 137{,}036^2 * 1.36 * 10^{-5}} = 4{,}8 * 10^{-10} SGSE$$

Such coincidences cannot be accidental. For a proton's wavelength $\lambda_p = 2{,}1 * 10^{-14} sm$, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286 * 10^{24} Hz$ is formed by the frequency(γ_0^+) quanta, with mass $2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+})$.

$1g = 5{,}62 * 10^{26} MeV$, or: $(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58 * 10^{-32} g = 3{,}13 * 10^{-5} MeV$

Similarly, for an electron $\lambda_e = 3{,}86 * 10^{-11} cm$, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77 * 10^{20} Hz$ is formed by the frequency(ν_e^-) quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-})$, where: $\alpha(Y-) = \frac{1}{137{,}036}$ constant, we get:

$(m_{\nu_e^-}) = \frac{\alpha^2\hbar(\nu_{(\nu_e^-)})}{2c^2} = \frac{1*1{,}0545*10^{-27}*7{,}77*10^{20}}{(137{,}036^2)*2*9*10^{20}} = 2{,}424 * 10^{-32} g = 1{,}36 * 10^{-5} MeV$, for the neutrino mass.

with the mass of an indivisible electron:

$$(Y\pm= e) = (X-= \nu_e)(Y+= \gamma)(X-= \nu_e) = \left(\frac{2\nu_e}{\alpha^2} + \frac{\gamma*\alpha}{2G}\right) = \left(\frac{2*1{,}36*10^{-5}}{(1/137.036)^2} + \frac{9{,}1*10^{-9}/137.036}{2*6{,}67*10^{-8}}\right) = 0{,}511\ MeV$$

and similarly, the mass of an indivisible proton:

$$(X\pm= p) = (Y-= \gamma_o)(X+= \nu_e)(Y-= \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{\nu_e}{\alpha^2}\right) = \left(\frac{2*3{,}13*10^{-5}}{6{,}67*10^{-8}} - \frac{1{,}36*10^{-5}}{(1/137.036)^2}\right) = 938{,}275\ MeV$$

Such coincidences also cannot be accidental. Similarly, in the unified fields of space-matter, the Bosons of the electro $(Y+) = (X-)$ weak interaction:

$$IAL(Y) = (Y+= e^\pm)(X-= \nu_\mu^\mp) = \frac{2\alpha*\left(\sqrt{m_e(m_{\nu_\mu})}\right)}{G} = (1+\sqrt{2}*\alpha)m(W^\pm), \text{ or:}$$

$$IAL(Y) = m(W^{\pm}) = \frac{2*(\sqrt{0.511*0.27})}{137.036*6.674*10^{-8}*(1+\frac{\sqrt{2}}{137.036})} = 80.4\ GeV,$$

with charge $(e^{\pm})$, and inductive mass:$m(Y-) = (\sqrt{2}*\alpha)*m(W^{\pm})$. It's like a "dark $m(Y-)$mass".

$$IAL(X) = (X+=\nu_{\mu}^{\mp})(Y-=e^{\pm}) = \frac{\alpha*\left(\sqrt{(2m_e)m_{\nu_{\mu}}exp1}\right)}{G} = 94{,}8\ GeV = m(Z^0)$$

and also new one's **stable** particles on colliding beams of muon antineutrinos (ν_{μ}^{-})

$$IAL(Y\pm=e_1^{-}) = (\boldsymbol{X}-=\nu_{\mu}^{-})(Y+=\gamma_o)(\boldsymbol{X}-=\nu_{\mu}^{-}) = \frac{2\nu_{\mu}^{-}}{\alpha^2} = 10{,}21\ \ GeV$$

On the counter beams of positrons (e^{+}), which are accelerated in the flow $(Y-=\gamma)$, photons of the «**white laser**» in the form of:

$$IAL(X\pm=p_1^{+}) = (\boldsymbol{Y}-=\mathrm{e}^{+})(X+=\nu_{\mu}^{-})(\boldsymbol{Y}-=\mathrm{e}^{+}) = \frac{2m_e}{G} = 15{,}3\ \ TeV$$

These are indivisible quanta of the new substance. On colliding beams of antiprotons (p^{-}), the following takes place:

$$IAL(Y\pm=e_2^{-}) = (\boldsymbol{X}-=p^{-})(Y+=e^{+})(\boldsymbol{X}-=p^{-}) = \frac{2m_p}{\alpha^2} = 35{,}24\ \ TeV.$$

For counter-propagating particles $НОЛ(Y-) = (X+=p^{\pm})(X+=p^{\pm})$, the mass of the Higgs boson quantum is calculated: $M(Y-) = (X+=p^{\pm})(X+=p^{\pm}) = \left(\frac{2m_0}{2\alpha} = \overline{m_1}\right)(1-3\alpha)$

or $M(Y-) = \left(\frac{2m_p}{2\alpha} = \frac{m_p}{\alpha} = \overline{m_1}\right)(1-3\alpha) = \frac{0{,}93828\ GeV}{(1/137{,}036)}\left(1-\frac{3}{137{,}036}\right) = 125{,}76\ \ GeV$

and the mass of the tau lepton:$M(X) = (\boldsymbol{Y}-=e^{-})(X+=\nu_t^{+})(\boldsymbol{Y}-=e^{-}) = \frac{(Y-)(Y-)}{(X+)} = \frac{(e=0.511MeV)}{\sqrt{1.24}*\sqrt{G=6.67*10^{-8}}} = 1776.835MeV$

Such coincidences also cannot be accidental. The physical fact is the charge isopotential of the proton $p(X-=Y+)e$and electron in the hydrogen atom with the mass ratio. By analogy $(p/e\approx 1836)$, we speak of the charge isopotential $\nu_{\mu}(X-=Y+)\gamma_0$, and $\nu_e(X-=Y+)\gamma$, sub atoms, with the ratio of masses $(\nu_{\mu}/\gamma_0\approx 8642)$ and $(\nu_e/\gamma\approx 1500)$ respectively. In this case, sub atoms (ν_{μ}/γ_0) are held together by the gravitational field of the planets, and the subatomic (ν_e/γ) are held by the gravitational field of the stars. This follows from calculations of the atomic structures (p/e), sub atomics of planets $(p_1/e_1)(p/e)(\nu_{\mu}/\gamma_0)$and stars $(p_2/e_2)(p_1/e_1)(p/e)(\nu_{\mu}/\gamma_0)(\nu_e/\gamma)$, for: $e_1 = 2\nu_{\mu}/\alpha^2 = 10{,}2GeV)$, $e_2 = 2p/\alpha^2 = 35{,}2TeV)$, $НОЛ = e_1*3{,}13*\gamma_0 = 1$, And $НОЛ = e_2*3{,}13*\gamma = 1$. And also, for $p_1 = \frac{2e}{G} = 15{,}3TeV$, and $p_1(X-=Y+)e_1$"heavy atoms" inside the stars themselves. If quanta $(m_X = p_1^{-}) = \frac{2(m_Y=e^{-})}{G} = (15{,}3\ TeV)$ and exist $(m_Y = e_2^{-}) = \frac{2(m_X=m_p)}{\alpha^2} = (35{,}24\ \ TeV)$, then similar to the generation by quanta(p_1/n_1) cores of the earth cores $(2\alpha p_1^{-} = 238p^{+} = {}^{238}_{92}U)$ uranium, $p^{+}\approx n$, with subsequent decay into a spectrum of atoms, quanta $p_2^{-} = \frac{2e_1^{-}}{G} = 3{,}06*10^5TeV$, and (p_2/n_2), $(p_2\approx n_2)$the Sun's nucleus (stars, but in the Earth's atmosphere, particle fixations with energy $p_2 = 305$ E15 eV or: e_2 = 3.524 E 13 eV , at least, are possible), generate nuclei of "stellar uranium", $(2\alpha p_2^{-} = 290p_1^{+} = {}^{290}U^{*})$, with their exothermic decay into a spectrum of "stellar" atoms (p_1^{+}/e_1^{-})in the solid surface of the star (Sun) without interactions with ordinary atoms(p^{+}/e^{-}) hydrogen and the spectrum of atoms. The emission of $(p_1^{+}\to\nu_{\mu}^{-})$ muon antineutrinos by the Sun, like the emission $(e\to\gamma)$of photons, means the presence of such stellar matter on the Sun (p_1^{+}/e_1^{-}) without interaction with the proton- (p^{+}/e^{-})electron atomic structures of ordinary matter (hydrogen, helium...). These are the calculations and physically acceptable possibilities.

In principle, it is sufficient to know the constants $G = 6{,}674*10^{-8}$, $\alpha = 1/137.036$, limiting angles and velocity $\mathrm{c} = 2.993*10^{10}sm/s$, to determine the Planck action constant for unit masses $(m_0*m_0 = M*m = 1)$and their charges in the form:

$$\hbar = Gm_0\frac{\alpha}{\mathrm{c}}Gm_0(1-2\alpha)^2 = \frac{(6{,}674*10^{-8})^2*(1-2/(137.036))^2}{137.036*2.993*10^{10}} = 1.054508*10^{-27}\text{erg*s}$$

or: $m_0*m_0 = (КЭ = m_m)(КЭ = m_n) = 1$, in the axioms of dynamic space-matter. This constant is valid in$(ОЛ_1)$ level of physical vacuum, with the maximum $(v=\gamma=\mathrm{c})$speed of light, in which all other $(v_i = N*c)$speeds $(v_i > c)$are in $(AL_1)(AL_0)(AL_{-1})\ldots(AL_i)$ levels of physical vacuum have, $w = \frac{c+N*c}{1+\frac{c*Nc}{c^2}} = c$, the speed of light. Moreover, for any $(M_j*k*m_i = 1)$masses. And this means that in all levels of physical $(m-n)$convergence, the quantum coordinate system, the constants act $(\hbar, G, \alpha, c)$in the calculations performed. Both large and small masses have quantum properties. For example, for the mass of the Sun.

$\hbar\left(\frac{M_S*c^2}{2}\right)\hbar = 1,$ or $M_S(\alpha\sqrt{2})2\nu_e = 2*10^{33}\left(\frac{\sqrt{2}}{137}\right)*1{,}78*10^{-27}*2*1{,}36*10^{-5} = 1.$

This means that such stellar masses $M_S(\sqrt{2})2 = 2.8*M_S$ can be held in their field gravity (ν_e) - neutrinos. Planets can hold in their field gravity e- electrons and (ν_μ)- neutrinos. Similarly, the charge of unit masses $(m_0 = 1)$ or $(m_0 = 1)$ in the form: $(m_0 = \sqrt{(M_j*k*m_i = 1)} = 1)$. Then the charge is a property of mass:

$$q = Gm_0\alpha(1-\alpha)^2 = 6{,}674*10^{-8}(1/137.036)*(1-1/137.036)^2 = 4.8*10^{-10},$$

and their relationships: $\hbar\alpha c = q^2$. Such calculations correspond to the model of the products of proton and electron annihilation. Mass fields (Y- = e) = (X+ = p) of the atom.

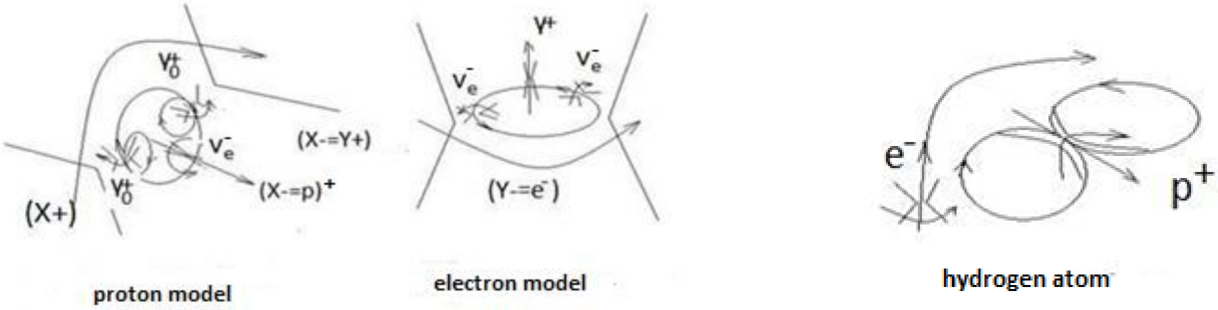


Fig. 5. Models of the products of proton and electron annihilation

The geometric **fact** here is the presence of antimatter in the substance of the proton and electron. At the same time, the products of proton annihilation

$$(X\pm = p^+) = (Y- = \gamma_0^+)(X+ = \nu_e^-)(Y- = \gamma_0^+)$$

and electron $(Y\pm = e-) = (X- = \nu_e^-) + (Y\pm = \gamma^+) + (X- = \nu_e^-)$ annihilation products.

P.S. In general models of the spectrum of atoms, the model of the quantum $(X\pm = {}_2^4He)$ of the **helium** nucleus is

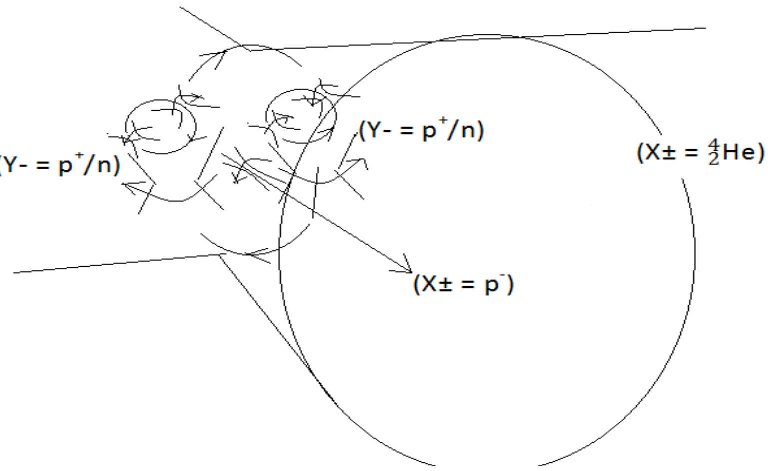


Fig.5.1 Synthesis model

structural form of quanta (Y- = p $^+$/n) of the Strong Interaction, structured by the (X-) field, either $(X\pm= \nu_e^-)$ antineutrino or antiproton $(X\pm= p^-)$in this case. According to the equations of mass field dynamics: $c*rot_Y M(Y-) = rot_Y N(Y-) = \varepsilon_2*\frac{\partial G(X+)}{\partial T} + \lambda*G(X+)$, we are talking about a controlled $(v_Y*rot_X 2M(Y-= p^+/n) = \varepsilon_2*\frac{\partial G(X+={}_2^4He)}{\partial T}$)thermonuclear reaction:

1). or in inelastic collisions

$(X\pm= {}_2^4\alpha) = (Y-= p^+/n = e^{***})(X+= \nu_e^-)(Y-= p^+/n = e^{***})$ in a collider, colliding beams of **low-energy deuterium nuclei,** without primary plasma. The resulting alpha particles heat the water jacket of the already controlled thermonuclear reactor. The energy yield of such a synthesis of structured plasma is calculated according to the standard scheme.

2). or by structuring deuterium plasma with **low-energy antiprotons,** in reactions

$(X\pm= {}_2^4\alpha) = (Y-= p^+/n = e^{***})(X+= p^-)(Y-= p^+/n = e^{***}),$ ${}_1^2H + p^- + {}_1^2H \rightarrow {}_2^4He + p^-$

Today, controlled thermonuclear reaction: $({}_1^2H + {}_1^3H \rightarrow {}_2^4He + {}_0^1n + 17{,}6MeV)$is created in plasma. These are different nuclei. In space-matter $(Y-= X+)$, this is $({}_1^2H + {}_1^3H)$ similar to the connection of mass trajectories of the "positron" $(Y-= p^+/n = e^{***})$ or $(Y-= e^+)$, and "proton" $(X+= {}_1^3H = p^{***})$or $(X+= p^+)$. Proton with positron, with mutually perpendicular$(Y-)\perp(X-)$ trajectories, this is hydrogen, in which everything goes to the rupture of the structure, in plasma in this case. And only with impacts in high-temperature plasma, in fields$(X+= p^+)$ Strong Interaction, vortex mass trajectories are formed $(Y-= p^+/n)(Y-= p^+/n) = (X\pm= {}_2^4He)$, already of a new core, as a stable structure.

More effective conditions for controlled Thermonuclear Reaction are counter flows of deuterium plasma, with perpendicular injection of antiproton beams at the point of meeting of plasma flows. The flow of deuterium plasma itself is controlled by a flow of ions, as a more stable state of plasma in TOKAMAK. Or inelastic collisions of deuterium beams of low energies, in a chamber with perpendicular lines of force of a strong magnetic field, **without primary plasma.** This will already be controlled " cold fusion" of helium.

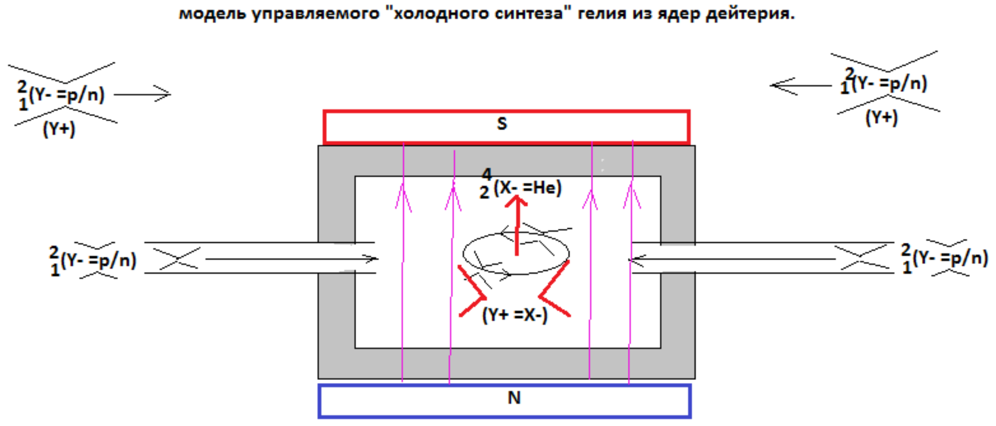


Fig.5.1 thermonuclear reactor.

The resulting alpha particles heat the water jacket of the already controlled thermonuclear reactor.
3) or in inelastic collisions (${}_1^3H + p^+ \rightarrow {}_2^4He$) in a tritium collider with **high-energy proton beams,** without primary plasma. The energy yield of such a synthesis of structured plasma is calculated according to the standard scheme.

$$\Delta m(2[{}_1^2H]) = 2[(1{,}00866 + 1{,}00728) - (m_{core} = 2{,}01355)] = 0{,}00478\text{amu}$$

$$\Delta m([{}_2^4He]) = [(2 * 1{,}00866 + 2 * 1{,}00728) - (m_{core} = 4{,}0026)] = 0{,}02928\text{amu.}$$

$$\Delta E = \Delta m([{}_2^4He]) - \Delta m(2[{}_1^2H]) = (0{,}02928 - 0{,}00478) = (0{,}0245) * 931{,}5MeV = 22{,}82MeV$$

Two grams of such plasma of synthesized helium are equivalent to 25 tons of gasoline. In all cases, trial experiments are needed on an already completed collider. (http://viXra.org/abs/2311.0014) Within the framework of the properties of dynamic space-matter, we can check the presence of quantum gravitational acceleration fields (Fig. 4).

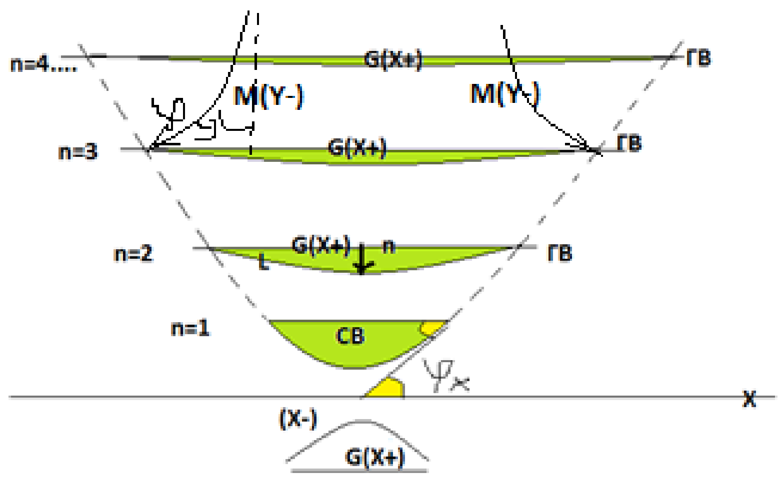


Fig . 5.3. Quantum gravity fields.

The essence of the experiment is to pass a photon through quasi potential quantum gravitational fields of accelerations, for example ${}_2^4\alpha$- particles, nuclei of helium, or deuterium, or tritium of simple nuclear structures. These are the levels of mass G (X + = Y -) trajectories of electron (Y - = e $^-$) orbits of an atom. But these are precisely high-frequency (up to 10^{22} Hz) quantum gravitational fields, which correspond to the goals of the experiment.

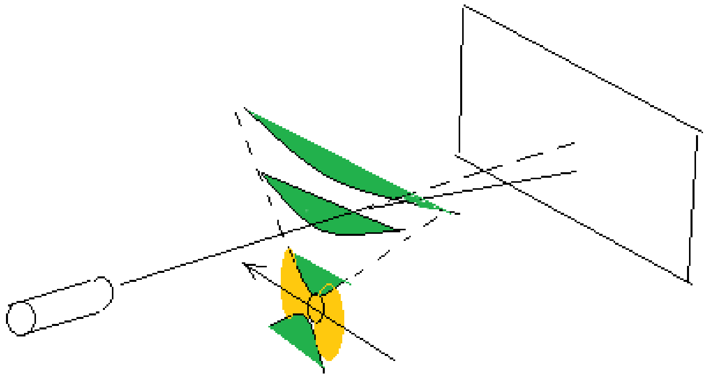


Fig. 5. 4.. Quantum gravity fields.

By passing nuclei ${}_2^4\alpha$- particles through a beam of photons, on the screen we will see the curvature of the photon trajectories around the nucleus, similar to the curvature of light rays around the Sun. But here we can take the characteristics of the curvature of the trajectories of individual photons, in the parameters of the quantum gravitational field.

Elements of quantum gravity.

They follow from the General Theory of Relativity, the Einstein tensor, as a mathematical truth of the difference of relativistic dynamics at two (1) and (2) points of Riemannian space, with the fundamental tensor $g_{ik}(x^n) = e_i(x^n)e_k(x^n)$.

$g_{ik}(1) - g_{ik}(2) \neq 0$, $e_k e_k = 1$, under the terms $e_i(X-), e_k(Y-)$,

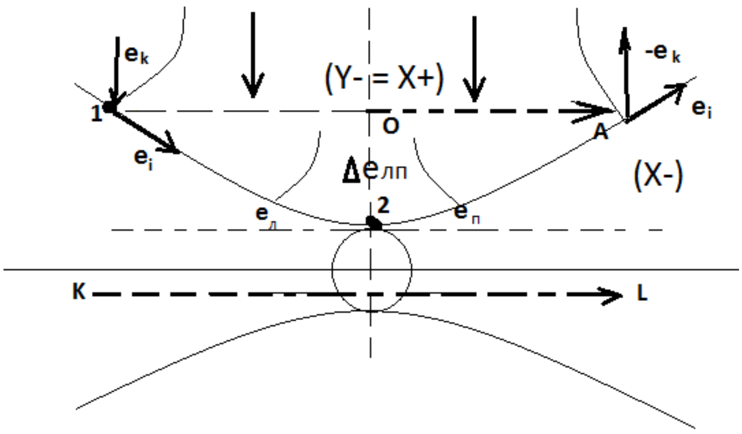


Figure 6. Quantum of space-matter

Point (2) is reduced to the Euclidean space of the sphere $(x^s_{2=r})$, where $(\mathrm{e}_{\boldsymbol{i}} \perp \mathrm{e}_{\boldsymbol{k}})$, $(\mathrm{e}_{\boldsymbol{i}} * \mathrm{e}_{\boldsymbol{k}} = 0)$. Therefore, in the neighborhood of point (2) we select parallel vectors $(\mathrm{e}_{\boldsymbol{l}})$ and $(\mathrm{e}_{\boldsymbol{r}})$ and take the average value $\Delta\mathrm{e}_{lr} = \mathrm{e}_2 = \frac{1}{2}(\mathrm{e}_{\boldsymbol{l}} + \mathrm{e}_{\boldsymbol{r}})$. Taking $(\mathrm{e}_{\mathbf{2}} = \mathrm{e}_{\boldsymbol{k}})$ and: $(g_{ik}(1) - g_{ik}(2) \neq 0) = \frac{K^2}{T^2}$.

$\Delta\mathrm{e}_{lr} = \frac{1}{2}(\mathrm{e}_{\boldsymbol{l}} + \mathrm{e}_{\boldsymbol{k}}) = \frac{1}{2}\mathrm{e}_k(\frac{\mathrm{e}_l}{\mathrm{e}_{\boldsymbol{k}}} + 1)$, we get: $g_{ik}(1)(\mathrm{X}+) - g_{ik}(2)(\mathrm{X}+) = k\mathrm{T}_{ik}(Y-)$, or

$$g_{ik}(1) - \frac{1}{2}(\mathrm{e}_{\boldsymbol{i}}\mathrm{e}_{\mathbf{2}} = \mathrm{e}_{\boldsymbol{i}}\mathrm{e}_{\boldsymbol{k}} = g_{ik})\left(\frac{\mathrm{e}_l}{\mathrm{e}_{\boldsymbol{k}}} + 1\right)(2) = k\mathrm{T}_{ik}\ , \left(\frac{\mathrm{e}_l}{\mathrm{e}_\kappa} = R\right). (\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_{\boldsymbol{k}}), \qquad g_{ik}(x^S_{2=r=k})$$

For$(\mathrm{e}_{\boldsymbol{l}} = \mathrm{e}_{\boldsymbol{k}})$ we have $(\mathrm{T}_{ik} = 0)$. In the conditions$(\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_{\boldsymbol{r}})$ we are talking about the dynamics of the physical vacuum at fixed angles of parallelism, with different geodesics of the already dynamic sphere $(x^s_l \neq x^s_2 \neq x^s_r)$ in fixed $(\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_2 \neq \mathrm{e}_{\boldsymbol{r}} = const)$**,** that's why points $(\mathrm{e}_{\boldsymbol{r}} = \boldsymbol{\lambda}\mathrm{e}_2)$. For dynamic $(\partial\mathrm{e}_r/\partial\, t \neq 0)$, $(\varphi \neq const)$ angles of parallelism of space-matter we speak about acceleration in the sphere (XYZ) of non-stationary Euclidean space. In other words, the geodesic of the non-stationary Euclidean sphere already $g_{ik}(x^s_l \neq x^s_2 \neq x^s_r \neq const)$ changes. We are talking about acceleration of the already dynamic physical vacuum during its expansion. Einstein's General Theory of Relativity in its full form:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = k\mathrm{T}_{ik}, \qquad \left(k = \frac{8\pi G}{c^4}\right)$$

The misconception of Einstein's General Theory of Relativity is that the energy-momentum tensor in the equation does not contain mass. Mass is zero $(M = 0)$, $({m_0}^2 = \frac{E^2}{c^4} - \frac{p^2}{c^2} = 0)$, in its classical understanding. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary $(\lambda \neq 0)$Euclidean space-time. In physical truth, in the equation of Einstein's General Theory of Relativity, in the unified Criteria of Evolution, Newton's formula (law) is "embedded": $(G) = 6{,}67 * 10^{-8}$.

$$E = c^4K, \quad P = c^4T, \quad (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \quad \Delta c_{ik}^2 = (G)v^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y = m_1)(c^2K_Y = m_2)}{c^2(c^2T^2 = K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the force of gravity acts in fields with zero mass. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$ in the external potential field of gravity $c^2(X+)$, with their Equivalence Principle, gives the force. What does this equation mean in classical terms? It all starts with Einstein's postulate of the maximum speed of light $(c)$for a mass $(m)$with a speed (w). This means that: $(c) \neq (w)$, or

$$c^2 \neq w^2; \qquad c^2 - w^2 \neq 0;\ w^2 = \frac{x^2}{t^2}; \qquad (c * t)^2 - (x)^2 = const = (c * \bar{t})^2 - (\bar{x})^2.$$

These are the well-known Lorentz transformations in relativistic dynamics. Fundamental here is the non-zero difference. Changing the course of time $\overline{(t)}$changes space $\overline{(x)}$, (Smirnov V.I.1974, v.3, part 1, p.195) with a relativistic correction for the mass$m(Y-)$ quantum field trajectories:

$$\frac{w^2}{c^2} = cos^2\varphi_{max}(Y-) = \alpha^2 = (\frac{1}{137{,}036})^2; \qquad c^2 - w^2 = c^2\left(1 - \frac{w^2}{c^2}\right) = c^2(1 - \alpha^2)$$

For classical transformations of relativistic dynamics:

$$\overline{x_1} = a_{11}c * t_1 - a_{12}x_1; \qquad c * \overline{t_1} = a_{21}c * t_1 - a_{22}x_1; \text{ with transformation matrix: } a_{ik} = \begin{matrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{matrix}.$$

In the three-dimensional space-time of a non-zero Euclidean sphere, with an invariant geodesic$(x_1^s = const)$ curve, there will be four such equations. (Smirnov V.I. 1974, v.3, part 1, pp.195-198).

$$\begin{matrix} \bar{x} = a_{11}c * t - a_{12}x - a_{13}y - a_{14}z; & & a_{11} & a_{12} & a_{13} & a_{14} \\ \bar{y} = a_{21}c * t - a_{22}x - a_{23}y - a_{24}z & \text{with } (a_{ik})\text{matrix} & a_{21} & a_{22} & a_{23} & a_{24} \\ \bar{z} = a_{31}c * t - a_{32}x - a_{33}y - a_{34}z & \text{transformations} & a_{31} & a_{32} & a_{33} & a_{34} \\ c * \bar{t} = a_{41}c * t - a_{42}x - a_{43}y - a_{44}z & & a_{41} & a_{42} & a_{43} & a_{44} \end{matrix}$$

in the well-known Lorentz group: $(x)^2 + (y)^2 + (z)^2 - (c * t)^2 = (\bar{x})^2 + (\bar{y})^2 + (z)^2 - (c * \bar{t})^2$. Here we can already substitute numbers and calculate the transformations of relativistic dynamics of the unified Evolution Criteria: for example: energy $E = \Pi^2Y = (m = \Pi Y) * (\Pi = c^2) = m * c^2$, momentum $p = \Pi^2t$, mass $m = \Pi Y(X+= Y-)$. Here $\Pi = c^2 = gY$, the acceleration potential (g)on the trajectory $(Y = Y-)$. Such transformations of relativistic dynamics in the inertial system of space -time without acceleration $(g = 0)$in the Euclidean sphere $(a_{ii} = 1)$without gravity, at point (1) Fig. 6, are the same as in the Euclidean sphere of space-time of a falling elevator in a gravitational field at point (2). Einstein was faced with the task of moving from the space-time of an inertial system in the Euclidean sphere without gravity to the space-time of the Euclidean sphere also without acceleration, but of a falling elevator in a gravitational field. In order to perform these transformations in relativistic dynamics, Einstein, in a mathematical procedure, added the potential of the gravitational field in the form of a tensor, the energy-momentum, to the acceleration potential (g)on the trajectory $(Y)$of space-time in an inertial system.

$\Pi = w^2 = \frac{Y^2}{t^2} = \frac{(E=\Pi^2Y)^2}{(p=\Pi^2t)^2}$This is a mathematical truth: $R_{ik} = \frac{1}{2}R(g_{ik} = gY) + \kappa(T_{ik} = \Pi)$, already the Einstein tensor, in its classical form: $R_{ik} - \frac{1}{2}Rg_{ik} = \kappa T_{ik}$. (Korn G., Korn T. (1973), p. 536). Or$(g_2 = g_1 \pm a)$ classical physics. Here $(R_{ik})$are the transformations of relativistic dynamics in the space-time of the Euclidean already another sphere, already another geodesic curvature $(x_2^s = const)$in the falling elevator in the field of gravitational potential $(\kappa T_{ik} = \Pi)$. In other words, the gravitational field is measured by the curvature of space-time. Calculating the changes in space-time in relativistic dynamics without gravity at point (1): $\overline{x_1} = g_{ik}x_1$; $c * \overline{t_1} = g_{ik}c * t_1$; $(i, k = 1{,}2{,}3{,}4)$and the changes in space-time in relativistic dynamics already with gravity at point (2): $\overline{x_2} = g_{ik}x_2$; $c * \overline{t_2} = g_{ik}c * t_2$; we can consider the changes in the curvature of the geodesic of the falling sphere $(x_2^s = const)$in the gravitational field $(x^s = X, Y, Z, ct)$.

$\overline{(x_2 - x_1)}^2 = g_{i1}c^2 * (t_2 - t_1)^2 - g_{i2} * (x_2 - x_1)^2 - g_{i3} * (y_2 - y_1)^2 - g_{i4} * (z_2 - z_1)^2 = (kT_{i1})$; (i =1, 2, 3, 4).

Basically, we are dealing with $(g_{ik})^2$ quadratic form$(g_{ik})(g_{ik} = g_{ir}R_{jkh}^r)$ for the selected directions $(e_je_h = 1)$ and $(e_ry^r = 1)$transformations of the Riemann–Christoffel tensor (Korn, 1973, p. 535).

As we can see, this is a matrix in 5 columns and 4 rows, each of which is an equation of dynamics in a gravitational field, and is solved separately. Or in the general case of a radial representation of a sphere:

$\overline{(x_2} - \overline{x_1)}^2 = \Delta x_{21}^2$; $\overline{(t_2} - \overline{t_1)}^2 = \Delta t_{21}^2$; in the form: $c^2 * \Delta t_{21}^2 - \Delta x_{21}^2 = \frac{\Delta P * P}{g^2}$. And: $c^2 * \Delta t^2\left(1 - \frac{\Delta w^2}{c^2}\right) = \frac{\Delta P * P}{g^2}$; $c^2\left(1 - \frac{\Delta w^2}{c^2}\right) = \frac{\Delta P * P}{(g^2 * \Delta t^2 = \Pi)} = \Delta P$. The difference in speeds in an orbit is measured by the eccentricity (ε). Then $c^2(1 - \varepsilon^2) = \Delta\Pi$. Taking the perihelion shift $\delta\varphi \approx \frac{\Delta A}{A}$, $A\delta\varphi = \Delta A$; we obtain the well-known Einstein formula: $c^2 A\delta\varphi(1 - \varepsilon^2) = (\Delta\Pi * \Delta A \equiv GM)$, $\delta\varphi \approx \frac{6\pi GM}{c^2 A(1-\varepsilon^2)} = 42{,}98''$for the perihelion of Mercury. This is also a mathematical truth. In these calculations: $\delta\varphi \approx \frac{6\pi GM}{c^2 A(1-\varepsilon^2)} = \frac{6*3{,}14*6.67*10^{-8}*2*10^{33}}{9*10^{20}*5{,}791*10^{12}*0{,}958} = 5{,}03356 * 10^{-7} rad$, $(1rad = 206264{,}8")$; and: $\delta\varphi = 0{,}1038"$, for 1 period of Mercury 88 days, and 100 years on Earth, we get: $\delta\varphi * \frac{36525}{88} = 43"$. And in these calculations the average value of the orbit of Mercury is taken $(A = 5{,}791 * 10^{12} sm)$, which means that we are talking about the rotation of the entire space-matter around the Sun. In this case, the dynamics of the vacuum values of space-time $(\frac{1}{2} g_{ik} = 0)$at point (2) is not taken into account $(e_i \perp e_k)$. There is no dynamics here. But here we can already substitute numbers and calculate the curvature of space-time, with its interpolation into the potential of the space of gravitational field velocities. With zero gravitational potential, the equations:$R_{ik} = \frac{1}{2} R(g_{ik} = gY) + \kappa(T_{ik} = \Pi = 0)$ Einstein's General Theory of Relativity, transform into equal equations of Einstein's Special Theory of Relativity, at two different points (laboratories) of Euclidean space, thus confirming in mathematical truth the first postulate of Einstein. $R_{ik} = (R = 1)(g_{ik})$; $\overline{x_2} = g_{ik} x_1$; $c * \overline{t_2} = g_{ik} t_1$; where $(i, k = 1{,}2{,}3{,}4)$, or $(c * \bar{t})^2 - (\bar{x})^2 = (c * t)^2 - (x)^2$.
Einstein's equation: $R_{ik}(1) - \frac{1}{2} R g_{ik}(2) = \frac{8\pi G}{c^4} T_{ik}$: we write in the form of gravitational potentials at two points of Riemannian space with a fundamental tensor:

$R_{ik}(1) = e_i(x^n) e_k(x^n) = v_i v_k = \Pi_1$ and $g_{ik}(2) = e_i(x^n) e_k(x^n) = v_i v_k = \Pi_2$

We understand that point (2) is represented by Euclidean space (r_0)without curvature. Note that the exact coincidence of point (2) of the curve with the circle is not in the mathematical truth of the full Einstein equation. Point (1) with curvature of Riemannian space (r) in a gravitational field. Then we will represent the gravitational potentials outside the masses in the form:

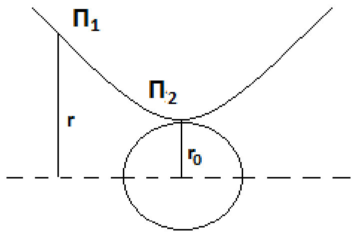


Fig.6a – gravitational potentials

$P_1 = c^2(\frac{r}{r})^2$, $P_2 = c^2(\frac{r_0}{r})^2$, with the energy-momentum tensor:

$$\frac{8\pi G}{c^4} T_{ik} = \frac{E^2}{p^2} = \frac{G(P^2K)^2}{(P^2t)^2} = \frac{GP^2P^2K^2}{c^4P^2t^2},$$

$$P_1 - P_2 = \frac{GP^2K^2}{c^4t^2} = \frac{Gc^2PK^2}{c^2Pt^2}, \qquad P_1 - P_2 = \frac{c^2GK^2}{c^2t^2}, \text{ or:}$$

$$c^2(\frac{r}{r})^2 - c^2(\frac{r_0}{r})^2 = \frac{c^2GK^2}{c^2t^2}, c^2(1 - \left(\frac{r_0}{r}\right)^2) = \frac{c^2GK^2}{c^2t^2}, \qquad (1 - \left(\frac{r_0}{r}\right)^2) = \frac{x^2}{c^2t^2},$$

$$\left(1 + \frac{r_0}{r}\right)\left(1 - \frac{r_0}{r}\right) = \frac{x^2}{c^2t^2}, \left(1 + \frac{r_0}{r}\right) c^2t^2 - \frac{x^2}{\left(1 - \frac{r_0}{r}\right)} = s^2(x), s^2(x) = 0, \text{ at } (x = 0).$$

$$\left(1 + \frac{r_0}{r}\right) c^2t^2 - \left(1 - \frac{r_0}{r}\right)^{-1} x^2 = s^2, \text{ or: } \quad ds^2 = \left(1 + \frac{r_0}{r}\right) c^2dt^2 - \left(1 - \frac{r_0}{r}\right)^{-1} dx^2.$$

These are the mathematical truths of the simplest model of radial relativistic space-time dynamics in a gravitational field without $(m_0 = 0)$ mass: $\frac{E^2}{p^2} = c^2$, or: $\frac{E^2}{c^2} = p^2 + (m_0 = 0)^2 c^2$. And the first thing to note is the non-zero $(r_0 \neq 0)$radius by definition. This is the radius of a circle instead of a sphere in the Schwarzschild solution. And this is the condition $(Rg_{ik} \neq 0)$ of the Einstein equation, as a mathematical truth in its full form. Here, talking about singularity is talking about nothing. There is no singularity in principle and by definition. The second point is that the Einstein equation considers gravity outside the sphere. There are no "travels" inside the sphere in the Einstein equation either, as in Newton's law $(r \neq 0)$.
All subsequent models of "black holes" have an event horizon, and so on. Many models of "black holes", collapsing photon spheres (stars in the limit) passing the Schwarzschild sphere, their diagrams are naive,

erroneous in the basic foundations and without arguments of the initial premises as causes, although mathematics and logic work further. But Einstein's equation is not about this at all. Einstein's equation does not contain mass $(m = 0)$and is deeper. It specifies the potentials, force fields and energy of the gravitational field at any point in the Universe outside of mass $(m = 0)$. And not a single model answers the question, WHY does the curvature of gravity arise and where does the energy of the field come from? In such listed conditions, as arguments of mathematical truths, to talk about a singularity in the center$(R = 0)$ "black hole", this is a conversation about nothing. There is no singularity in the center of "black holes". The question is closed. But there is a fact of the presence of "super massive compact objects" discovered in the core of galaxies. And there is another representation of the properties of such objects:

$$(R < R_0) = \frac{2GM}{(v_i > c)^2}$$

with the presence of superluminal space: $(v_i > c)$inside $(R < R_0)$such "black spheres" called "black holes". There are no "holes". The mass of such "black spheres" $(M \neq 0)$is not zero.

For infinite gravitational accelerations, $P = c^2 = (g_2 \to \infty)(\boldsymbol{Y_2} \to \boldsymbol{0})$at a singular point $(Y_2 \to 0)$, such as a "black hole", Einstein's equation speaks of relativistic dynamics:

$(R_{ik} = (g_2 \to \infty)(Y_2 \to 0)\ ) = \frac{1}{2}R(g_{ik} = g_1Y_1) + k(T_{ik} \equiv P = c^2)$, (g_2)acceleration at point 2,

$(c * \bar{t})^2 - (\bar{x})^2 = \frac{c^4}{(g_2 \to \infty)^2} \to 0$. Einstein's equation itself disappears:

$$(c * \bar{t})^2 - (\bar{x})^2 = 0, \text{ or: } (c * \bar{t})^2 = (\bar{x})^2, \quad \text{and} \quad (c * \overline{t \to 0})^2 = (\bar{x} = \boldsymbol{Y_2} \to \boldsymbol{0})^2.$$

This means that there is no such singularity in space-time. There are no "black holes" or singularities in Einstein's equation. All this is in strict mathematical truths. On the other hand, the mathematical truth here is that the non-zero difference of relativistic dynamics Δx_{21}^2, in Einstein's equation, is due to the velocities of masses less than the speed of light in the spheres themselves at points 2 and 1, and **outside the non-zero Euclidean spheres** with their various geodesic $(x_2^s \neq x_1^s)$curves in the gravitational field $(1 - \frac{2G(M)}{Rc^2} = 0)$. $R(x^s) = \frac{2G(M)}{c^2}$, $c^2 = \frac{2G(M \to 0)}{(R \to 0)}$, $(R \neq 0)$. There is no velocity of masses in the gravitational field equal to the velocity of light, since the Einstein equation itself disappears, together with singularities in the "black holes". They do not exist. The question is closed. In the equations there are only masses of **non-zero** spheres $(x_2^s \neq x_1^s)$as a source of curvature, equal to gravity, and fields of inductive masses (outside the "elevator") of "dark matter". But there are no equations that give "black holes, singularities. There are no such equations in Einstein's General Theory of Relativity.

The observed "black holes" in space-matter are presented as objects of various energy levels of the physical vacuum. These are objects of stellar (up to $30{,}8 * M_{Sun}$) masses, interstellar masses from $31 * M_{Sun}$ to $622000 * M_{Sun}$ solar masses), galactic masses (from $6 * 10^5 M_{Sun}$to $10^{10} M_{Sun}$), intergalactic masses (from $10^{10} M_{Sun}$to $10^{13} M_{Sun}$), quasar nuclei (from $10^{13} M_{Sun}$ to $10^{17} M_{Sun}$) and quasar galaxies up to $(10^{24} M_{Sun})$. They have increasing, multi-level shells of quantum subspaces, into which, for example, a photon cannot get. This goes beyond Einstein's general theory of relativity or, more precisely, beyond the Euclidean axiomatics of space-time. But there are no infinities and singularities here. They do not exist in Nature.

The average value of the local basis vector of the Riemannian space (Δe_{lr}), is defined as the uncertainty principle, but already for the entire wavelength $KL = \lambda(X +)$of the gravitational field of $G(X +) = M(Y -)$mass trajectories. This uncertainty in the form of a segment (OA = r), as a wave function $(r = \psi_Y)$of the mass $M(Y -)$trajectory of a quantum $(Y \pm)$in the gravitational $G(X +)$field of the Interaction. $\lambda_Y\ (X +) \equiv (2\psi_Y)$spin $(X +)$field. The projection $(Y -)$of the trajectory onto the plane of the circle (πr^2) gives the area of the probability $(\psi_Y)^2$of the mass quantum getting $M(Y -)$into the gravitational field $G(X +)$of the Interaction.

These are the initial elements of quantum gravity. $G(X +) = M(Y -)$ mass field. They follow from the equation of General Relativity.

2.2. Quantum gravity in a unified theory

The elements of the quantum gravity (X+ = Y-) mass field follow from the General Theory of Relativity. We are talking about the difference in relativistic dynamics at two (1) and (2) points of Riemannian space, as the mathematical truth of the Einstein tensor. (G. Korn, T. Korn, p.508). Here $g_{ik}(1) - g_{ik}(2) \neq 0$, $e_k e_k = 1$, by conditions $e_i(X -)$, $e_k(Y -)$, is the fundamental tensor $g_{ik}(x^n) = e_i(x^n)e_k(x^n)$ of Riemannian space in $(x^n)$the coordinate system.

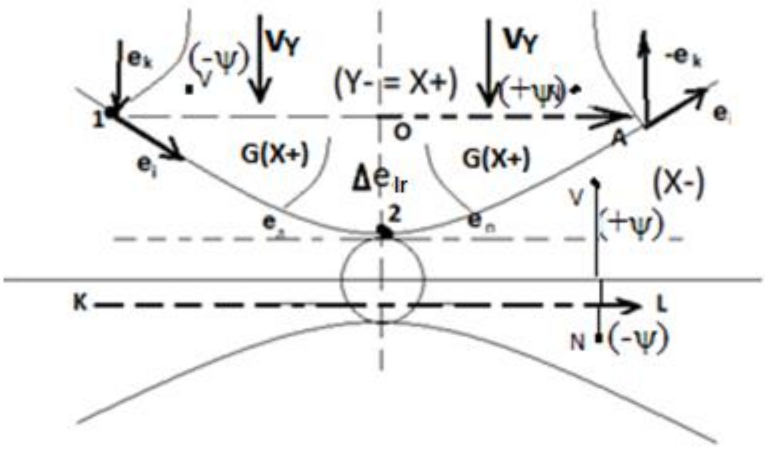


Fig. 7. Quantum gravitational (X+ = Y-) mass field.

The physical property of the gravitational (X+ = Y-) mass field is the principle of equivalence of inertial and gravitational mass. This is the equality of acceleration$a = v_Y * M(Y-)$ mass trajectories and acceleration $g = G$(X+)of the gravitational field, $v_Y * M(Y-) = \mathrm{a} = g = G(\mathrm{X}+)$, in velocity space $e_i(X-) = e_i(x^n = X,Y,Z) = v_X\left[\frac{K}{T}\right]$local basis vectors, $e_k(Y-) = e_k(x^n = X,Y,Z) = v_Y\left[\frac{K}{T}\right]$.

For example, in a "falling" elevator $(g - a) = 0$there is no acceleration, and the weight $P = m(g - a) = 0$, is equal to zero. Point (2) is reduced to the Euclidean space of the sphere $(x^s_{2=r})$, where $(\mathrm{e}_{\boldsymbol{i}} \perp \mathrm{e}_{\boldsymbol{k}})$, $(\mathrm{e}_{\boldsymbol{i}} * \mathrm{e}_{\boldsymbol{k}} = 0)$. Therefore, in the neighborhood of point (2) we select parallel vectors $(\mathrm{e}_{\boldsymbol{l}})$ and $(\mathrm{e}_{\boldsymbol{r}})$ and take the average value $\Delta\mathrm{e}_{lr} = \mathrm{e}_2 = \frac{1}{2}(\mathrm{e}_{\boldsymbol{l}} + \mathrm{e}_{\boldsymbol{r}})$. Taking $(\mathrm{e}_{\boldsymbol{2}} = \mathrm{e}_{\boldsymbol{k}})$ and: $(g_{ik}(1) - g_{ik}(2) \neq 0) = \frac{K^2}{T^2}$.

$\Delta\mathrm{e}_{lr} = \frac{1}{2}(\mathrm{e}_{\boldsymbol{l}} + \mathrm{e}_{\boldsymbol{k}}) = \frac{1}{2}\mathrm{e}_k(\frac{\mathrm{e}_l}{\mathrm{e}_{\boldsymbol{k}}} + 1)$, we get: $g_{ik}(1)(\mathrm{X}+) - g_{ik}(2)(\mathrm{X}+) = k\mathrm{T}_{ik}(Y-)$, or

$$g_{ik}(1) - \frac{1}{2}(\mathrm{e}_{\boldsymbol{i}}\mathrm{e}_{\boldsymbol{2}} = \mathrm{e}_{\boldsymbol{i}}\mathrm{e}_{\boldsymbol{k}} = g_{ik})\left(\frac{\mathrm{e}_l}{\mathrm{e}_{\boldsymbol{k}}} + 1\right)(2) = k\mathrm{T}_{ik}\,, \left(\frac{\mathrm{e}_l}{\mathrm{e}_\kappa} = R\right).\ (\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_{\boldsymbol{k}}), \qquad g_{ik}(x^S_{2=r=k})$$

For$(\mathrm{e}_{\boldsymbol{l}} = \mathrm{e}_{\boldsymbol{k}})$ we have $(\mathrm{T}_{ik} = 0)$. In the conditions$(\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_{\boldsymbol{r}})$ we are talking about the dynamics of the physical vacuum at fixed angles of parallelism, with different geodesics of the already dynamic sphere $(x^s_l \neq x^s_2 \neq x^s_r)$ in fixed $(\mathrm{e}_{\boldsymbol{l}} \neq \mathrm{e}_2 \neq \mathrm{e}_{\boldsymbol{r}} = const)$**,** that's why points $(\mathrm{e}_{\boldsymbol{r}} = \boldsymbol{\lambda}\mathrm{e}_2)$. For dynamic $(\partial\mathrm{e}_r/\partial\, t \neq 0)$, $(\varphi \neq const)$ angles of parallelism of space-matter we speak about acceleration in the sphere (XYZ) of non-stationary Euclidean space. In other words, the geodesic of the non-stationary Euclidean sphere already $g_{ik}(x^S_l \neq x^s_2 \neq x^s_r \neq const)$ changes. We are talking about acceleration of the already dynamic physical vacuum during its expansion. Einstein's General Theory of Relativity in its full form:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = k\mathrm{T}_{ik}, \qquad \left(k = \frac{8\pi G}{c^4}\right)$$

The misconception of Einstein's General Theory of Relativity is that the energy-momentum tensor in the equation does not contain mass. Mass is zero $(M = 0)$, $(\mathrm{m_0}^2 = \frac{\mathrm{E}^2}{c^4} - \frac{p^2}{c^2} = 0)$, in its classical understanding. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary $(\lambda \neq 0)$Euclidean space-time. In physical truth, in the equation of Einstein's General Theory of Relativity, in the unified Criteria of Evolution, Newton's formula (law) is "embedded": $(G) = 6{,}67 * 10^{-8}$.

$$E = c^4K, \quad P = c^4T, \quad (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \quad \Delta c_{ik}^2 = (G)v^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y = m_1)(c^2K_Y = m_2)}{c^2(c^2T^2 = K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the force of gravity acts in fields with zero mass. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$ in the external potential field of gravity $c^2(X+)$, with their Equivalence Principle, gives the force. The average value of the local basis vector of the Riemannian space ($\Delta\mathrm{e}_{лп}$) is defined as the uncertainty principle of mass $(Y-)$trajectories, but for the entire wavelength $KL = \lambda(X+)$gravitational field. Here the accelerations $G(X+) = v_YM(Y-)$of mass trajectories. This uncertainty in the form of a segment ($2 * \mathrm{OA} = 2r$), as a wave function $2\psi_Y(Y-)r = \lambda(X+)$ of the mass $M(Y-)$trajectory of a quantum $(Y\pm)$in the gravitational field $G(X+)$of Interaction. Here $2\psi_Y$, the spin $(\downarrow\uparrow)$ of the quantum field $\lambda(X+)$of gravity. The projection of the mass $(Y-)$trajectory of a quantum onto the plane of a circle (πr^2) gives the area of the probability of the mass

$(\psi_Y)^2$ trajectory of a quantum $(Y\pm)$, $G(X+)$falling into the quantum gravitational $M(Y-)$field of interaction $(Y-=\mathrm{X}+)$actions. In the general case, the points V; and N (Y -) mass or V; N (X-) charge trajectories are absolutely identical to each other in the line-trajectory of a single bundle of parallel straight lines. Each pair of points has its own wave function $\sqrt{(+\psi)(-\psi)}=i\psi$, in the interpretation of quantum entanglement. In this representation, quantum entanglement is a fact of reality, which follows from the axioms of dynamic space-matter. The entropy of quantum entanglement of a set gives the gradient of the potential, but here the Einstein equivalence principle of inertial $v_Y M(Y-)=G(X+)$ and gravitational mass.

These are the initial elements of quantum gravity. $G(X+)=v_Y M(Y-)$mass field. They follow from the equation of the General Theory of Relativity. Let us single out here the dimensions of the unified Criteria of Evolution of space-matter in the form of. Speed $v_Y\left[\frac{K}{T}\right]$; potential $(\Pi=v_Y^2)\left[\frac{\mathrm{K}^2}{\mathrm{T}^2}\right]$; acceleration $G(X+)\left[\frac{K}{T^2}\right]$; mass $m=\Pi\mathrm{K}(Y-=X+)$fields and charge $q=\Pi\mathrm{K}(X-=Y+)$ fields, their densities $\rho\left[\frac{\Pi K}{\mathrm{K}^3}\right]=\left[\frac{1}{T^2}\right]$; force $F=\Pi^2$; energy $\boldsymbol{\mathcal{E}}=P^2\mathrm{K}$; momentum $(p)=P^2\mathrm{T}$; action $\hbar=P^2\mathrm{KT}$, and so on.
Let us denote $(\Delta \mathrm{e}_{лп}=2\psi\mathrm{e}_k)$, $\mathrm{T}_{ik}=\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_i\Delta\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_{lr}=\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_i 2\psi\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_{\kappa}=2\psi\mathrm{T}_{ik}$, as an energy tensor $\boldsymbol{\mathcal{E}}-(p)$ momentum with a wave function (ψ). From this follows the equation:

$$R_{ik}-\frac{1}{2}R\mathrm{e}_i\Delta\mathrm{e}_{lr}=k\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_i\Delta\left(\frac{\mathcal{E}}{(\mathrm{p})}\right)_{lr}\text{ or}$$

$$R_{ik}(X+)=2\psi\left(\frac{1}{2}R\mathrm{e}_i\mathrm{e}_k(X+)+\kappa\mathrm{T}_{ik}(Y-)\right),\text{ and: }R_{ik}(X+)=2\psi\left(\frac{1}{2}Rg_{ik}(X+)+k\mathrm{T}_{ik}(Y-)\right).$$

This is the equation of the quantum Gravitational potential with the dimension $\left[\frac{\mathrm{K}^2}{\mathrm{T}^2}\right]$of the potential $(P=v_Y^2)$and the spin (2ψ). In the brackets of this equation, part of the equation of General Relativity in the form of the potential Π(X+)field of gravity. In field theory (Smirnov, v.2, p.361), the acceleration of mass $(Y-)$trajectories in $(X+)$the gravitational field of a single $(Y-)=(X+)$space-matter is represented by the divergence of the vector field:

$$divR_{ik}(Y-)\left[\frac{K}{\mathrm{T}^2}\right]=G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right],\text{ with acceleration }G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]\quad\text{and}$$

$$G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]=grad_l\mathrm{P}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]=grad_n\mathrm{P}(\mathrm{X}+)*\cos\varphi_{\mathrm{x}}\left[\frac{K}{\mathrm{T}^2}\right].$$

The relation $G(\mathrm{X}+)=grad_l\mathrm{P}(\mathrm{X}+)$is equivalent to $G_{\mathrm{x}}=\frac{\partial G}{\partial x}$; $G_Y=\frac{\partial G}{\partial y}$; $G_z=\frac{\partial G}{\partial z}$; representation. Here the total differential is $G_{\mathrm{x}}dx+G_Ydy+G_zdz=dP$. It has an integrating factor of the family of surfaces $P(\mathrm{M})=\mathrm{C}_{1,2,3\ldots}$, with the point M, orthogonal to the vector lines of the field of mass $(Y-)$trajectories in $(X+)$the gravitational field. Here $e_i(Y-)\perp e_k(X-)$. From this follows the quasipotential field:

$$t_T(G_{\mathrm{x}}dx+G_Ydy+G_zdz)=dP\left[\frac{\mathrm{K}^2}{\mathrm{T}^2}\right],\qquad\text{And}\qquad G(\mathrm{X}+)=\frac{1}{t_T}grad_l\mathrm{P}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right].$$

Here $t_T=n$, for the quasipotential field. Time $t=nT$, is $n$the number of periods $T$of quantum dynamics. And $n=t_T\neq 0$. From here follow the quasipotential surfaces: $\omega=2\pi/t$ quantum gravitational fields with period T, and acceleration:

$$\boldsymbol{G}(\mathrm{X}+)=\frac{\psi}{t_T}grad_l\mathrm{P}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right],\qquad(Y=Y-)[K]*\boldsymbol{G}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]=\mathrm{P}(\mathrm{X}+)\left[\frac{K^2}{\mathrm{T}^2}\right]\equiv\Delta c_{ik}^2$$

$$\boldsymbol{G}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]=\frac{\psi}{t_T}\left(grad_n(Rg_{ik})(\cos^2\varphi_{\mathrm{x}MAX}=(G)=6.67*10^{-8})\left[\frac{K}{\mathrm{T}^2}\right]+(grad_l(T_{ik})\right).$$

$$(G)=6.67*10^{-8}$$

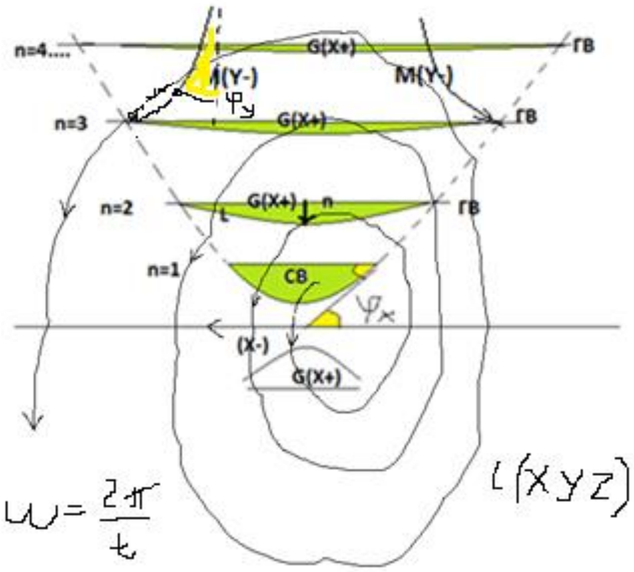


Fig. 8. Quantum gravitational fields.

This is fixed in the section, the chosen direction of the normal $n \perp l$. The addition of all such quantum fields of a set of quanta $rot_X G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]$of any mass forms a common potential "hole" of its gravitational field, where the Einstein equation is already in effect, with the formula (law) of Newton "sewn up" in the equation. $(G) = 6.67 * 10^{-8}$.

$$E = c^4 K\ , \quad P = c^4 T\ , \ (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2)\ , \quad \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4K^2 = E^2}{c^4T^2 = P^2} = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{(G)(c^2K_Y = m_1)(c^2K_Y = m_2)}{c^2(c^2T^2 = K^2)} = \frac{(G)m_1m_2}{c^2K^2}\ , \qquad \Delta c_{ik}^2 = \frac{(G)m_1m_2}{c^2K^2}\ , \qquad \Delta c_{ik}^2 c^2 = F$$

In dynamic space-matter, we are talking about the dynamics $rot_X G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]$of fields on closed $rot_\mathrm{X} M(Y-)$trajectories. Here is the line along the quasi-potential surfaces of the Riemannian space, with the normal $n \perp l$. The limiting angle of parallelism of mass $(Y-)$trajectories in $(X+)$the gravitational field gives the gravitational constant ($\cos^2\varphi(X-)_{MAX} = (G) = 6.67 * 10^{-8}$). Here $t_T = \frac{t}{T} = n$, the order of the quasi-potential surfaces, and $(cos\varphi(Y-)_{MAX} = \alpha = \frac{1}{137.036})$.

$$\boldsymbol{G}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right] = \frac{\psi * T}{t}\left((G) * grad_n R g_{ik}(\mathrm{X}+) + \alpha * grad_n T_{ik}(\mathrm{Y}-)\right)\left[\frac{K}{\mathrm{T}^2}\right].$$

This is the general equation of quantum gravity (X+ = Y-) of the mass field already **accelerations** $\left[\frac{K}{\mathrm{T}^2}\right]$, and the wave ψfunction, as well as $T$the period of quantum dynamics $\lambda(X+)$, with spin (↓↑), (2ψ). Acceleration fields, as is known, are already force fields. And this equation differs from the equation of gravitational **potentials** of the General Theory of Relativity. In a few words, we will note the concepts in such approaches.

Einstein then attempted to perform a parallel transfer of a vector in Riemannian space along a geodesic curve $(x^S)$from point 1 to point 2, obtaining a quantum of the gravitational field.

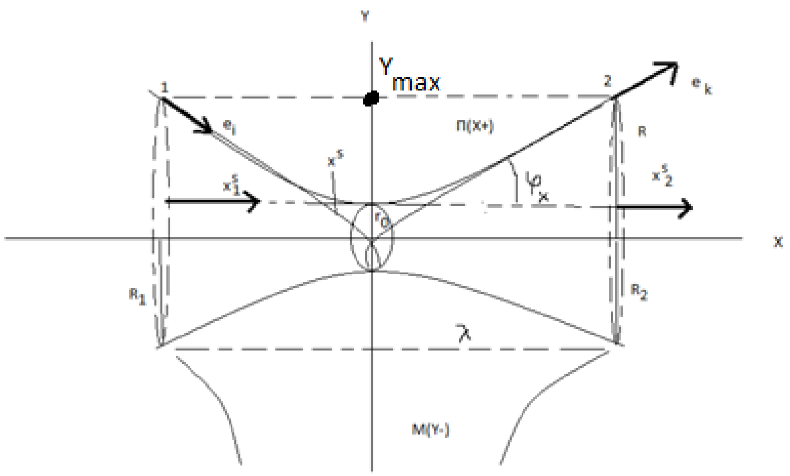


Fig. 8.1 interpretation of models.

In the mathematical procedures of Euclidean axiomatics, this is possible only by transferring the vector of (x_1^s)point 1 to exactly the same vector (x_2^s), but of point 2, as projections onto Euclidean space, local basis vectors of Riemannian space $e_i(x^s)$and $e_k(x^s)$. $(x_1^s = x_2^s = cos\varphi_{X\,max} = \sqrt{G})$,
or $(x_1^s * x_2^s = \sqrt{G}e_i\sqrt{G}e_k = (G)g_{ik}(x^s)$. At each fixed point of the geodesic curve (x^s), in the Euclidean axiomatics of the curvature of space-matter: $K = \frac{Y^2}{r_0}$(V.I. Smirnov, 1974, v.1, p.187), and the relations $\frac{Y}{r_0} = ch\left(\frac{X}{r_0}\right) = \frac{1}{2}(e^{x/r_0} + e^{-x/r_0})$, and $(X = \frac{\lambda}{2})$, the gravitational potential is equal to:

$P(X+) = (G)g_{ik}\left(1 - \left[\frac{Y}{r_0} = ch\left(\frac{\lambda/2}{r_0}\right)\right]\right) = kT_{ik}$. For: $h = 2\pi(\hbar = \Delta p_Y \Delta x_Y^s)$, $\Delta\lambda = \frac{2\pi\hbar}{\Delta p_Y}$, and $ch\left(\frac{\pi*\hbar}{\Delta p_Y * r_0}\right)$.

Here (p_Y), the momentum of the action of the quantum of the gravitational field. This is how Einstein's idea is realized. By transforming the gravitational potential $\Pi(X+)$, one can obtain the following variants:

a) $P(X+) = g * x^s = x^s \boldsymbol{G}(X+)$, the relation of relativistic dynamics $(\frac{Y}{r_0} = R)$ as rotations of the Lorentz transformations in planes of a circle $(R)$and $r(_0)$, as well as for $(cos\varphi(Y-)_{MAX} = \alpha)$, and: $Y = \alpha * (Y-)$, we already obtain quantum gravitational acceleration fields in the form:

$(G)g_{ik} = (G) * R * g_{ik}(X+) + \alpha(Y-)T_{ik}$ or: $\boldsymbol{G}(X+) = (G) * R * grad_n g_{ik}(X+) + \alpha * grad_n T_{ik}(Y-)$,

b) in Euclidean axiomatics, $cos\varphi(Y-)_{min} = 1$, $cos\varphi(X-)_{min} = 1$, and $Gg_{ik} = R_{ik}$, we obtain the classical equation of Einstein's General Theory of Relativity in the form: $R_{ik} - \frac{1}{2}R * g_{ik} = k * T_{ik}$.

c). From the standard equation of Einstein's General Theory of Relativity: $R_{ik} - \frac{1}{2}Rg_{ik} = \frac{8\pi G}{c^4}T_{ik}$, without the dynamics of the physical vacuum, in the unified Criteria of Evolution of space-time, the classical law of Newton follows: $F = \frac{GMm}{R^2}$. From the difference gravitational potentials at points (1) and (2) in the form: ($R_{ik} = e_i e_k(1) = U_1)\frac{1}{2}Rg_{ik} = e_i e_k(2) = U_2$, and ($U_1 - U_2 = \Delta U$). For example, for the Sun and Lands $(M = 2 * 10^{33}g)$ and $(m = 5.97 * 10^{27}g)$, we obtain ($U_1 = \frac{(G=6.67*10^{-8})(M=2*10^{33})}{R=1.496*10^{13}} = 8.917 * 10^{12}$) the gravitational potential at a distance to the Earth and $U_2 = \frac{(G=6.67*10^{-8})(m=5.97*10^{27})}{R=6.374*10^8} = 6.25 * 10^{11}$, the potential of the Earth itself. Then$(\Delta U = U_1 - U_2 = 8.917 * 10^{12} - 6.25 * 10^{11} = 8.67 * 10^{12})$, or $(\Delta U = 8.29 * 10^{12})$, we get: $\Delta U = \frac{8\pi G}{(c^4 = U^2 = F)}(T_{ik} = \frac{(U^2K)^2}{U^2T^2} = \frac{U^2(UK=m)^2}{U^2T^2} = \frac{Mm}{T^2})$, or $\frac{\Delta U}{\sqrt{2}} = \frac{8\pi G}{F}\frac{Mm}{T^2}$, $F = \frac{8\pi G}{(\Delta U/\sqrt{2})}\frac{Mm}{T^2} = \frac{GMm}{(\Delta U * T^2/\sqrt{2})/8\pi}$ without dark masses . It remains to calculate $\frac{\Delta U * T^2}{8\pi\sqrt{2}} = \frac{8.29*10^{12}*(365.25*24*3600=31557600)^2}{8\pi\sqrt{2}} = 2.3 * 10^{26}$ what corresponds to the square of the distance $(R^2 = 2.24 * 10^{26})$ from the Earth to the Sun, or $F = \frac{GMm}{R^2}$ Newton 's law.

d) as well as a conceptual model of loop quantum gravity, already with some reservations. If in the equation of the gravitational potential $Gg_{ik}\left(Y_{max} - \left[\frac{Y}{r_0} = ch\left(\frac{\lambda/2}{r_0}\right)\right]\right) = kT_{ik}$, and the idea Einstein on parallel transport, to represent the transformations of local basis vectors in the spinor field of the (S)SU (2) group to the homomorphic group SO (3), as well as with the generators of the Lorentz group in SO (1,3) of the space - time of the dynamic sphere, we obtain:$(R = x_Y^s) \to r_0 \to (R = x_Y^s)$ transformations. We are talking about the non-stationary Euclidean space of a dynamic hyperboloid in quantum relativistic dynamics (Quantum Theory of Relativity). Or $S = \left(Y_{max} - \left[\frac{Y}{r_0} = ch\left(\frac{\lambda/2}{r_0}\right)\right]\right)$, And $Gg_{ik} * S = kT_{ik}$ invariant $(S^T\epsilon S)$, with spinor Makowski metric: $\epsilon = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$. For$(Y = (r_0 = Y_0))$ and $(ch\left(\frac{X=0}{r_0}\right) = 1)$, these are strict mathematical truths. In essence, this is the additional Bell parameter, probabilistic potentials$g_{ik}(Y_{max} - (Y = r_0 ch\left(\frac{\lambda/2>x}{r_0}\right)))$ interactions of (X±) and (Y ±) quanta in experiments, with precise determination of coordinates (x). Here the interaction cross-section: $\pi Y_{max}^2(1 - \psi^2)has(\psi^2)$ probability of interaction of the wave function. We are talking about potentials P(Y +) of electric or P(X+) of mass fields. When homogeneous potentials interact ($P*P=P^2 = F = dp/dt$), an interaction force appears. The Einstein-Podolsky-Rosen paradox consists in measuring the parameters of an entangled particle indirectly, without changing its properties. Particles will be ideally entangled if they are born in the same quantum field with acceptable symmetry. To change the properties of an entangled particle, it is necessary to change the "superluminal background" of the physical vacuum, which is allowed by Einstein's formulas. Then, by studying (or changing) the influence of the Background Criteria on one particle, we know exactly the dynamics of the second particle, for example, in the interstellar space of a galaxy. Another acceptable option is when the background for an electron is a virtual photon, and for a proton, a virtual antineutrino. Then, if two electrons (on identical orbits of atoms) are irradiated with entangled photons, we will get the same effect. Such radiation can be programmed and change the structure of atoms (molecules) on the planet, but only at the speed of light. Such programming of a group of homogeneous or different atoms in molecules can be performed by homogeneous or different entangled photons in space (here or somewhere) or in time (now or later) with a single-color or "white" laser. And the emergent properties of new atoms or molecules can be accepted as control information. Thus, we obtain a quantum gravitational potential, with energy-momentum at each point of the Riemann space. In the technologies of quantum operators for extremals and wave functions in the dynamics of a quantum, we obtain a quantum gravitational field within the framework of the General Theory of Relativity. In such a concept, there is no equivalence principle and relativistic dynamics of the physical vacuum with a parameter (λ), in the Einstein equation. A spinor with scaling generators $(R) \to r_0 \to (R)$, for $Y = r_0\left(ch\frac{X}{r_0} = \frac{1}{2}(e^{\frac{X}{r_0}} + e^{-\frac{X}{r_0}})\right)$, with a scaling parameter (m), in the form $e^{m\begin{pmatrix}0 & 1\\ -1 & 0\end{pmatrix}} = \begin{pmatrix}0 & e^m\\ -e^m & 0\end{pmatrix}$, can give a diverging and converging spiral in the dynamics (x^s) of a geodesic. This adequately corresponds to the mathematical apparatus (answering the questions HOW) of loop quantum gravity of point gravitational potentials, with an explicit indication of gravitons, but with the indicated shortcomings and the absence of a source of the gravitational field. That is, without answers to the questions WHY exactly so.

For $n = 1$, (Fig. 2) the gravitational field $G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right] = \frac{\psi * T}{\Delta t} G * grad_n(Rg_{ik})(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right]$, of the gravity source is $G(\mathrm{X}+)$the field of the SI $(\mathrm{X}+)$– Strong Interaction. Quantum dynamics in time Δtwithin the period of dynamics T, is represented by the relation:

$$G(\mathrm{X}+) = \psi * T * G\frac{\partial}{\partial t} grad_n Rg_{ik}(\mathrm{X}+), \text{ where } T = \frac{\hbar}{\varepsilon = U^2\lambda}, \text{ is the period of quantum dynamics.}$$

The formula for the accelerations $\left[\frac{K}{\mathrm{T}^2}\right]$of the SW $(\mathrm{X}+)$field of the Strong Interaction takes the form:

$$G(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right] = \psi\frac{\hbar}{\Pi^2\lambda} G\frac{\partial}{\partial t} grad_n Rg_{ik}(\mathrm{X}+)\left[\frac{K}{\mathrm{T}^2}\right], \qquad grad_n = \frac{\partial}{\partial Y}.$$

Here $G = 6.67 * 10^{-8}$, $\hbar = \Pi^2\lambda\mathrm{T}$, is the flow of quantum energy of $\varepsilon = \Pi^2\lambda = \Delta mc^2$ the field of inductive mass $(\Delta m)$of the exchange quantum $(Y- = \frac{p}{n})$ of the Strong Interaction, and also $(Y- = 2n)$ nucleons $(p \approx n)$of the atomic nucleus. The inductive mass $\Delta m(Y- = \mathrm{X}+)$is represented by inseparable quark models $\Delta m(Y- = \gamma_0) = u$and $\Delta m(\mathrm{X}+ = \nu_e) = d$quarks, in the proton model:

$(\mathrm{X}\pm = p^+) = (\boldsymbol{Y} -= \gamma_0^+)(\boldsymbol{X} += \nu_e^-)(\boldsymbol{Y} -= \gamma_0^+)$**,** color gluon fields of interaction

$(\mathrm{X}\pm = p^+) = (\boldsymbol{Y} += \gamma_0^+)(\boldsymbol{X} -= \nu_e^-)(\boldsymbol{Y} += \gamma_0^+)$of quarks in their confinement $(\boldsymbol{Y}+)(\boldsymbol{Y}+) = (\mathrm{X}-)$**,** a single space-matter, $(\mathrm{X}\pm = p^+) = (\boldsymbol{u} = \gamma_0^+)(\boldsymbol{d} = \nu_e^-)(\boldsymbol{u} = \gamma_0^+)$**,** a proton in this case. Similar to the structure of quarks$(Y\pm = n) = (X = d)(Y = u)(X = d) = (\boldsymbol{X} -= \boldsymbol{p}^+)(\boldsymbol{Y} += e^-)(\boldsymbol{X} -= \nu_e^-)$ neutron with colored gluons $(\mathrm{X}+)(\mathrm{X}+) = (\boldsymbol{Y}-)$ or $(Y+)(Y+) = (X-)$ fields interactions. Solutions of the equations of quantum fields of the Strong Interaction, assume the presence of their inseparable quark models $(Y -= u)(X += d)$of a single $(Y -= \mathrm{X}+)$space-matter. These are exchange quantum, inductive mass fields of mesons. In more complex structures of elementary particles, other $(\mathrm{Y}- = \mathrm{X}+)$quark models $(Y -= \mathrm{c})$or, $(Y -= t)$ as well as $(X += s)$ and, $(X += b)$are manifested in the known laws of symmetry.

Each mathematical model, answering the question HOW, has its own reasons for internal connections. Lagrangian mechanics can only be applied to systems whose connections, if any, are all holonomic. (https://360wiki.ru/wiki/Lagrangian_mechanics). In quantum mechanics, where waves are particles with non-holonomic connections, in the fields of a single space-matter, the Lagrange formalism is impossible either in fact or by definition. By transformations, one can always come to another model of a physical fact, but with other reasons in other connections. Such models are mathematical, but the question is, where is the truth? For example, (+) charge of a proton in quarks and (+) charge of a positron without quarks. This is a fundamental contradiction. Both models work, but the physical reasons are lost. There is no answer to the question, WHY is it so? The quark- gluon fields of the proton, during its annihilation (p $^+$)+ (p $^-$), should transform into quantum fields of photons. But there is no such procedure. Why, where and how quarks disappear during decays of the π- meson is an open question. Feynman diagrams work yes, but the proton does not emit a photon in a charge interaction with the electron of the atom. These are the fundamental foundations of all atomic structures, the structure of matter. WHY is it so - there is no answer? Here we will answer WHY a particle has exactly these decay products or annihilations of indivisible quanta. We will proceed from general ideas $\psi(X) = e^{a(X)}\overline{\psi}(X)$ Dirac equations, when $Y = e^{a(X)}(X+)$, the dynamic field of a quantum:

$(X\pm)=ch\left(\frac{X}{Y_o}\right)(X+)cos\varphi(X-)=1,\quad cos\varphi(X-)=\sqrt{G}$, or $(Y\pm)=ch\left(\frac{Y}{X_o}\right)(Y+)cos\varphi(Y-)=1$, $cos\varphi(Y-)=\frac{1}{137.036}=\alpha$. Where $(cos\varphi\neq 0)$in both cases. In mass fields $m(Y-=X+)$, we will take the measured mass and the estimated time(T) decay of particles. From the most general ideas:

$m=\frac{\Pi^2}{Y\prime\prime}=\frac{\Pi^2T^2}{Y=\exp(z)}=T\Pi(\frac{K}{T})(\frac{K}{\mp})\mp\exp(-z)$, with a unit charge $q(X-=Y+)=1$, and the speed of light $c=1$ in the quantum itself, space-matter $m=T\frac{(\Pi K=q=1)}{G\alpha}(\frac{K}{T}=c=1)\exp(-z)$, Where $z=\frac{(m_X=\Pi X)}{\Pi=c^2=1)}=X(MeV)$ and $z=\frac{(m_Y=\Pi Y)}{\Pi=c^2=1)}=Y(MeV)$in a dynamic, hyperbolic$e^{\alpha(X)}$ space Dirac equations. For $G=6{,}67*10^{-8}$, $\alpha=\frac{1}{137.036}$, $\nu_\mu=0{,}27\ MeV$, $\gamma_o=3{,}13*10^{-5}MeV$, $\nu_e=1{,}36*10^{-5}MeV$,$\gamma=9{,}1*10^{-9}MeV$

mass spectrum according to decay (annihilation) products

Stable particles with annihilation products in a single $(Y\mp=X\pm)$space-matter:

$(X\pm=p)=(Y-=\gamma_o)(X+=\nu_e)(Y-=\gamma_o)=\left(\frac{2\gamma_o}{G}-\frac{\nu_e}{\alpha^2}\right)=938{,}275\ MeV$;

$(Y\pm=e)=(X-=\nu_e)(Y+=\gamma)(X-=\nu_e)=\left(\frac{2\nu_e}{\alpha^2}+\frac{\gamma*\alpha}{2G}\right)=0{,}511\ MeV$;

unstable particles already according to the products and time of decay.$G\alpha=4.8673*10^{-10}$

$(Y\pm=\mu)=(X-=\nu_\mu)(Y+=e)(X-=\nu_e)=\frac{(T=2.176*10^{-6})}{G\alpha}\exp\left(\nu_\mu+e+\frac{\nu_e ch1}{\alpha^2}=1{,}1751\right)=105{,}66\ MeV$,

Here and further in the calculations we will designate in underlined font,$(\underline{\mu}=1{,}1751)$ indicator exp(). It shows the features of fragmentation of the dynamic field $\exp(\alpha(X))$in the Dirac equation.

$(Y\pm=\pi^\pm)=(Y+=\mu)(X-=\nu_\mu)=\frac{(T=2.76586*10^{-8})}{2G\alpha}\exp\left(\underline{\mu}+\nu_\mu ch1\right)=139{,}57\ MeV$, $(\underline{\pi^\pm}=1{,}59173)$

$(X-=\pi^0)=(Y+=\gamma_o)(Y+=\gamma_o)=\frac{(T=7.8233*10^{-17})}{G^2\alpha}\exp\left(\frac{2\gamma_0^2}{G\alpha}\right)=134{,}98\ MeV$, $(\underline{\pi^0}=4{,}025599)$

$(X-=\eta^0)=(X+=\pi^0)(Y-)(X+=\pi^0)(Y-)(X+=\pi^0)=\frac{(T=5.172*10^{-19})}{(G\alpha)^2}\exp\left(\frac{3\underline{\pi^0}}{2}-\frac{\gamma ch2}{G}\right)=547{,}853\ MeV$,

$(X-=\eta^0)=(Y-=\pi^+)(X+=\pi^0)(Y-=\pi^+)=\frac{(T=5.1*10^{-19})}{\sqrt{2}(G\alpha)^2}\exp\left(2\underline{\pi^\pm}+\frac{\underline{\pi^0}}{2}\right)=547{,}853\ MeV$,

$(Y\pm=K^+)=(Y+=\mu)(X-=\nu_\mu)=\frac{(T=1.335*10^{-8})}{G\alpha}\exp 2\left(\underline{\mu}+\nu_\mu\right)=493{,}67\ MeV$,

$(Y\pm=K^+)=(Y+=\pi^+)(X-=\pi^0)=\frac{(T=1.01398*10^{-8})}{G\alpha}\exp\left(\underline{\pi^+}+\underline{\pi^0}/2\right)=493{,}67\ MeV$. $\underline{K^-}=3{,}16535$

$(Y-=K_S^0)=(X+=\pi^0)(X+=\pi^0)=\frac{(T=0{,}885*10^{-10})}{G\alpha}\exp\left(2\underline{\pi^0}-\frac{\gamma}{G}\right)=497{,}67\ MeV$,

$(X-=K_L^0)=(Y-=\pi^\pm)(X+=\nu_e)(Y-=e^\mp)=\frac{(T=4{,}9296*10^{-8})}{G\alpha}\exp\left(\underline{\pi^\pm}+e^\mp+\frac{2\nu_e}{\alpha^2}\right)=497{,}67\ MeV$,

$(X-=K_L^0)=(Y-=\pi^\pm)(X+=\nu_\mu)(Y-=\mu^\mp)=\frac{(T=5{,}1713*10^{-8})}{G\alpha}\exp\left(\underline{\pi^\pm}-\frac{\underline{\mu^\mp}}{2}+2\nu_\mu\right)=497{,}67\ MeV$,

$(X-=\rho^0)=(Y+=\pi^+)(Y+=\pi^+)=\frac{(T=5{,}02*10^{-24})}{G\alpha}\exp\left(\frac{2\underline{\pi^\pm}}{\sqrt{\alpha}}(1+\frac{1}{2\sqrt{\alpha}}\right)=775{,}49\ MeV$;

$(X\pm=\rho^+)=(X+=\pi^0)(Y-=\pi^+)=\frac{(T=6{,}47566*10^{-24})}{G\alpha}\exp\left(\frac{\underline{\pi^0}}{\sqrt{\alpha}}-\frac{\underline{\pi^+}(\sqrt{\alpha}-1)}{2}\right)=775{,}4\ MeV$;

Similarly, hadrons

$(Y\pm=n)=(X-=\nu_e)(Y+=e)(X-=p)=(T=878{,}77)\exp\left(\frac{\nu_e}{\sqrt{G}}+\frac{e}{2}-p\sqrt{G}\right)=938{,}57\ MeV$,

$(X\pm=\Lambda^0)=(X+=p^+)(Y-=\pi^-)=\frac{(T=2.604*10^{-10})}{G\alpha}\exp(\alpha p^++\underline{\pi^-}/2)=1115{,}68\ MeV$, $\underline{\Lambda^0}=7{,}642837$

$(Y\pm=\Lambda^0)=(Y+=n)(X-=\pi^0)=\frac{(T=1.5625*10^{-10})}{G\alpha}\exp\left(\alpha n+\frac{\underline{\pi^0}}{2ch1}\right)=1115{,}68\ MeV$, $\underline{\Lambda^0}=8{,}153$

$(Y-=\Sigma^+)=(X+=p^+)(X+=\pi^0)=\frac{(T=8.22*10^{-11})}{G\alpha}\exp\left(\alpha p^++\frac{\underline{\pi^0}}{2}\right)=1189{,}37\ MeV$,

$(X-=\Sigma^+)=(Y+=n)(Y+=\pi^+)=\frac{(T=8.1*10^{-11})}{G\alpha ch1}\exp(\alpha n+\pi^+)=1189{,}37\ MeV$,

$(X-=\Sigma^-)=(Y+=n)(Y+=\pi^-)=\frac{(T=1.25*10^{-10})}{G\alpha}\exp(\alpha n+\pi^+)=1189{,}37\ MeV$,

$(X-=\Sigma^0)=(Y+=\Lambda^0)(Y+=\gamma)=\frac{(T=7.4*10^{-20})}{G^2\alpha*ch1}\exp\left(\frac{\underline{\Lambda^0}+\gamma/G}{2}\right)=1192{,}64\ MeV$, $\underline{\Lambda^0}=7{,}642837$,

$(Y\pm=\Xi^0)=(Y+=\Lambda^0)(X-=\pi^0)=\frac{(T=2.5984*10^{-10})}{G\alpha}\exp(\underline{\Lambda^0}-\underline{\pi^0}\sqrt{\alpha})=1314{,}86\ MeV$, $\underline{\Lambda^0}=8{,}153$, $\underline{\Xi^0}=7{,}809$,

$(X\pm=\Xi^-)=(X+=\Lambda^0)(Y-=\pi^-)=\frac{(T=1.3917*10^{-10})}{G\alpha}\exp(\underline{\Lambda^0}+\underline{\pi^-}/2)=1321{,}71\ MeV$, $\underline{\Lambda^0}=7{,}642837$, $\underline{\Xi^-}=8{,}43869$,

$(X-=\Omega^-)=(Y+=\Lambda^0)(Y+=K^-)=\frac{(T=8.018*10^{-11})}{G\alpha}\exp(\underline{\Lambda^0}-\underline{K^-}/2)=1672{,}45\ MeV$, $\underline{\Lambda^0}=7{,}642837$,$\underline{K^-}=3{,}16535$

$(X-=\Omega^-)=(Y+=\Xi^0)(Y+=\pi^-)=\frac{(T=6.734*10^{-11})}{G\alpha}\exp(\underline{\Xi^0}+\underline{\pi^-})=1672{,}45\ MeV$, $\underline{\Xi^0}=7{,}809$,

$(Y-=\Omega^-)=(X+=\Xi^-)(X+=\pi^0)=\frac{(T=7.1147*10^{-11})}{G\alpha}\exp(\underline{\Xi^-}+\underline{\pi^0}/ch2)=1672{,}45\ MeV$, $\underline{\Xi^-}=8{,}275$,

Such coincidences also cannot be accidental. Similarly, in the unified fields of space-matter, the Bosons of the electro $(Y+)=(X-)$weak interaction:

$$НОЛ(Y) = (Y+= e^{\pm})(X-= \nu_{\mu}^{\mp}) = \frac{2\alpha*\left(\sqrt{m_e(m_{\nu_\mu})}\right)}{G} = (1+\sqrt{2}*\alpha)m(W^{\pm}),$$ or:

$$НОЛ(Y) = m(W^{\pm}) = \frac{2*(\sqrt{0.511*0.27})}{137.036*6.674*10^{-8}*(1+\frac{\sqrt{2}}{137.036})} = 80.4\ GeV,$$

with charge $(e^{\pm})$, and inductive mass: $m(Y-) = (\sqrt{2}*\alpha)*m(W^{\pm})$. It's like a "dark $m(Y-)$mass".

$$НОЛ(X) = (X+= \nu_{\mu}^{\mp})(Y-= e^{\pm}) = \frac{\alpha*\left(\sqrt{(2m_e)m_{\nu_\mu}exp1}\right)}{G} = 94{,}8\ GeV = m(Z^0)$$

and also new one's <u>stable </u>particles on colliding beams of muon antineutrinos (ν_{μ}^{-})

$$НОЛ(Y=e_1^-) = (X-=\nu_{\mu}^-)(Y+=\gamma_O^-)(X-=\nu_{\mu}^-) = \frac{2\nu_{\mu}}{\alpha^2} = 10.216GeV$$,

On the counter beams of positrons (e^{+}), which are accelerated in the flow $(Y-=\gamma)$, photons of the " **white" laser** in the form of:

$$НОЛ(X=p_1^+) = (Y-=e^+)(X+=\nu_{\mu})(Y-=e^+) = \frac{2m_e}{G} = 15{,}3TeV$$,

These are indivisible quanta of the new substance. On colliding beams of antiprotons (p^{-}), the following takes place:

$$НОЛ(Y\pm= e_2^-) = (\boldsymbol{X}-= p^-)(Y+= e^+)(\boldsymbol{X}-= p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV.$$

For counter-propagating particles $НОЛ(Y-) = (X+= p^{\pm})(X+= p^{\pm})$, the mass of the Higgs boson quantum is calculated:

$$M(Y-) = (X+= p^{\pm})(X+= p^{\pm}) = \left(\frac{2m_0}{2\alpha} = \overline{m_1}\right)(1-3\alpha)$$

or $$M(Y-) = \left(\frac{2m_p}{2\alpha} = \frac{m_p}{\alpha} = \overline{m_1}\right)(1-3\alpha) = \frac{0{,}93828\ GeV}{(1/137{,}036)}\left(1-\frac{3}{137{,}036}\right) = 125{,}76\ GeV$$

and the mass of the tau lepton:

$$M(X) = (\boldsymbol{Y}-= e^-)(X+= \nu_t^+)(\boldsymbol{Y}-= e^-) = \frac{(Y-)(Y-)}{(X+)} = \frac{(e=0.511MeV)}{\sqrt{1.24}*\sqrt{G=6.67*10^{-8}}} = 1776.835MeV$$

There are other methods for calculating the mass spectrum, but this logical construction gives the calculation of the mass spectrum with minimal parameters. The initial parameters here are only the decay products. This model is still imperfect, but there are no problems and contradictions of the Standard Model.

In other methods of calculating the mass spectrum, we speak of another technology of the theories themselves, in which Bohr's postulates, the uncertainty principle, the principle of equivalence of masses, are presented as axioms of dynamic space-matter. Here are other initial concepts and, on their basis, other causes and effects in the models. The same mass spectrum is calculated in quantum models. For example, in the quantum relativistic dynamics of the "gauge field", a dynamic mass is formed in the form of: $\overline{W} = \frac{a_{11}W_Y \pm c}{a_{22} \pm W_Y/c}$, at the extreme point, $(\pm K_Y)^2 = 0 = \frac{P^2}{b^2} - P*\overline{T}^2$, $P_1 = 0$, $P_2 = b^2*\overline{T}^2$, with its own velocity space in Spontaneous Symmetry Breaking, ${W_Y}^2 = \frac{P}{2} = \frac{b^2*\overline{T}^2}{2}$, or $\overline{W} = \frac{\overline{T}}{\sqrt{2}}\left(\pm b = \frac{P^2=F_Y}{\overline{m}}\right)$,

$$\overline{m}*W_Y = \frac{1}{\sqrt{2}}(\pm F_Y\overline{T} = \pm p_Y), \quad \overline{m}*W_Y = \frac{\pm p_Y}{\sqrt{2}}, \quad \overline{m} = \frac{p_Y}{W_Y\sqrt{2}}.$$

For the masses$(Y-= X+)$ fields, under the conditions of Global (GI) and Local Invariance (LI), we obtain:

$$\overline{K}_Y = (a_{11} = cos\gamma)_{ГИ}K(ch\frac{X}{Y_0}cos\varphi_X)_{ЛИ}(X+) + K_X(X-),$$ or

$$(P\overline{K}_Y = \overline{m}) = (a_{11} = cos\gamma)_{ГИ}\left(\frac{\overline{m}=m_0}{\sqrt{2}}\right)\left(\left(ch\frac{X}{Y_0} = 1\right)/ch\frac{Y}{X_0})cos\varphi_X\right)_{ЛИ}(X+= Y-) + (PK_X = m_0)(X-).$$

Symmetries of such mass$(X+= Y-)$ trajectories in levels n- convergence, under conditions of $ch\frac{Y}{X_0}cos\varphi_X = 1$, quantum relativistic corrections $(1-(\alpha = W/c = 1/137)^2) = (1+\alpha)(X+)(1-\alpha)(X-)$in levels, form a new and new stage n- convergence, and in the most general form, a dynamic mass:

$$\overline{m} = \left(\left[\left\{\frac{m_0}{\sqrt{2}ch2} = \overline{m}_1\right\}(1+\alpha) = \overline{m}_2\right](1+\alpha) = \overline{m}_3\right)(X+) + m_0(X-).$$

in the quantum field of the Dirac equation, already without the scalar boson. For example, for $m_0 = m_p = 938{,}279MeV$

$\overline{m} = \left\{\frac{m_p}{\sqrt{2}ch2} = \overline{m}_1\right\}\left(\alpha = \frac{1}{137.036}\right)(X+) + m_p(X-) = 939.57\ MeV = m_n$,

$\overline{m} = \left\{\frac{m_p}{\sqrt{2}ch2} = (\overline{\pi}^0)\right\}(X+) + m_n(X-) = (\Lambda^0 = 1115.9\ MeV)$, $\overline{\pi}^0 = 176{,}35\ MeV$,

$\overline{m} = [\left\{\frac{m_p}{\sqrt{2}ch2} = \overline{m}_1\right\}(1+\alpha) = \overline{\pi}^0(1+\alpha) = \overline{m}_2 = \overline{\pi}^-](X+) + m_p(X-) = (\Lambda^0 = 1115.9\ MeV)$, $\pi^- = 177{,}637\ MeV$

With relativistic masses π- mesons, with speeds$(W = 0{,}64 * c)$ in quantum relativistic dynamics. Similarly, further:

$\Sigma^{+}(p^{+},\pi^{0}) = \sqrt{2} * \overline{\pi}^{0}(1+\alpha)(X+) + m_{p}(X-) = 1189{,}5\ (1189{,}64)MeV,$

$\Sigma^{-}(n,\pi^{-}) = \sqrt{2} * \overline{\pi}^{-}(1+\alpha ch2)(X+) + m_{n}(X-) = 1197{,}68\ (1197{,}3)MeV,$

$\Sigma^{0}\left(\Lambda^{0},\gamma\right) = \sqrt{2} * \overline{\pi}^{0}(1+\alpha)^{2}(X+) + m_{n}(X-) = 1192{,}6\ MeV, \Lambda^{0} = \Lambda^{0}(n,\pi^{0}),$

$\Xi^{0}\left(\pi^{0},\Lambda^{0}(n,\pi^{0})\right) = \left[2\overline{\pi}^{0}(1+\alpha)^{2}(1+2\alpha ch2)\right](X+) + m_{p}(X-) = 1315{,}8MeV^{**}$

$\Xi^{-}\left(\pi^{-},\Lambda^{0}(p,\pi^{-})\right) = \left[2\overline{\pi}^{-}\left(1+2\sqrt{2}\alpha ch2\right)\right](X+) + m_{p}(X-) = 1321{,}14MeV,$

$\Omega^{-}(\Xi^{0},\pi^{-})(\Xi^{-},\pi^{0}) = \left[\frac{ch2}{\sqrt{2}}(\overline{\pi}^{0}(1+\alpha)^{2})ch1\right](X+) + m_{p}(X-) = 1672{,}8\ MeV,$

$\Lambda_{C}^{+} = \left[2(\frac{m_{p}}{\sqrt{2}} = \overline{\pi}^{0}ch2)(1+\alpha)^{2}(X+) + m_{p}(X-)\right] = \left[2ch2(\overline{\pi}^{0}(1+\alpha) = \overline{\pi}^{-})(1+\alpha)(X+) + m_{p}(X-)\right] = 2284{,}6MeV$

Let us denote the constant $(1+(ch2)^{2}(\alpha)^{2}) = S = 1{,}10328758$, the relativistic mass $(m_{0} = 2797{,}53375\ MeV)$and rewrite the formula as: $\overline{m} = \left(\left(\left((m_{0}S = \overline{m}_{1})S = \overline{m}_{2})S = \overline{m}_{3}\right)S = \overline{m}_{4}\right) + \frac{1}{2}m_{0}\alpha$, then

charmonium levels:

$\overline{m} = (\overline{m}_{1} = 3086{,}48MeV) + \left(\frac{1}{2}m_{0}\alpha = 10{,}2\ MeV\right) = 3096{,}68MeV = j/\psi$,$(3096{,}7MeV)$ valid,

$\overline{m} = (\overline{m}_{2} = 3405{,}275MeV) + \left(\frac{1}{2}m_{0}\alpha = 10{,}2\ MeV\right) = 3415{,}475MeV = \chi_{0}$, $(3415\ MeV)$,

$\overline{m} = \chi_{0}(1+\alpha * ch2) = 3509{,}27MeV = \chi_{1}$, $(3510\ MeV)$,

$\overline{m} = \left(\frac{m_{1}}{(1+\alpha * ch2)^{2}} = 2923{,}74MeV\right) + (2m_{0}\alpha = 40829MeV) = 2964{,}6MeV = \eta_{C},\qquad (2980\ MeV),$

Similarly, mass fields$(Y- = m_{e})$ electron, $\overline{m} = \frac{m_{e}}{(cos\varphi = \sqrt{G/2})} = m_{0} = 2798.16\ MeV$, give:

$\overline{m} = \frac{2m_{0}}{(ch2)^{3}}\left(1+\frac{\alpha}{\sqrt{2}}\right) = 105{,}6\ MeV$, *muon*, and then mesons:

$\overline{m} = \frac{m_{0}}{\sqrt{2}(ch2)^{2}} = 139{,}78\ MeV = \pi^{\pm}$, $\qquad \overline{m} = \frac{m_{0}}{\sqrt{2}(ch2)^{2}}(1-\sqrt{2} * \alpha * ch2) = 134{,}3\ MeV = \pi^{0}$,

$\overline{m} = \left(\frac{m_{0}}{4\sqrt{2}} = m_{1}\right) * \left(1+\frac{\alpha}{\sqrt{2}}\right) = 497{,}2\ MeV = K^{0}, \overline{m} = (m_{1})/\left(1+\frac{\alpha}{2\sqrt{2}}\right) = 493{,}4\ MeV = K^{\pm},$

Such a technology of calculations, in the conditions of $(X\pm = Y\mp)$dynamic $(\varphi \neq const)$space, in Euclidean axiomatics $(\varphi = const)$and without $(X\pm = Y\mp)$fields, is impossible in principle. We are talking about a different technology of the theories themselves. Just as it is impossible to imagine the quantum relativistic dynamics of the Quantum Theory of Relativity in Euclidean axiomatics $(\varphi = 0 = const)$. This is impossible in principle.

Different structures of decay products of elementary particles give different generations $(Y-= u)(X+= d)$of quarks, as models. Here quanta $(Y- = p/n)$ and $(Y- = 2n)$ Strong Interaction of nucleons (p $\approx n$)of the nucleus. Since the density ($\frac{\partial B(X-)}{\partial T}$)of the field of the neutrino trajectory $\rho(X- = \nu_{e})$ is much greater than the density of the field of the proton trajectory $\rho(X- = p)$, then in the quanta of the Strong Interaction of nucleons (p $\approx n$)of the nucleus, with the decay products of the neutron

$(Y\pm = n) = (X = d)(Y = u)(X = d) = (\boldsymbol{X}-= \boldsymbol{p}^{+})(\boldsymbol{Y}+= e^{-})(\boldsymbol{X}-= \nu_{e}^{-})$ and

proton annihilation $(X\pm = p^{+}) = (Y = u)(X = d)(Y = u) = (\boldsymbol{Y}-= \gamma_{0}^{+})(\boldsymbol{X}+= \nu_{e}^{-})(\boldsymbol{Y}-= \gamma_{0}^{+})$, protons are "tied" by a "rigid string" of the vortex magnetic field of $(X- = \nu_{e})$the neutrino trajectory, as the reason for the stability of such quanta of the Strong Interaction in the nuclei of atoms. In this case, we have quanta of the Strong Interaction $\left(Y-\right) = (X+)(X+)\big) = cos\varphi_{Y} * 2p = 2\alpha * p = (Y- = p/n)$, $(G) = 6{,}67 * 10^{-8}$

From this follows the relationship: $2\alpha * p = \Delta m(Y-) = 13{,}69\ MeV$. This corresponds to the equation:

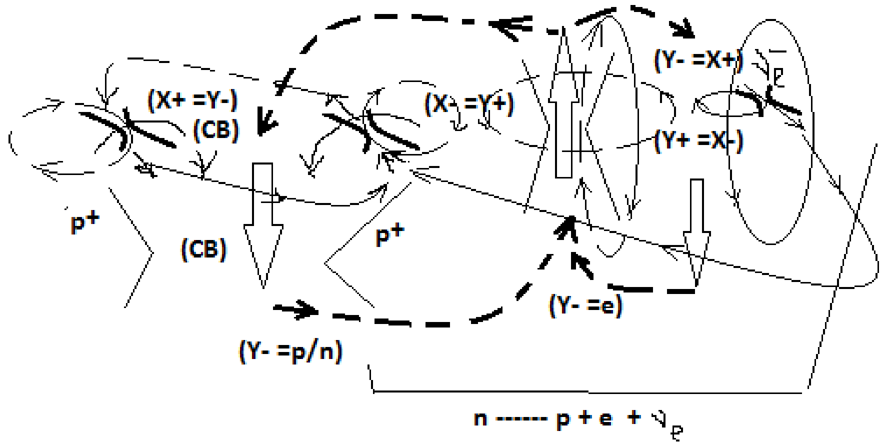
$$G(X+) = \psi\frac{\hbar\lambda}{\Delta m^{2}}(G)\frac{\partial}{\partial t}grad_{n}Rg_{ik}(X+).$$

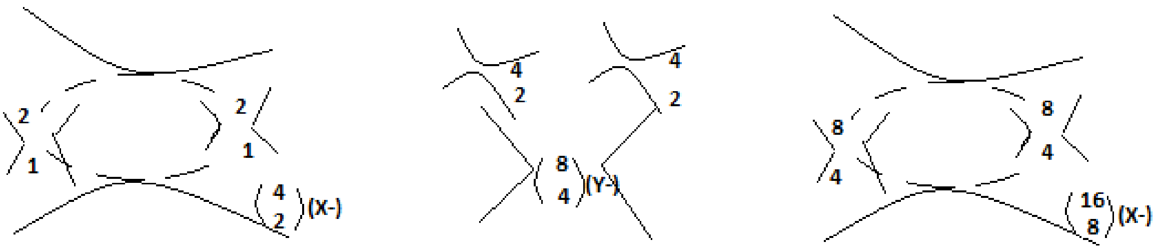
We have a quantum$(Y- = p/n)$ Strong Interaction in nuclei, with minimum $\Delta E_{N} = 6{,}85\ MeV$and maximum $\Delta E_{N} \approx 8{,}5\ MeV$specific binding energy or $\Delta m(Y-) = 17\ MeV$, nucleons of the nucleus. By analogy with the bremsstrahlung of an electron $(Y-= e^{-}) \rightarrow (Y-= \gamma^{+})$of X-rays, physically radiation is acceptable $\left(Y-= \alpha\left[\left(\frac{p^{+}}{n}\right) или (2n)\right] = e_{+}^{*}\right) \rightarrow (Y-= (14-17)\ MeV = \gamma_{-}^{*})$ quanta of "dark matter" with mass$(Y-)$ trajectories. They have$(Y+)$ charge field and can react to a magnetic field. We are talking about the bremsstrahlung of the $^{2}_{1}H$deuterium nucleus. Such quanta of "dark matter" are absorbed by quanta$(Y- = p/n)$ shells nuclei of atoms. Similar quanta of "dark matter" are given by the nuclei of planets $(Y-= 223{,}36GeV)$, stars $(Y-= 4{,}3 * 10^{6}GeV)$, "black holes" $(Y-= 1{,}5 * 10^{7}TeV)$ and galactic nuclei $(Y-= 2{,}48 * 10^{11}TeV)$.

Unified Maxwell equations for electromagnetic $(Y+= X-)$fields and gravity $(X+ = Y-)$ mass fields of quanta $(Y- = p/n)$and $(Y- = 2n)$the Strong Interaction of nucleons of the nucleus,

$c * rot_Y B(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+);$ $rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T};$	$c * rot_X M(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$ $rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$

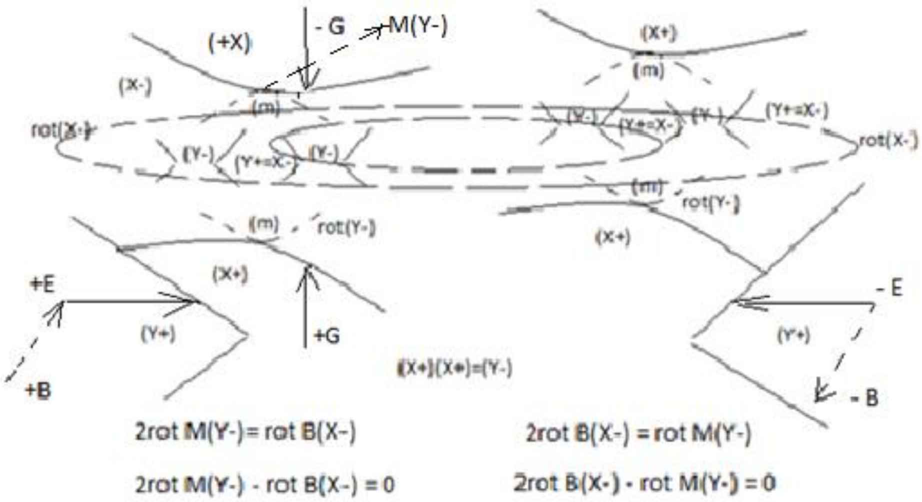
suggest the presence in the nucleus of closed $rot_Y B(X-)$vortex shells, magnetic fields and vortex $rot_X M(Y-)$mass $(Y-)$trajectories of exchange quanta, as $(\Delta E = \Delta m(Y-)c^2)$the binding energy of the nucleus $\Delta m = 2\alpha m(p) = \frac{2*938,28}{137,036} = 13,694\ MeV$, with a minimum specific binding energy of the nucleons of the nucleus $\Delta E = 6,85\ MeV$, that is, a mass defect(m) on the diagram. Let us represent the quanta $(Y- = p/n)$ and $(Y- = 2n)$ the Strong Interaction of nucleons in the form of models in the levels and shells of the atomic nucleus.





Quantum $(Y- = p/n)$and similar$(Y- = 2n)$ Strong Interaction

Based on these properties $(X- = p^+)$and$(X- = \nu_e^-)$, the decay time of a neutron in a strong $(X-)$magnetic field should increase. This is verified in an experiment.



Such quanta$(Y- = p/n)$ and $(Y- = 2n)$the Strong Interaction of the nucleus form structures $(X\pm)$And$(Y\pm)$ quanta of the nucleus. At the same time, in the nucleus there is really a general state of the equations of the dynamics of a single $(X\pm = Y\mp)$ space-matter. Let us sum up these equations for closed vortex $rot(Y-)$ And $rot(X-)$ fields in the "standing waves" of the core, without their densities $\lambda_1 E(Y+)$ And $\lambda_2 G(X+)$ in the form: $c * rot_Y B(X-) + c * rot_X M(Y-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \varepsilon_2 * \frac{\partial G(X+)}{\partial T}$, and we will reduce these fields to $(X\pm)$and$(Y\pm)$ quanta of the nucleus of one frequency $\frac{\partial}{\partial T} = \omega$, oscillations of all quanta in the structure of the nucleus. $c * rot_X M(Y-) - \varepsilon_1 \omega\, E(Y+) = \varepsilon_2 \omega G(X+) - c * rot_Y B(X-) = 0$, with zero densities outside the vortices. The fact is that the "+" substance of the mass $(Y- = X+)$fields corresponds to the "-" charge of the electric $(Y+)$ fields$(Y\pm)$ quanta, and vice versa for antimatter. A single frequency of oscillations of all quanta in the structure of the nucleus in a single$(X\pm = Y\mp)$ space-matter has the form:

$$\omega = \frac{c * rot_X M(Y-)}{\varepsilon_1\, E(Y+)} = \frac{c * rot_Y B(X-)}{\varepsilon_2 G(X+)} \text{ or } \varepsilon_2 G(X+) * c * rot_X M(Y-) = \varepsilon_1\, E(Y+) * c * rot_Y B(X-),$$

for gravity $(X+ = Y-)$ mass and electromagnetic $(Y+ = X-)$fields of nuclear quanta. The unified fields for the orbital electrons external to the nucleus are summed in exactly the same way.$(X\pm = Y\mp)$,

$$rot_X E(Y+) + rot_Y G(X+) = \omega B(X-) + \omega M(Y-), \qquad rot_Y G(X+) - \omega B(X-) = \omega M(Y-) - rot_X E(Y+) = 0,$$

$\omega = \frac{rot_Y G(X+)}{B(X-)} = \frac{rot_X E(Y+)}{M(Y-)}$, or: $rot_Y G(X+) * M(Y-) = rot_X E(Y+) * B(X-)$ in united$(X\pm = Y\mp)$ fields.

It should be noted that the wave function of a quantum field has a material essence. $\pm\psi_E \equiv \pm E(Y+)$ electric field strength or $\pm\psi_B \equiv \pm B(X-)$magnetic vector field induction. Then $(\psi_E)^2 \sim (\varepsilon\varepsilon_0 E^2 = \frac{W_E}{V})$ the energy density of the electric and $(\psi_B)^2 \sim (\frac{B^2}{\mu\mu_0} = \frac{W_B}{V})$magnetic fields with the total energy density $\psi^2 = (\psi_E)^2 + (\psi_B)^2$ electromagnetic vector field. In this case, in the $S = \pi r^2 \equiv \psi^2$cross-sectional area of interactions with probability: $\frac{\psi^2}{\psi^2_{MAX=1}} \le 1$, has the form $(i\psi)^2 = (+\psi)(-\psi)$superposition of the wave function of the quantum field. But when fixing the energy, we fix either $(+\psi)(+\psi) = \psi^2$, or $(-\psi)(-\psi) = \psi^2$, always positive $(\frac{W}{V} = \psi^2) > 0$, energy density. We are talking about the collapse of the wave function. We can talk about the electric field $(+E(Y+))$of the electron and $(-E(Y+))$ positron in a superposition of the wave function $(i\psi)^2 = (+\psi)(-\psi) = -\frac{W}{V} < 0$, which is what Dirac did. But exactly such wave functions have $\pm\psi_G \equiv \pm G(X+)$ quantum gravity fields and $\pm\psi_M \equiv \pm M(Y-)$ quanta of the mass field, with exactly the same mathematical apparatus of representation. We are talking about nuclear fields or in the cross-sections of interactions of mass particles, quantum gravitational $G(X+) = M(Y-)$ mass fields.

In general, quanta $(Y\pm = \frac{p}{n} = {}^2_1H)$ and $(X\pm = 2\frac{p}{n} = {}^4_2\alpha)$ shells of the nucleus form level and shells of electrons in the spectrum of atoms. In unified models of decay products of the spectrum of masses of elementary particles, in unified fields $(Y- = X+)$, $(Y+ = X-)$space-matter, it is possible to represent the nuclei of the spectrum of atoms. Based on the calculations of the masses of the proton and neutron:

$$(X\pm = p) = (Y- = \gamma_o)(X+ = \nu_e)(Y- = \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{\nu_e}{\alpha^2}\right) = 938{,}275\ MeV,$$

$$(Y\pm = n) = (X- = \nu_e)(Y+ = e)(X- = p) = (T = 878{,}77)\exp\left(\frac{\nu_e}{\sqrt{G}} + \frac{e}{2} - p\sqrt{G}\right) = 938{,}57\ MeV,$$

we talk about the quanta of the Strong Interaction in the structures of the nucleus in the form of models of charged $(Y\pm = \frac{p}{n}) = (X+ = p) + [(X+ = p)(e)(\nu_e) = n]$and neutral quanta of the Strong Interaction $(Y\pm = 2n) = [n = (\nu_e)(e)(X+ = p)] + [n = (X+ = p)(e)(\nu_e)]$, when fields $(X+)(X+) = (Y-)$form mass $(Y-)$trajectories. Such$(Y\pm = \frac{p}{n})$ And $(Y\pm = 2n)$ quanta and form the structures of the nucleus in a single $(X\pm = Y\mp)$ its space-matter, with closed vortex$(X-)$ magnetic fields and$(Y-)$ mass fields. Let us represent the structures of the nucleus in the form of such models of charged$(Y\pm = \frac{p}{n})$ quanta of the Strong Interaction. For example:

$(Y\pm = \frac{p}{n} = {}^2_1H)$, $(X\pm) = (Y+ = \frac{p}{n})(Y+ = \frac{p}{n}) = (X- = {}^4_2\alpha)$, $(Y- = {}^1_0n)(X+ = {}^1_1H)(Y- = {}^1_0n) = (X\pm = {}^3_1H)$,

$(X+ = {}^3_1H)(X+ = {}^4_2H) = (Y- = {}^7_3Li)$, and so on $(X- = {}^4_2\alpha)(Y+ = {}^1_0n)(X- = {}^4_2\alpha) = (Y- = {}^9_4Be)$.

$(X+ = {}^4_2\alpha)(Y-)(X+ = {}^4_2\alpha)(Y-)(X+ = {}^4_2\alpha) = (X+ = {}^{12}_6C)$,

$(X+ = {}^4_2\alpha)(Y-)(X+ = {}^4_2\alpha)(Y- = {}^2_1H)(X+ = {}^4_2\alpha) = (X+ = {}^{14}_7N)$.

New structure inside the kernel $(X+ = {}^4_2\alpha)(X+ = {}^4_2\alpha) = ({}^8_4Y-)$ gives kernels: $({}^8_4Y+)({}^8_4Y+) = (X- = {}^{16}_8O)$, $(Y- = {}^8_4Y+)(X+ = {}^3_1H)(Y- = {}^8_4Y+) = (X\pm = {}^{19}_9F)$, and similarly, further.

We can say that for the core ${}^A_ZX(N)$, "free"$(A - 2Z = N)$ neutrons in the form of neutral $(Y\pm = 2n)$quanta of the Strong Interaction also form their structures inside the structures of charged$(Y\pm = p/n)$ quanta of the Strong Interaction. Structures of charged quanta $(Y\pm = p/n)$ Strong Interaction forms the structures of electron shells of atoms, as a reason. For example: neutral structure:
$(Y\pm = 2n)(Y\pm = 2n) = (X\mp = 4n)$, is inside the nucleus $(X\pm = {}^{40}_{18}Ar(4n))$in the form:

$$(X\mp = {}^{12}_6X)\,(Y\pm = 2n)(X\mp = {}^{12}_6X)(Y\pm = 2n)(X\mp = {}^{12}_6X) = (X\pm = {}^{40}_{18}Ar(4n)).$$

In such structures, equations and electrons work. $(Y+ = X-)$ magnetic fields and gravity equations $(X+ = Y-)$mass fields simultaneously, in the form of fields $(Y+)(Y+) = (X-)$and $(X+)(X+) = (Y-)$.
Similarly, further: ${}^{75}_{33}As(9n) = (X- = 4n)(Y+ = 1n)(X- = 4n) = (Y\pm = 9n)$.

Note that in 100% of the states of the core, ${}^9_4(1n)$, ${}^{19}_9(1n)$, ${}^{23}_{11}(1n)$, ${}^{27}_{13}(1n)$, ${}^{31}_{15}(1n)$, ${}^{40}_{18}(4n)$, ${}^{45}_{21}(3n)$,

${}^{51}_{23}(5n)$, ${}^{55}_{25}(5n)$, , ${}^{59}_{27}(5n)$, ${}^{75}_{33}(9n)$, ${}^{89}_{39}(11n)$, ${}^{93}_{41}(11n)$, ${}^{103}_{45}(13n)$, ${}^{127}_{53}(21n)$, ${}^{133}_{55}(23n)$, ${}^{139}_{57}(25n)$, ${}^{141}_{59}(23n)$,${}^{159}_{65}(29n)$ ${}^{165}_{67}(31n)$, ${}^{169}_{69}(31n)$, ${}^{175}_{71}(33n)$, ${}^{181}_{73}(35n)$, ${}^{197}_{79}(39n)$, ${}^{209}_{83}(43n)$, we obtain the final stable structure of "standing waves" of neutral $(Y\pm=2n)$quanta of the Strong Interaction in the nucleus of an atom ${}^{209}_{83}Bi(43n)$.

$(X\mp=4n)(Y\pm=9n)(X\mp=4n)(Y\pm=9n)(X\mp=4n)(Y\pm=9n)(X\mp=4n)=(43n)={}^{209}_{83}Bi(43n)$, inside the structure of charged$(Y\pm=\text{p}/n)$ quanta of the Strong Interaction of the nucleus, which form the structures of the electron shells of atoms, as the cause.

Such neutral quantum structures $(Y\pm=2n)$are in the corresponding shells of charged $(Y\pm=\text{p}/n)$quantum structures of the Strong Interaction in self-consistent fields closed in a figure eight, a chain of vortex fields. All this corresponds to the equations of dynamics, can be modeled, calculated and predicted. By saturating these $(Y\pm)$, $(X\pm)$ quanta of the nucleus shells with the energy of the quanta of $(Y-=14-17)\ MeV$ "dark matter ", it is possible to cause "ionization" of the nucleus shells. In such artificial radioactivity, it is possible, for example, from the nuclei of atoms $({}_{80}Hg-{}^{2}_{1}H)$or $({}_{81}Tl-{}^{4}_{2}He)$, to obtain $({}^{197}_{79}Au)$gold. As in the case of a controlled thermonuclear reaction at a collider, a trial experiment is needed here. In the most general case, the dynamics of $\text{rot}_x\text{M}(\text{Y}-)$inductive mass fields (" hidden masses ") is determined by the dynamics of the gravity source.

$$c*\text{rot}_x\text{M}(\text{Y}-)=\frac{1}{r}G(\text{X}+)+\ \varepsilon_2\frac{\partial G(\text{X}+)}{\partial\text{t}}.$$

For $n\neq 1$, and $n=2,3,4\ldots\to\infty$, we obtain the quasipotential $G(\text{X}+)$acceleration fields $G(\text{X}+)$of the quantum gravitational field as a source of gravity: $G(\text{X}+)\frac{\psi}{t_T}(G)*grad_n\left(\frac{1}{2}Rg_{ik}\right)(\text{X}+)$, with the limit $(G)=cos^2\varphi(\text{X}-)_{MAX}$ the angle of parallelism of the quantum $G(\text{X}+)$field of the Strong Interaction in this case and the period $T=\frac{\lambda}{c}$of quantum dynamics. Quasi-potential $G(\text{X}+)$fields of the quantum gravitational field of accelerations, at distances $c*t=r$ have the form: $(G)=6{,}67*10^{-8}$.

$$G(\text{X}+)=\frac{\psi*\lambda}{r}\left((G)*grad_n\left(\frac{1}{2}Rg_{ik}\right)(\text{X}+)+\alpha*grad_n(T_{ik})(\text{Y}-)\right),\quad r\to\infty.$$

This is the equation of the quantum gravitational field **of accelerations** $G(X+)=v_YM(Y-)$, mass trajectories with the principle of equivalence of inertial and gravitational mass. It has a fundamental difference with the equation of gravitational **potentials** of the General Theory of Relativity. The component of the gravitational quasi-potential field and the energy-momentum tensor (T_{ik}) in the equation: $G(\text{X}+)=\frac{\psi*\lambda}{r}*grad_l(T_{ik})(\text{Y}-)$relate to inductive mass fields in the physical vacuum. In brackets we have the gradient of the potentials of the gravitational $(\text{X}+=\text{Y}-)$mass field.

$$G*grad_n\left(\frac{1}{2}Rg_{ik}\right)(\text{X}+)+\alpha*grad_n(T_{ik})(\text{Y}-)=(G)*\alpha*grad_\lambda\frac{1}{2}\text{P}(\text{X}+=\text{Y}-).$$

It follows from this $$G(\text{X}+)=\frac{\psi(\lambda=1)}{r}*G*\alpha*grad_\lambda(\frac{1}{2}\text{P}(\text{X}+=\text{Y}-)).$$

The general gravitational potential $\text{P}(\text{X}+=\text{Y}-)$in general form includes both the potential of the gravitational source $(\frac{1}{2}Rg_{ik})(\text{X}+)$and the quasi-potential $(T_{ik})(\text{Y}-)$fields of inductive masses. We will write the same equation in other quantum parameters, namely:

$$G(\text{X}+)=\frac{\psi*(Tc=\lambda)}{(t=nT)c}(G)\alpha(\frac{1}{2\lambda}\text{P}(\text{X}+=\text{Y}-))\text{or } G(\text{X}+)=\frac{\psi*\left(\frac{1}{T}=\nu=\frac{\varepsilon}{\hbar}\right)}{nc}(G)\alpha\left(\frac{1}{2}\text{P}\right),\ G(\text{X}+)=\frac{\psi*\varepsilon}{n\hbar c}G\alpha(\frac{1}{2}\text{P}).$$

Here the gradient of the general gravitational mass $\text{P}(\text{X}+=\text{Y}-)$potential is taken over the entire wavelength (λ). We are talking about the quantum levels of the mass trajectories of the orbital electrons of the atom, in the form:

$n\hbar=m_eVr$). And further: $\frac{mV^2}{r}=\frac{ke^2}{r^2}$, $V=\sqrt{\frac{ke^2}{mr}}$, $(m_er\sqrt{\frac{ke^2}{r}}=n\hbar)$, $n\hbar=\sqrt{m_erke^2}$, $r=\frac{n^2\hbar^2}{m_eke^2}$,

for energy, $\varepsilon=\frac{ke^2}{r}=\frac{m_ek^2e^4}{n^2\hbar^2}$, during radiation, $\Delta\varepsilon=\frac{m_ek^2e^4}{\hbar^2}\left(\frac{1}{n_1^2}-\frac{1}{n_2^2}\right)=\ \hbar\nu$, of an atom.

These are the unified mathematical truths of the unified equations of the unified $(Y\mp=\text{X}\pm)$space-matter.

Examples.

For the angular velocity $(\omega=\frac{2\pi^r}{T}=\frac{1^r}{t})\left[\frac{r}{s}\right]$of inductive mass $M(Y-)$trajectories in orbits (r)around the Sun in its $G(\text{X}+)$gravitational field, there is a rotation of this field.

$$rot_yG(\text{X}+)=\ -\mu_2*\frac{\partial N(Y-)}{\partial t}=-\frac{\partial M(Y-)}{\partial t},\ \text{or}\ \ rot_yG(\text{X}+)=\omega M(Y-).$$

For Mercury, at perihelion $r_\text{м}=4{,}6*10^{12}$см, with an average speed of $4{,}736*\ 10^6$см$/c$, there is a centrifugal acceleration of $a_\text{м}=\frac{(v_\text{м})^2}{r_\text{м}}=\frac{(4{,}736*10^6)^2}{4{,}6*10^{12}}=4{,}876\ sm/s^2$. The mass of the Sun $M_s=2*10^{33}g$, and the radius of the Sun $r_0 = 7 * 10^{10}$см, create an acceleration $G(\text{X}+)$of the gravitational field with $(\psi = 1)$ in the form of.

$$g_{\text{м}} = G(\text{X}+) = \frac{1*(\lambda=1)}{r_{\text{м}}} * (G) * \frac{M_S}{2r_0} * \alpha, \qquad \text{or:} \qquad g_{\text{м}} = \frac{6.67*10^{-8}*2*10^{33}}{2*4,6*10^{12}*7*10^{10}*137} = 1,511\ sm/s^2.$$

From the relation of general relativity, $R_{ik}(X+) = 2\psi\left(\frac{1}{2}Rg_{ik}(X+) + \text{к}\text{T}_{ik}(Y-)\right)$, follow analogous relations in the space of accelerations, inductive mass $M(Y-)$trajectories around the Sun of the space-matter itself at the average radius $r_{\text{м}} = 5,8 * 10^{12}$смin the form.

$$a_{\text{м}}(\text{X}+) - g_{\text{м}}(\text{X}+) = \Delta\,(Y-) = 4,876 - 1,511 = 3,365\ sm/s^2.$$

From the equation of gravitational (X+= Y−)mass fields $rot_yG(\text{X}+) = \omega M(Y-)$, it follows $\frac{\Delta\,(Y-)}{\sqrt{2}} = \frac{2\pi^r}{T}M(Y-)$, the rotation of Mercury's perihelion in time (T). For $100 years = 6.51 * 10^{14} years$, this rotation of mass $M(Y-)$ trajectories is: $\frac{\Delta\,(Y-)*6.51*10^{14}}{r_{\text{м}}*2\pi\sqrt{2}}(57,3^0) = 42,5''$. We are talking about the rotation of all space-matter around the Sun. This is an example of dynamic space-matter. Similarly, further.

For the Earth, at the distance of the Earth's orbit and the speed of the Earth $v_E = 3 * 10^6$см/cin orbit $r_E = 1.496 * 10^{13}\ sm$, the centrifugal acceleration is equal to:

$$a_E = \frac{(v_E)^2}{r_E} = \frac{(3*10^6)^2}{1.496*10^{13}} = 0,6\ sm/s^2.$$

acceleration $G(\text{X}+)$of the gravitational field of the Sun $r_0 = 7 * 10^{10}$см, with mass $(M_s)$and $(\psi = 1)$, is

$$g_E = G(\text{X}+) = \frac{1}{r_E} * (G) * \frac{M_S}{2r_0} * \alpha = \frac{6.67*10^{-8}*2*10^{33}}{2*1.496*10^{13}*7*10^{10}*137} = 0.465\ sm/s^2.$$

Similarly, $a_E(\text{X}+) - g_E(\text{X}+) = \Delta\,(Y-) = 0,6 - 0,465 = 0,135\ sm/s^2$. From this acceleration of inductive mass $M(Y-)$trajectories of space-matter around the Sun, the rotation of the perihelion of the Earth's orbit follows, by analogy, and is

$$\frac{\Delta\,(Y-)*6.51*10^{14}}{r_3*2\pi}(57,3^0) = 5,8''.$$

For Venus, according to the same calculation scheme, the rotation of the perihelion of Venus $r_V = 1.08 * 10^{13}$ см, and the speed $v_V = 3,5 * 10^6 cm/s$, the centrifugal acceleration of Venus in orbit is

$$a_V = \frac{(v_V)^2}{r_V} = \frac{(3,5*10^6)^2}{1.08*10^{13}} = 1,134\ \ sm/s^2.$$

Similarly, the acceleration of the Sun's $G(\text{X}+)$gravitational field in the orbit of Venus is.

$$g_V = G(\text{X}+) = \frac{1}{r_V} * G * \frac{M_S}{2r_0} * \alpha = \frac{6.67*10^{-8}*2*10^{33}}{2*1.08*10^{13}*7*10^{10}*137} = 0.644\ sm/s^2.$$

Acceleration of inductive mass $M(Y-)$trajectories of space-matter around the Sun,

$$a_V(\text{X}+) - g_V(\text{X}+) = \Delta\,(Y-) = 1,134 - 0.644 = 0,49\ sm/s^2.$$

From this follows the rotation of the perihelion of Venus: $\frac{\Delta\,(Y-)*6.51*10^{14}}{r_V*\pi}(57,3^0) = 9,4''$seconds per 100 years.

These calculated values are close to the observed values. It is significant that from Einstein's formula for the shift of Mercury's perihelion,

$$\delta\varphi \approx \frac{6\pi GM}{c^2A(1-\varepsilon^2)} = 42,98''\text{for 100 years.}$$

$$c^2A(1-\varepsilon^2) * \delta\varphi \approx 6\pi GM, (c^2A - c^2A\varepsilon^2)\delta\varphi \approx 6\pi GM$$

there is no apparent reason for such a shift, except for the curvature of space from the equation of General Relativity. The idea is that the difference in the rate of relativistic time on the orbit causes its rotation and is proportional to the eccentricity. At the same time, the slowing down of the rate of time (Δt_{21}^2)in the gravitational (X +)field at perihelion gives a relativistic contraction of $(-\Delta x_{21}^2)$the mass $(Y-)$trajectory in Einstein's equation. Formally, this is: $(rot_yG(\text{X}+) = \frac{\Delta G(\text{X}+)}{(-\Delta\bar{x}_{21})}) = (\frac{\partial M(Y-)}{\partial T} = \frac{\Delta M(Y-)}{(\Delta t_{21})})$, a mathematical truth. The physical reason is that the planet is pushed along the mass $(Y-)$trajectory action of gravity $G(\text{X}+)$fields, when it rotates around the star. We are talking about the presence of inductive mass $M(Y-)$fields of space-matter, and their rotation around the Sun, as a cause, in accordance with the equations of dynamics. In other words, space- matter itself rotates around the Sun. For the same reasons, we will consider **the movement of the Sun around the core of the Galaxy.**

Initial data. The speed of the Sun in the Galaxy $v_s = 2,3 * 10^7 sm/s$, the mass of the Galactic core $M_c = 4,3$ млн. $M_s = 4,3 * 10^6 * 2 * 10^{33}$г, the distance to the center of the Galaxy 8,5 кпкor $r = 2,6 * 10^{22} sm$. The centrifugal acceleration of the Sun in the galactic orbit:

$$a_s = \frac{(v_s)^2}{r} = \frac{(2{,}3*10^7)^2 = 5{,}29*10^{14}}{2{,}6*10^{22}} = 2*10^{-8}\ sm/s^2.$$

Using this calculation technology, we will estimate the radius of the core of our Galaxy $r_я$. In exactly the same calculation formula we will get (r_c.) the radius of the core of our Galaxy $g_G = G(X+)$.

$$a_s = G(X+) = \frac{1}{r}*(G)*\alpha*\frac{M_я}{2r_я}, \text{ where}$$

$$r_c = \frac{1}{r}*(G)*\alpha*\frac{M_c}{2a_s} = \frac{6.67*10^{-8}*4{,}3*10^6*2*10^{33}г}{2*137*2{,}6*10^{22}*2*10^{-8}} = 4*10^{15}sm \approx 267au \ldots,$$

$1au. = r = 1{,}496*10^{13}sm$, or, $1pc = 3*10^{18}sm$, then: $r_c \approx 1{,}3*10^{-3}pc$. Such a radius in our Galaxy corresponds to the gradient of all mass fields of the gravity source,

$$G(X+) = \frac{\psi(\lambda=1)}{r}*(G)*\alpha*grad_\lambda(\frac{1}{2}P(X+=Y-)), \text{ with radius } r_c \approx 1{,}3*10^{-3}\ pc.$$

Limits of the measurable radius $r_{0c} \approx 10^{-4}pc$. Their ratio corresponds to the ratio of their masses.

$$\frac{r_{0я}}{r_я}*100\% = \frac{10^{-4}}{1{,}3*10^{-3}}*100\% = 7{,}69\ \%.$$

This means that the mass of the galactic core is made up of $7{,}69\ \%$ hidden mass $M(Y-)$fields.

Parameters of the Moon. It is well known that in the position of the Moon between the Sun and the Earth, according to Newton's law, the Sun attracts the Moon 2.2 times stronger than the Earth.

For: $M_s = 2*10^{33}g$, $m_E = 5{,}97*10^{27}g$, $r_E = 6{,}371*10^8cm$, $m_M = 7{,}36*10^{25}g$, $r_M = 3{,}844*10^{10}cm$, $(G) = 6{,}67*10^{-8}$, $\alpha = 1/137$, $(\Delta A = 1{,}496*10^{13} - r_M = 1{,}49215*10^{13}cm)$,

$$F_1 = \frac{(G)M_s m_M}{(\Delta A)^2} = \frac{6{,}67*10^{-8}*2*10^{33}*7{,}36*10^{25}}{(1{,}49215*10^{13})^2} = 4{,}41*10^{25},$$

$$F_2 = \frac{(G)m_E m_M}{(r_M)^2} = \frac{6{,}67*10^{-8}*5{,}97*10^{27}*7{,}36*10^{25}}{(3{,}844*10^{10})^2} = 1{,}98*10^{25}, (F_1/F_2 = 2{,}2).$$

The difference in forces $(F_1 - F_2) = (\Delta F) = (4{,}41 - 1{,}98)*10^{25} = 2{,}43*10^{25}$, is compensated by the gravity of the ("hidden") mass fields of space around the Earth, with acceleration:

$$g_E(X+) = \frac{\pi}{r_M}*G*\frac{M_E}{r_E}*\alpha = \frac{3{,}14*\sqrt{2}*6{,}67*10^{-8}*5{,}97*10^{27}}{137*3{,}844*10^{10}*6{,}371*10^8} = 0{,}372\ cm/s^2.$$

The gravitational force of the mass field corresponds within the measurement accuracy.

$$(\Delta F) = m_M*g_E(X+) = 7{,}36*10^{25}*0{,}372 = 2{,}74*10^{25}.$$

Thus, solutions of the equations of quantum gravitational fields give results within measurable limits.

Deflection of photons in the gravitational field of the Sun. A photon "falls" in the gravitational field of the Sun with acceleration $g(X+) = \frac{2GM_s}{R_s^2}$. During the flight time of the Sun's diameter $t = \frac{2R_s}{c}$, tangentially to the sphere of the Sun, the vertical "fall" speed is $v = g*t$. The angle of deflection of the photon, for $R_s = 6{,}963*10^{10}cm$, is defined as:

$$\varphi = arcsin\frac{v}{c}, \text{ or } \quad \frac{v}{c} = \frac{2GM_s}{R_s^2}*\frac{2R_s}{c}*\frac{1}{c} = \frac{4*6{,}67*10^{-8}*2*10^{33}}{6{,}963*10^{10}*(3*10^{10})^2} = 8{,}515*10^{-6},$$

$$\varphi = arc\sin(8{,}515*10^{-6}) = 0{,}000488^0 = 1{,}75'' \text{ arc seconds.}$$

This angle corresponds to the calculations in the equations of Einstein's General Theory of Relativity. From these same equations, the slowing down of the course of time $(\Delta t\downarrow)$gives additional acceleration $(\Delta g\uparrow)$in the field of gravity, or centrifugal $(\Delta a\uparrow)$acceleration, with the principle of their $(\Delta g = \Delta a)$ equivalence at a constant speed of light $c = (\Delta g\uparrow)(\Delta t\downarrow)$. This concerns the course of time in the orbit of Mercury, from Einstein's calculations. And the course of time of one electron in various discrete orbits of an atom, in the mass fields of an atom, changes in exactly the same way. The change in the course of time of an electron in discrete orbits is associated with a change in its frequency $(\Delta\nu)$, which is accompanied by the emission or absorption of a photon $(\Delta E = \hbar\Delta\nu)$, in Planck's theory. And the deeper the "gap" in $(X+)$the field of the Strong, gravitational field near the nucleus, the greater the wavelength and the period $(Y-)$of the mass quantum trajectory$(Y-= e)$ orbital electron in a single$(X+= Y-)$ space-matter, the slower its time flow. Here we are talking about the discrete dynamics of the time flow in the quantum relativistic dynamics of any quantum of space -time, the physical vacuum near "black holes" similarly.

2.7. Dynamics of the Universe.

Let us consider the mathematical truths of the dynamics of the selected Criteria of Evolution. In other Criteria this will be a different representation. If $(R)$is the radius of the non-stationary Euclidean space of the sphere of the visible Universe, then from the classical Special Theory of Relativity, where $(b = \frac{K}{T^2})$ acceleration,$(c^4 = F)$ force, follows:

$$R^2 - c^2t^2 = \frac{c^4}{b^2} = \bar{R}^2 - c^2\bar{t}^2; \quad \text{or} \quad b^2(R\uparrow)^2 - b^2c^2(t\uparrow)^2 = (c^4 = F) \text{ force.}$$

In the unified Criteria, $\left(b=\frac{K}{T^2}\right)(R=K)=\frac{K^2}{T^2}=P$, we speak of the potential in the velocity space $(\frac{K}{T}=\overrightarrow{e})$ of a vector space in any $\vec{e}(x^n)$coordinate system, where we take: $P=g_{ik}(x^n)$, the fundamental tensor of the Riemannian space. Then in the general case we have:

$$P_1^2-P_2^2=(P_1(X+)-P_2(Y-))(P_1(X-)+P_2*(Y+))=(\Delta P_1(X+=Y-))\downarrow(\Delta P(X-=Y+))\uparrow=F$$

This force, over the entire radius $(R=K)$of the visible sphere of the unified $(X\pm=Y\mp)$space-matter of the Universe, gives (dark) energy $(U=FK)$to the dynamics of the entire Universe.

$$(P_1^2-P_2^2)K=(P_1-P_2)K(P_1+P)=(\Delta P_1)(X+=Y-)\downarrow K(\Delta P_2)(X-=Y+)\uparrow=FK=U$$

What is its nature? On the radius $(R=K)$of the dynamic sphere of the Universe there is a simultaneous dynamic of a single $(X\pm=Y\mp)$space-matter. Considering the dynamics of potentials in gravitational mass $(X+=Y-)$ fields, as is already known, $(P_1-P_2)=g_{ik}(1)-g_{ik}(2)\neq 0$, we are talking about the equation of "gravity" $R_{ik}-\frac{1}{2}Rg_{ik}-\frac{1}{2}\lambda g_{ik}=k\mathrm{T}_{ik}$, General Theory of Relativity, in any $g_{ik}(x^m\neq const)$ coordinate system, and at various levels of singularity $0Л_j$, $0Л_i$ the physical vacuum of the entire Universe.
We are talking about a sphere ($x^m=\mathrm{X,Y,Z,ct}\neq const$)non-stationary Euclidean space-time, in the form: $(x^m=\mathrm{X,Y,Z,ct})*\{\left(ch\frac{X(X+=Y-)}{Y_0=R_0(X-)}\right)(\mathrm{X}+=\mathrm{Y}-)*\cos\varphi_\mathrm{X}(\mathrm{X}-=\mathrm{Y}+)=1\}$. The gradient of such (ΔP_1)a potential, also known, gives the equations of quantum gravity with inductive $M(Y-)$(hidden) mass fields in the gravitational field. We are talking about $(\Delta P_1\sim T_{ik})\downarrow(X+=Y-)$ the energy-momentum of the gravitational $(X+=Y-)$mass fields of the expanding Universe, with a decrease in the density of mass $(Y-)$trajectories

$$PK=\frac{(K_i\to\infty)^3}{(T_i\to\infty)^2}=\left(\frac{1}{(T_i\to\infty)^2}=(\rho_i\to 0)\downarrow\right)({K_i}^3=V_i\uparrow)(X+=Y-)\ =(\rho_i\downarrow V_i\uparrow)(X+=Y-),$$

$$(R_j)*(R_i=1{,}616*10^{-33}sm)=1,\qquad (R_j)=6{,}2*10^{32}sm\qquad (\rho_i(Y-)\to 0).$$

On the other hand, the very "expansion" of the physical vacuum of the Universe is caused$(\Delta\Pi_2)(X-=Y+)\uparrow$ fragmentation of the general$(X-)$ fields of the Universe, with the formation of new and new (P_1+P_2) quantum potentials, with densities$(\rho_i(\mathrm{X}-)\to\infty)$ pushing each other apart (in expansion),$(X-)$ fields. In the overall picture, in the expanding$(X-)$ field of the Universe, mass $(Y-)$trajectories are drawn into structures. We are talking about the properties of a dynamic, unified $(X\pm=Y\mp)$space-matter, in which from: $cos\varphi(X-)cos\varphi(Y-)=1$, and $\lambda_i(X-)\lambda_i(Y-)=1$, for velocities $v_i=const$, follows the period of dynamics $T_i(Y-)\to\infty$, mass $(Y-)$ trajectories of quanta of $\gamma_i(Y-)$the physical vacuum at infinite radii $\lambda_i(Y-=X+)=R_j\to\infty$, the Universe. In this case, for vanishing densities $\rho_i(Y-)=\frac{1}{(T_i\to\infty)^2}\to 0$, mass trajectories, there is $(T_i\to\infty)(t_i\to 0)=1$, proper $(t_i\to 0)$, disappearing time dynamics of the entire Universe. In other words, at infinite radii, the Universe disappears in time. On the other hand, in the depths of the physical vacuum $\lambda_i(X-)\to 0$, and the velocities $v_i=const$, we obtain the period $T_i(X-)\to 0$, quanta of the physical vacuum, with the densities of its fields $\rho_i(X-)=\frac{1}{(T_i\to 0)^2}\to\infty$. It is like a "solid bottom" of the physical vacuum, to which we will descend. $(T_i\to 0)(t_i\to\infty)=1$, infinitely long $(t_i\to\infty)$, in a single $(X\pm=Y\mp)$space-matter. It is clear that from such a $\rho_i(X-)\to\infty$" bottom " of the physical vacuum, the quanta $\lambda_i(X-)$of space-matter will "emerge" into the physical vacuum of lower densities of the field of the Universe. In other words, quanta of $(X\pm)$space-matter are continuously born from the physical vacuum. Each quantum $(X\pm)$ or $(Y\pm)$ of a single $(X\pm=Y\mp)$space-matter, in its dynamics, has the potential of its fields. The interaction of the potentials $(P)$of any fields $(X\pm=Y\mp)$gives $(P*P=F)$ the force of any interaction, which in space (K) gives this or that energy. And these are already the energy levels of the physical vacuum. And here, the infinity of motion in time is reduced to zero $(R_i=1{,}616*10^{-33}sm)\to 0$, in space-time, as is the Universe disappearing in time on $\lambda_i(Y-=X+)=R_j\to\infty$, infinite radii. The argument is that the dynamic space-matter of the Universe is united, in its dynamics on $(m-n)$convergences, the axioms of dynamic $(\varphi\neq const)$space-matter. We are talking about the quantum coordinate system of the multidimensional space of velocities. Their special case $(\varphi=0)$is the Euclidean axiomatics of space-time. In classical and quantum relativistic dynamics, any superluminal velocities are allowed in the levels of physical vacuum. In the Special and Quantum Theory of Relativity, we have mathematical truths.

$$\overline{W_Y}=\frac{c+Nc}{1+c*Nc/c^2}=c,\qquad \overline{W_Y}=\frac{a_{11}Nc+c}{a_{22}+Nc/c}=\mathrm{c},\quad \text{For } a_{11}=a_{22}=\cos(\varphi=0)=1.$$

For the Indivisible Area of Localization of the dynamic space a -matter of the Universe, we have: $IAL=(T_j(m)\to\infty)(t_i(n)\to 0)=1$, vanishing proper time $(t_i(n)\to 0)$at (n)convergence or

$(T_j(m) \to \infty)$ at (m)convergence of quanta $(X\pm)$or $(Y\pm)$, space-matter. In one $(X\pm = Y\mp)$ space-matter, many representations of periods of their dynamics are allowed in the fields of interaction $(X+)$ And $(Y+)$, or their $(X-)$ And $(Y-)$, trajectories. For example, for $(X+)$a quantum as $IAL = (X-)(X+) = 1$, we are talking about quanta: $IAL = (X-)(X+= Y-) = 1$, or $IAL = (X-)(Y-) = 1$. On $(m-n)$convergences, we talk about the periods of their dynamics: $IAL = (T_j)(t_i) = 1$, in different fields.

$$IAL = (T_j(X-) \to \infty)(t_i(Y-) \to 0) = 1, \text{ or: } IAL = (T_j(Y-) \to \infty)(t_i(X-) \to 0) = 1.$$

Periods of dynamics are associated with densities$\rho = \frac{1}{T^2}$ space-matter in different levels of physical vacuum. In this case, at infinite radii $R = c * T_j(X-) \to \infty$)in near-zero densities $\rho = \frac{1}{{T_j}^2} \to 0$, there is an instantaneous $(t_i(Y-) \to 0)$dynamics of mass $(Y-)$trajectories, primary near-zero radii $r = c * t_i(Y-) \to 0)$ of infinitely large densities $\rho(Y-) = \frac{1}{{t_i}^2} \to \infty$, mass fields. And vice versa, for periods of dynamics $T_i(Y-) \to \infty$, mass $(Y-)$trajectories of quanta $\gamma_i(Y-)$of physical vacuum at infinite radii $\lambda_i(Y- = X+) = R_j \to \infty$, the Universe , and for vanishing densities $\rho_i(Y-) = \frac{1}{(T_i \to \infty)^2} \to 0$, mass trajectories, there is $(T_j \to \infty)(t_i \to 0) = 1$, proper $(t_i \to 0)$, the vanishing time of the dynamics of the entire Universe. In other words, at infinite radii, the Universe disappears in time, as already stated. Such are the mathematical truths.

3.Allowable structures of leptons.

Content

3.1.Introduction.

The real dynamic space-matter is presented in its axioms as facts that do not require proof. We speak of a set of straight parallel lines passing through a point (O), outside the original straight-line AC, within the always dynamic $(\varphi \neq const)$angle of parallelism.

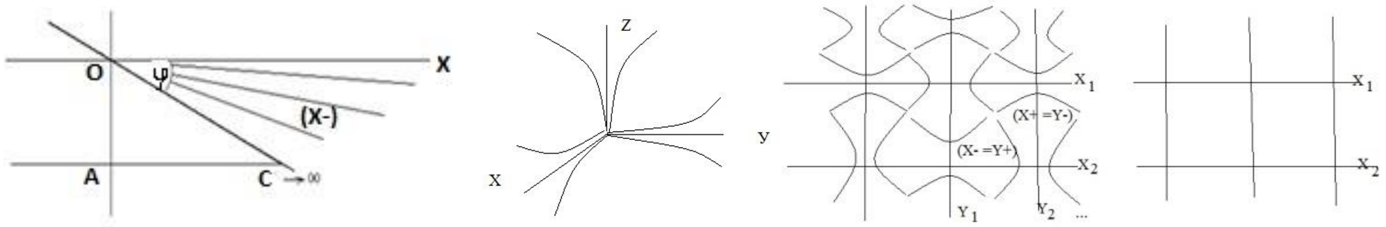


Figure 1. Dynamic space-matter.

In the Euclidean representation of space-time, we do not see everything and there is a space $(X-)$that we $(\triangle AOC)$cannot get into. But this$(X-)$ space exists, and it has its own physical properties of matter, which we do not see directly. Such space-matter has its own geometric facts, as axioms, which do not require proof.

<u>Axioms:</u>

1. A non-zero, dynamic angle of parallelism $(\varphi \neq 0) \neq const$ of a bundle of parallel lines defines mutually orthogonal parallel lines $(X-) \perp (Y-)$of the fields of lines - trajectories, as isotropic properties of space-matter.

2. The zero angle of parallelism $(\varphi = 0)$ gives "length without width" with zero or non-zero (Y_o)radius of the sphere-point "having no parts" in the Euclidean axiomatics.

3. A bundle of parallel lines with a zero angle of parallelism $(\varphi = 0)$, “equally located to all its points”, gives a set of straight lines in one “width less” Euclidean straight line. (Mathematical Encyclopedia, Moscow, 1963, v4, p.13, p.14)

4. Internal $(X-), (Y-)$and external $(X+), (Y+)$fields of the trajectory lines are non-zero $X_0 \neq 0$ or $Y_0 \neq 0$ material sphere-points, form an Indivisible Area of Localization $IAL(X\pm)$ or $IAL(Y\pm)$ dynamic space-matter.

5. In single $(X- = Y+)$,$(Y- = X+)$ In the fields of orthogonal lines-trajectories $(X-) \perp (Y-)$there are no two identical spheres-points and lines-trajectories.

6. Sequence of Indivisible Area of Localization $(X\pm), (Y\pm), (X\pm)$ ..., by radius $X_0 \neq 0$ or $Y_0 \neq 0$

sphere-point on one line-trajectory gives (n)convergence, and on different trajectories (m)convergence.

7. Each Indivisible Area of Localization of space-matter corresponds to a unit of all its Criteria of Evolution – CE, in a single $(X- = Y +)$,$(Y- = X +)$ space-matter on $(m - n)$ convergences:
$IAL = CE(X- = Y +)CE(Y- = X +) = 1$ and $IAL = CE(m)CE(n) = 1$, in a system of numbers equal by analogy of units.

8. Fixing the angle $(\varphi \neq 0) = const$ or$(\varphi = 0)$ a bundle of straight parallel lines, space-matter, gives the 5th postulate of Euclid and the axiom of parallelism.

Infinity $(AC \to \infty)$cannot be stopped, therefore dynamic $(X-)$space-matter, along the axis (X), always exists. At the same time, Euclidean space in the axes (X, Y, Z) loses its meaning. On the plane, in the Euclidean axes ($X_1, X_2 \dots X_n$), ($Y_1, Y_2 \dots Y_n$), we do not see $(X- = Y +)$,$(Y- = X +)$ dynamic space-matter. Euclidean space is a special case $(\varphi = 0)$ dynamic $(\varphi \neq 0) = const$, space-matter. Any point of fixed trajectory lines is represented by local basis vectors:

$$\boldsymbol{e_i} = \frac{\partial X}{\partial x^i}\boldsymbol{i} + \frac{\partial Y}{\partial x^j}\boldsymbol{j} + \frac{\partial Z}{\partial x^k}\boldsymbol{k}, \qquad \boldsymbol{e^i} = \frac{\partial x^i}{\partial X}\boldsymbol{i} + \frac{\partial x^j}{\partial Y}\boldsymbol{j} + \frac{\partial x^k}{\partial Z}\boldsymbol{k},$$

Riemannian space with the fundamental $\boldsymbol{e_i}(x^n) * \boldsymbol{e_k}(x^n) = \boldsymbol{g_{ik}}(x^n)$ tensor (M. Korn , M. S. p.508) , and topology $(x^n = \boldsymbol{XYZ})$ in Euclidean space. These basis vectors can always be represented as: $(x^i = c_x * t)$, $(X = c_x * t)$ linear components of space-time. In this case, we obtain the usual: $\boldsymbol{v_i}(x^n) * \boldsymbol{v_k}(x^n) = (v^2) = \boldsymbol{P}$, the potential of space-matter, as a kind of acceleration (b)on the length (K), in the velocity space (v), that is: $(v^2 = bK)$. Riemannian space is a fixed $(\varphi \neq 0 = const)$ state of a geodesic$(x^s = const)$ lines dynamic $(\varphi \neq const)$space-matter that has a variable geodesic line $(x^s \neq const)$. There is no such mathematics of Riemannian space, $\boldsymbol{g_{ik}}(x^s \neq const)$with variable geodesic. There is no geometry of Euclidean non-stationary sphere, no geometry of Lobachevsky space, with variable asymptotes of hyperbolas. These are deep and fundamental changes in the technology of theoretical research itself, which form our ideas about the world around us. We do not see it in Euclidean axiomatics.

Will correlate $IAL(Y \pm)$the Indivisible Areas of Localization $IAL(X \pm)$with the indivisible quanta of space-matter: $(X\pm = p)$, $(Y\pm = e)$, $(X\pm = \nu_\mu)$, $(Y\pm = \gamma_0)$, $(X\pm = \nu_e)$,$(Y\pm = (\gamma)$ in a $(X- = Y +)$ single, $(Y- = X +)$ dynamic space-matter, as with the facts of reality:

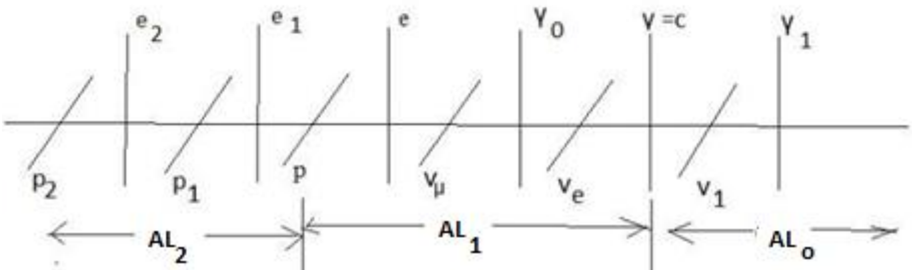


Figure 2. Indivisible quanta of space-matter.

Here $(X\pm = p)$ the proton has the same charge as $(Y\pm = e)$ the electron with the electron $(Y+ = X -)$ magnetic field, and the electron $(Y\pm = e)$emits a photon $(Y\pm = \gamma)$, as facts. To maintain the continuity of a single $(X- = Y +)$, $(X+ = Y -)$space-matter $(Y\pm = \gamma_0)$, a photon is introduced, similar to $(Y\pm = \gamma)$ a photon. This corresponds to the analogy of the muon $(X\pm = \nu_\mu)$ and electron $(X\pm = \nu_e)$ neutrino. In this case, both neutrinos (ν_μ), (ν_e) and photons (γ_0), (γ), can accelerate, like a proton or electron, to speeds (γ_1), ($\gamma_{2\dots}$), according to the same Lorentz transformations, just as protons and electrons are accelerated. To the ultimate speed of light $(\gamma = \mathrm{c})$. Having a standard, outside any fields, electron speed $W_e = \alpha * \mathrm{c}$, emitting a standard photon outside any fields: $V(\gamma) = c$, we have a constant: $\alpha = \frac{W_e}{c} = \cos\varphi_Y = \frac{1}{137.036}$.
An orbital electron, with an angle of parallelism to the $\varphi(Y-) = 89{,}6^0$ "straight " trajectory $(Y-)$ of the field in Lobachevsky geometry, with its uncertainty principle, such an electron does not emit a photon, as in rectilinear, without acceleration, motion. **This postulate of Bohr, as well as the uncertainty principle of space-time and the equivalence principle of Einstein $(\boldsymbol{X+ = Y -})$, are axioms of dynamic space-matter.** The dynamics of mass fields within the limits of $\cos\varphi_Y = \alpha$, $\cos\varphi_X = \sqrt{G}$, interaction constants, gives the charge isopotential of their unit masses.
For: $m(p) = 938{,}28 MeV$, $G = 6{,}67 * 10^{-8}$. $m_e = 0{,}511\ MeV$, ($m_{\nu_\mu} = 0{,}27\ MeV$),

$$\left(\frac{X=K_X}{K}\right)^2 (X-) = cos^2\varphi_X = \left(\sqrt{G}\right)^2 = G, \qquad \left(\frac{Y=K_Y}{K}\right)(Y-) = cos\,\varphi_Y = \alpha = \frac{1}{137{,}036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y = m_Y}{\left(\frac{Y^2}{K^2}=\frac{G}{2}\right)}, \qquad \text{where} \qquad 2m_Y = Gm_X \quad ,$$

$$m = \frac{F=\Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X = m_X}{\left(\frac{X^2}{K^2}=\frac{\alpha^2}{2}\right)}, \qquad \text{where} \qquad 2m_X = \alpha^2 m_Y$$

$$(\alpha/\sqrt{2})*\Pi K*(\alpha/\sqrt{2}) = \alpha^2 m(e)/2 = m(\nu_e) = 1{,}36*10^{-5}\,MeV \quad , \quad \text{or:} \quad m_X = \alpha^2 m_Y/2 \, ,$$

$$\sqrt{G/2}*\Pi K*\sqrt{G/2} = G*m(p)/2 = m(\gamma_0) = 3.13*10^{-5}\,MeV \quad , \text{or:} \quad m_Y = Gm_X/2$$

$$m(\gamma) = \frac{Gm(\nu_\mu)}{2} = 9{,}1*10^{-9}MeV \, .$$

In a single $(Y\pm = X\mp)$ or $(Y+ = X-)$dynamic space-matter of indivisible structural forms of indivisible $(Y\pm)$ quanta $(Y- = X+)$ and $(X\pm)$:

$(Y\pm = e^-) = (\boldsymbol{X}+= \nu_e^-)(Y-= \gamma^+)(\boldsymbol{X}+= \nu_e^-)$ electron, where $IAL(Y\pm)$= CE (Y +) * CE (Y -), and $(X\pm = p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$ a proton, where $IAL(X\pm)$= CE(X +)*CE(X -),
We separate $(Y+ = X-)$ electromagnetic fields from mass fields $(Y- = X+)$in the form:

$$(X+)(X+) = (Y-)\text{And } \frac{(X+)(X+)}{(Y-)} = 1 = (Y+)(Y-);\ (Y+= X-) = \frac{(X+)(X+)}{(Y-)}, \text{ or: } \frac{(\boldsymbol{X}+=\nu_e^-/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(\boldsymbol{X}+=\nu_e^-/2)}{(Y-=\gamma^+)} = q_e(Y+)$$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36*10^{-5})^2*\sqrt{2}*6{,}67*10^{-8}}{4*9{,}07*10^{-9}} = 4{,}8*10^{-10}SGSE$$

$$(Y+)(Y+) = (X-)\text{And } \frac{(Y+)(Y+)}{(X-)} = 1 = (X+)(X-);\ (Y+= X-) = \frac{(Y-)(Y-)}{(X+)}, \text{ or: } \frac{(\boldsymbol{Y}-=\gamma_0^+)(\boldsymbol{\alpha^2})(\boldsymbol{Y}-=\gamma_0^+)}{(\boldsymbol{X}+=\nu_e^-)} = q_p(Y+= X-),$$

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3{,}13*10^{-5}/2)^2}{2*137{,}036^2*1.36*10^{-5}} = 4{,}8*10^{-10}SGSE$$

Such coincidences cannot be accidental. For a proton's wavelength $\lambda_p = 2{,}1*10^{-14}cm$, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286*10^{24}Hz$ is formed by the frequency(γ_0^+) quanta, with mass $2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+})$.
$1g = 5{,}62*10^{26}MeV$, or: $(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58*10^{-32}g = 3{,}13*10^{-5}MeV$
Similarly, for an electron $\lambda_e = 3{,}86*10^{-11}cm$, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77*10^{20}Hz$ is formed by the frequency(ν_e^-) quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-)})$, where: $\alpha(Y-) = \frac{1}{137{,}036}$ constant, we get:

$$(m_{\nu_e^-}) = \frac{\alpha^2\hbar(\nu_{(\nu_e^-)})}{2c^2} = \frac{1*1{,}0545*10^{-27}*7{,}77*10^{20}}{(137{,}036^2)*2*9*10^{20}} = 2{,}424*10^{-32}g = 1{,}36*10^{-5}MeV, \quad \text{for the neutrino mass.}$$

with the mass of an indivisible electron:

$$(Y\pm= e) = (X-= \nu_e)(Y+= \gamma)(X-= \nu_e) = \left(\frac{2\nu_e}{\alpha^2} + \frac{\gamma*\alpha}{2G}\right) = \left(\frac{2*1{,}36*10^{-5}}{(1/137.036)^2} + \frac{9{,}1*10^{-9}/137.036}{2*6{,}67*10^{-8}}\right) = 0{,}511\,MeV$$

and similarly the mass of an indivisible proton:

$$(X\pm= p) = (Y-= \gamma_o)(X+= \nu_e)(Y-= \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{\nu_e}{\alpha^2}\right) = \left(\frac{2*3{,}13*10^{-5}}{6{,}67*10^{-8}} - \frac{1{,}36*10^{-5}}{(1/137.036)^2}\right) = 938{,}275\,MeV$$

Such coincidences also cannot be accidental. Similarly, in the unified fields of space-matter, the Bosons of the electro $(Y+) = (X-)$ weak interaction:

$$IAL(Y) = (Y+= e^\pm)(X-= \nu_\mu^\mp) = \frac{2\alpha*\left(\sqrt{m_e(m_{\nu_\mu})}\right)}{G} = (1+\sqrt{2}*\alpha)m(W^\pm)\text{ , or:}$$

$$IAL(Y) = m(W^\pm) = \frac{2*(\sqrt{0.511*0.27})}{137.036*6.674*10^{-8}*(1+\frac{\sqrt{2}}{137.036})} = 80.4\,GeV,$$

with charge $(e^\pm)$, and inductive mass:$m(Y-) = \left(\sqrt{2}*\alpha\right)*m(W^\pm)$. It's like a "dark $m(Y-)$mass".

$$IAL(X) = (X+= \nu_\mu^\mp)(Y-= e^\pm) = \frac{\alpha*\left(\sqrt{(2m_e)m_{\nu_\mu}exp1}\right)}{G} = 94{,}8\,GeV = m(Z^0)$$

and also new one's **<u>stable</u>** particles on colliding beams of muon antineutrinos (ν_μ^-)

$$IAL(Y\pm = e_1^-) = (\boldsymbol{X}-= \nu_\mu^-)(Y+= \gamma_o)(\boldsymbol{X}-= \nu_\mu^-) = \frac{2\nu_\mu^-}{\alpha^2} = 10{,}21\ GeV$$

On the counter beams of positrons (e^+), which are accelerated in the flow $(Y- = \gamma)$, photons of the «**white laser»** in the form of:

$$IAL(X\pm = p_1^+) = (\boldsymbol{Y}-= e^+)(X+= \nu_\mu^-)(\boldsymbol{Y}-= e^+) = \frac{2m_e}{G} = 15{,}3\ TeV$$

These are indivisible quanta of the new substance. On colliding beams of antiprotons (p^-), the following takes place:

$$IAL(Y \pm = e_2^-) = (\boldsymbol{X} -= p^-)(Y += e^+)(\boldsymbol{X} -= p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV.$$

For counter-propagating particles НОЛ$(Y -) = (X += p^\pm)(X += p^\pm)$, the mass of the Higgs boson quantum is calculated: $M(Y -) = (X += p^\pm)(X += p^\pm) = \left(\frac{2m_0}{2\alpha} = \overline{m_1}\right)(1 - 3\alpha)$

or $M(Y -) = \left(\frac{2m_p}{2\alpha} = \frac{m_p}{\alpha} = \overline{m_1}\right)(1 - 3\alpha) = \frac{0{,}93828\ GeV}{(1/137{,}036)}\left(1 - \frac{3}{137{,}036}\right) = 125{,}76\ \ GeV$

and the mass of the tau lepton: $M(X) = (\boldsymbol{Y} -= e^-)(X += v_t^+)(\boldsymbol{Y} -= e^-) = \frac{(Y-)(Y-)}{(X+)} = \frac{(e = 0.511 MeV)}{\sqrt{1.24} * \sqrt{G = 6.67 * 10^{-8}}} = 1776.835 MeV$

In a single $(Y+ = X -) = 1$, space - matter, Maxwell's equations [1] for the electro (Y+ =X -) magnetic field are derived. Inside the solid angle $\varphi_X(X-) \neq 0$ of parallelism there is an isotropic voltage of the A_n component flow (Smirnov, Course of Higher Mathematics, v.2, p.234). The full flow of the vortex through the intersecting surface $S_1(X-)$ is in the form:

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial(A_n / \cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1 .$$

A_n component corresponds to a bundle of $(X-)$ parallel trajectories. It is a tangent along a closed curve L_2 in the surface S_2, where $S_2 \perp S_1$ and $L_2 \perp L_1$. Similarly, the relation follows:

$$\int_{L_2} A_n dL_2 = \iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 .$$

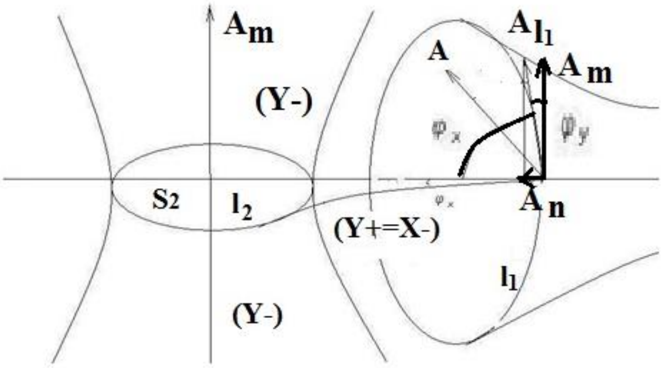


Figure 3. Electro $(Y+= X-)$magnetic and gravitational $(X+= Y-)$fields.

Inside the solid angle $\varphi_X(X-) \neq 0$ of parallelism the condition is satisfied

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 \quad + \iint \frac{\partial A_n}{\partial T} dL_2 dT = 0 = \iint_{S_2} A_m(X-) dS_2 .$$

In general, there is a system of equations of $(X - = Y+)$ field dynamics.

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial(A_n / \cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1$$

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 = -\iint \frac{\partial A_n}{\partial T} dL_2 dT \quad \text{, And} \quad \iint_{S_2} A_m dS_2 = 0 .$$

In Euclidean $\varphi_Y = 0$ axiomatics, taking the voltage of the vector component flux as the voltage of the electric field $A_n / \cos\varphi_X = E(Y+)$ and the inductive projection for a non-zero angle $\varphi_X \neq 0$ as the magnetic field induction $B(X-)$, we have

$$\iint_{S_1} rot_X B(X-) dS_1 = \iint \frac{\partial E(Y+)}{\partial T} dL_1 dT + \iint_{S_1} E(Y+) dS_1$$

$$\iint_{S_2} rot_Y E(Y+)dS_2 = -\iint \frac{\partial B(X-)}{\partial T} dL_2 dT$$, under the conditions $$\iint_{S_2} A_m dS_2 = 0 = \oint_{L_2} B(X-)dL_2$$.

the well-known Maxwell equations apply.

$$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+);$$
$$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T};$$

Induction of a vortex magnetic field $B(X-)$ occurs in an alternating electric $E(Y+)$ field and vice versa. For example, a charged sphere inside a moving carriage (the **charge ($q \neq 0$) does not change)** does not have a magnetic field. But a compass on the platform will show the magnetic field of a sphere in a moving carriage. It was precisely this inductive magnetic field, from moving electrons of a conductor current, that Oersted discovered when he observed $(X-)$the magnetic field of moving $(Y+)$electrons of a conductor current. Then there were Faraday's experiments, the induction of vortex electric fields in an alternating magnetic field, the laws of induction and self-induction, and Maxwell's equations.

For an open contour L_2 there are component ratios $\int_{L_2} A_n dL_2 = \iint_{S_2} A_m dS_2 \neq 0$. Under conditions of orthogonality of the components $A_n \perp A_m$ of the vector A, in non-zero, dynamic $(\varphi_X \neq const)$ and $(\varphi_Y \neq const)$ parallel angles, $A\cos\varphi_Y \perp (A_n = A_m \cos\varphi_X)$, there is a component dynamic $(A_m \cos\varphi_X = A_n)$ along the contour L_2 in the surface S_2. Both ratios are presented in full form.

$$\int_{L_2} A_m \cos\varphi_X dL_2 = \iint_{S_2} \frac{\partial(A_m(X+) * \cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2$$

Zero flux through the surface S_1 of a vortex $(rot_n A_m)$ outside the solid angle $(\varphi_Y \neq const)$ of parallelism corresponds to the conditions

$$\iint_{S_1} rot_n A_m dS_1 + \iint \frac{\partial A_m}{\partial T} dL_1 dT = 0 = \iint_{S_1} A_n(Y-)dS_1 .$$

In general, the system of equations of $(Y- = X+)$ field dynamics is represented in the form:

$$\iint_{S_2} rot_m A_m(Y-)dS_2 = \iint_{S_2} \frac{\partial(A_m(X+) * \cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2$$
$$\iint_{S_1} rot_n A_m(X+)dS_1 = -\iint \frac{\partial A_m(Y-)}{\partial T} dL_1 dT , \qquad \iint_{S_1} A_n(Y-)dS_1 = 0 .$$

Introducing by analogy the $G(X+)$ field strength of the Strong (Gravitational) Interaction and the induction of the mass field $M(Y-)$, we obtain similarly:

$$\iint_{S_2} rot_m M(Y-)dS_2 = \iint \frac{\partial G(X+)}{\partial T} dL_2 dT + \iint_{S_2} G(X+)dS_2$$
$$\iint_{S_1} rot_n G(X+)dS_1 = -\iint \frac{\partial M(Y-)}{\partial T} dL_1 dT , \quad \text{at} \quad \iint_{S_1} A_n(Y-)dS_1 = 0 = \oint_{L_1} M(Y-)dL_1 .$$

Such equations correspond to gravitational $(X+ = Y-)$ mass fields,

$$c * rot_X M(Y-) = rot_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$$
$$M(Y-) = \mu_2 * N(Y-); \qquad rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$$

by analogy with Maxwell's equations for $(Y+= X-)$electromagnetic fields. We are talking about the induction of mass $M(Y-)$fields in a variable $G'(X+)$gravitational field, similar to the induction of a magnetic field in a variable electric field. There are no options here. And here it is appropriate to dwell in more detail on the well-known formula $(E = mc^2)$. A body with a non-zero $(m \neq 0)$mass emits light with energy (L)in a (x_0, y_0, z_0, ct_0)coordinate system, with the law of conservation of energy: $(E_0 = E_1 + L)$, before and after radiation. For the same mass, and this is the key point (**the mass ($m \neq 0$)does not change**) in another (x_1, y_1, z_1, ct_1)coordinate system, the law of conservation of energy with $(\gamma = \sqrt{1-\frac{v^2}{c^2}})$ Lorentz transformations, Einstein wrote in the form $(\mathrm{H}_0 = \mathrm{H}_1 + \mathrm{L}/\gamma)$. Subtracting their difference, Einstein obtained:

$$(\mathrm{H}_0 - \mathrm{E}_0) = (\mathrm{H}_1 - \mathrm{E}_1) + \mathrm{L}(\frac{1}{\gamma} - 1), \text{ or } (\mathrm{H}_0 - \mathrm{E}_0) - (\mathrm{H}_1 - \mathrm{E}_1) = \mathrm{L}(\frac{1}{\gamma} - 1),$$

With separation of the difference in radiation energy. Both inertial coordinate systems are moving, but (x_1, y_1, z_1, ct_1)moves with a speed (v)relative to (x_0, y_0, z_0, ct_0). And it is clear that blue and red light have a difference in energy, which Einstein wrote down in the equation. Einstein wrote the equation itself as a difference in kinetic energies in the first expansion.

$$(\mathrm{K}_0 - \mathrm{K}_1) = \frac{\mathrm{L}}{2}(\frac{v^2}{c^2} \ldots), \quad \text{or:} \qquad \Delta\mathrm{K} = (\frac{\Delta\mathrm{L}}{c^2})\frac{v^2}{2}$$

Here $(\frac{\Delta\mathrm{L}}{c^2} = \Delta m)$ the factor has the properties of the mass of "radiant energy", or: $\Delta\mathrm{L} = \Delta mc^2$. This formula has been interpreted in different ways. The energy of annihilation of: $\mathrm{E} = \mathrm{m}_0 c^2$ the rest mass, or: $\mathrm{m}_0{}^2 = \frac{\mathrm{E}^2}{c^4} - p^2/c^2$, in relativistic dynamics. Here, a mass with zero momentum $(p = 0)$ has energy: $\mathrm{E} = \mathrm{m}_0 c^2$, and a zero mass of a photon: $(\mathrm{m}_0 = 0)$, has momentum and energy $\mathrm{E} = \mathrm{p} * \mathrm{c}$. But Einstein derived another law of "radiant energy" $(\Delta\mathrm{L} = \Delta mc^2)$, with mass properties. This is not the energy of a photon, this is not the energy of annihilation, and this is not the energy $(\Delta E = \Delta mc^2)$of the mass defect of the nucleons of the nucleus of an atom. Einstein saw what no one saw. Like a moving charge, with the induction of the magnetic field of Maxwell's equations, a moving mass (the mass $(m \neq 0)$ does not change) induces mass energy $(\Delta\mathrm{L} = \Delta mc^2)$, which Einstein found. By analogy with the inductive energy of a magnetic field from a moving charge, Einstein derived a formula for the inductive, "radiant" energy of mass fields, from moving non-zero masses (the **mass $(m \neq 0)$ does not change),** including stars in galaxies. Here Einstein went beyond the Euclidean $(\varphi = 0)$axiomatics of space-time. axioms of dynamic space-matter $(\varphi \neq const)$, we are talking about inductive $m(Y-)$mass fields, in complete analogy with Maxwell's equations. This is what Einstein saw, and no one else.

Such equations of dynamics are presented as a single mathematical truth of such fields in a single, dynamic space-matter. We are talking about the induction of mass fields around moving masses (stars) as well as about the induction of magnetic fields around moving charges.

Thus, the rotations $rot_y B(X-)$of $rot_x M(Y-)$trajectories give the dynamics of $\mathrm{E}'(Y+)$both $G'(X+)$the electric $(Y+)$and gravitational $(X+)$fields, respectively. And the rotations $(Y+)$of fields around $(X-)$trajectories and $(X+)$fields around $(Y-)$ trajectories give the dynamics of the electromagnetic $rot_x E(Y+) \rightarrow B'(X-)$field and mass $rot_y G(X+) \rightarrow M'(Y-)$trajectories.

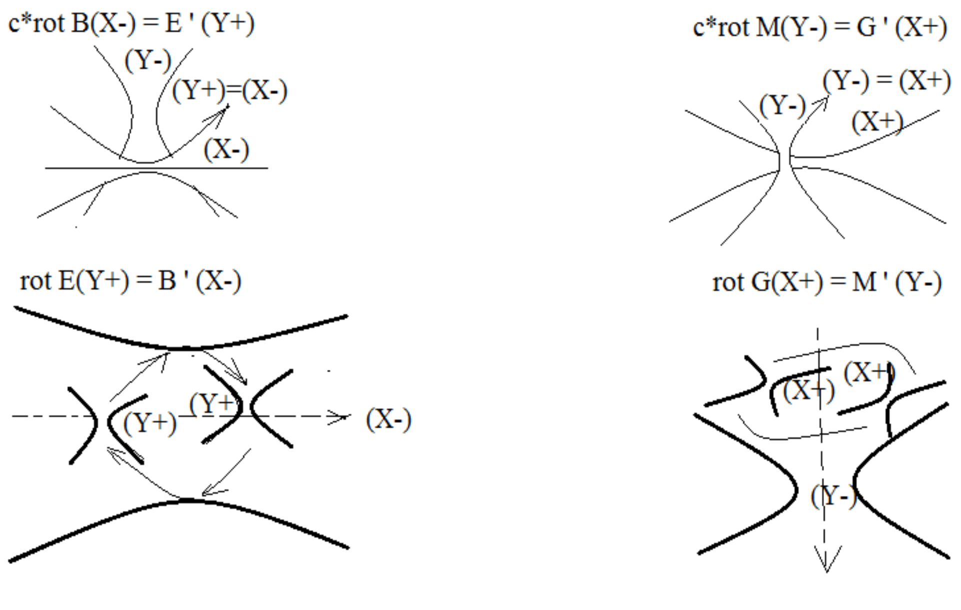


Figure 4. Unified fields of space-matter.

The model of the products of proton and electron annihilation corresponds to such calculations. We have mass fields (Y- = e) = (X+ = p) of the atom.

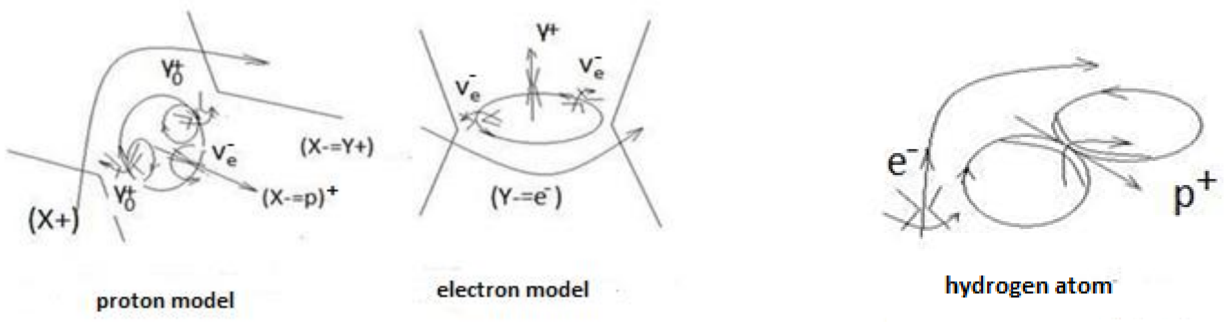


Figure 5. Models of the products of proton-electron annihilation

The geometric **fact** here is the presence of antimatter in the substance of the proton and electron. At the same time, there are electro $(Y+= X-)$magnetic interaction of an orbital electron and a proton of a nucleus, such as a hydrogen atom, as well as the symmetries of the proton annihilation products: $(X\pm= p^{+}) = (\boldsymbol{Y}-= \gamma_0^{+})(\boldsymbol{X}+= \nu_e^{-})(\boldsymbol{Y}-= \gamma_0^{+})$**,** and electron: $(Y\pm = e-) = (X- = \nu_e^{-}) + (Y\pm = \gamma^{+}) + (X- = \nu_e^{-})$. There is no exchange photon in the charge attraction of an orbital electron with a (-) charge and a proton of the nucleus with a (+) charge. If the electron emits a photon, then the protons of the nucleus do not emit photons in the charge interaction with orbital electrons. As well as many orbital electrons with a (-) charge do not repel each other in orbits, although in theory they should be attracted to the (+) charges of the protons of the nucleus. This is a contradiction of such a model. As is known, the (+) charge of a proton is formed by quarks, but the same (+) charge of a positron does not have quarks. Such a model of (+) charge is contradictory.

4.Vacuum structures.

Contents

4.1.Introduction

There are amazing properties of mathematics to model and calculate physical properties of matter. They say that the language of Nature is mathematics. Mathematics describes physical experiments, generalizes and predicts physical properties. But there are questions of physics that mathematics has no answers to. Modern physics runs into many problems, facts that go beyond its theoretical concepts. The theoretical models and fundamental concepts themselves are largely contradictory. For example, they said that the Higgs field creates the mass of particles. Formally, this can be understood at the classical level, $m = \nu^2 V$ (frequency is determined by the stiffness coefficient and mass), as oscillations in the volume of the Higgs field (boson energy in the Spontaneous Symmetry Breaking model), which are taken as the basis of the idea. But how the "Higgs field mass" creates the force of gravitational attraction of two masses, they forgot to say. There is no answer. Mathematics answers the question HOW? Physics answers the question WHY? We will look for physical reasons. This is very important. For example, what is energy, what is mass and the emergent properties of mass, what is charge, how does mass create gravity, what is the force of gravity, and so on.

Here we will pay attention that mathematical models are created in the Euclidean axiomatics of points ("...having no parts"), lines ("...length without width"), the system of numbers equal by analogy to units. Let's say we are talking about 10 apples, to which 5 apples were added, and we are talking about 15 apples, as equal by analogy to apples, that is, units. But we are not saying that each apple is different from another apple. There are no 15 identical apples (units) in Nature. This means that such an addition operation corresponds to reality only in an approximate form. On the other hand, if we put 3 apples on the table, and then take one apple away, then 2 apples remain. Note that we took away the apple that we put on the table. Everything is real. And this operation of subtracting numbers corresponds to physical reality. As we can see, even simple actions with prime numbers do not always correspond to the properties of Natural events. A set of Euclidean points at one point, is it a point or a set of them? A set of Euclidean lines in one "length without width", is it a line or a set of them? Euclidean axiomatic does not provide answers to such questions. But it is this axiomatic that is our technology of theories in space-time. Earlier we considered another technology of theories of dynamic space-matter, in which the technology of theories in Euclidean axiomatic is a limiting, special case. At the same time, space dynamic in time (in any coordinate system) is a form of matter, the main property of which is movement. In other words, dynamic space-matter is one and the same. And that is why the mathematical properties of space-time correspond to the physical properties of matter. That is why the properties of matter are written by the laws of mathematics.

4.2. Initial positions.

In order to avoid searching through various sources, we will recall here the basic provisions necessary for further presentation.

How does the technology of theories in Euclidean axiomatic differ from the technology of theories of a single and dynamic space-matter? The answer is in the Euclidean axioms themselves of the system of numbers equal by analogy to units, a point ("...having no parts") and a line ("...length without width"). The question immediately arises, how many straight lines pass through a point outside another line and are parallel to it. They say that there is one straight line, but this is "...length without width", in which there are many. The axioms do not work. Then the uncertainty principle of the line-trajectory of a quantum is introduced. In fact, and according to the Euclidean axioms, many straight lines parallel to the original straight-line pass through a point outside a line. In this case, the properties of parallelism are the properties of isotropy of space, Euclidean in this case, when parallel lines can be drawn in any direction. Such technology of Euclidean axiomatic in theories gives excellent results of classical physics. But in quantum theories with the uncertainty principle, we have only extreme or probabilistic fixed properties of matter.

We considered the properties of dynamic space-matter with its own axiomatic (as facts that do not require proof) in which the Euclidean axiomatic, as well as its technology, is a special case. Let us recall.

Isotropic properties of lines parallel $(\parallel)$to trajectory lines give Euclidean space with zero $(\varphi = 0)$angle of parallelism.

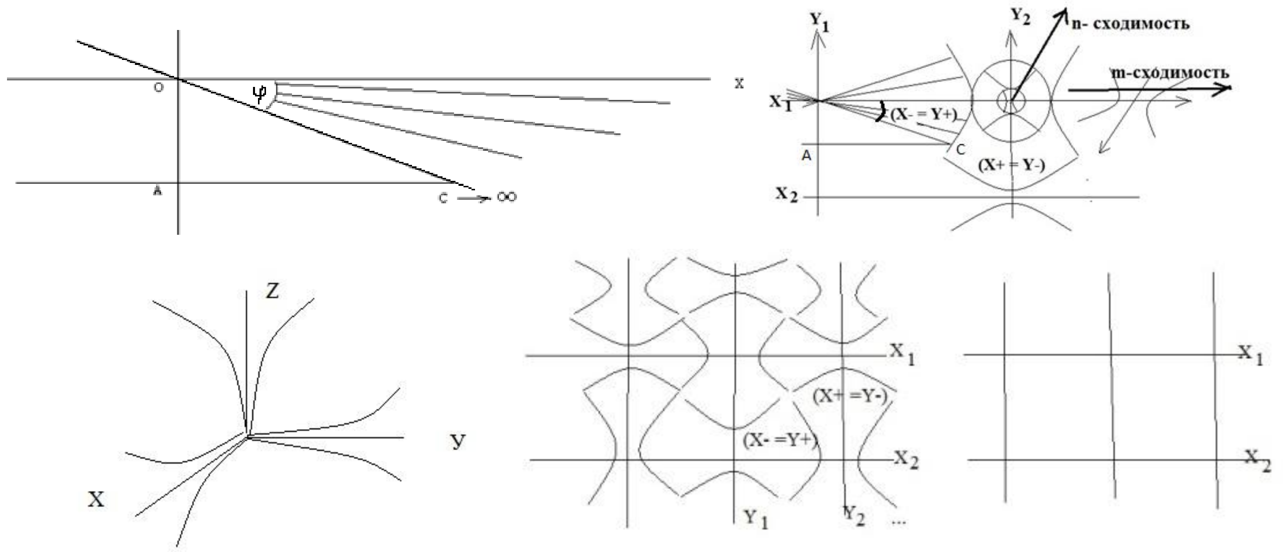


Fig. 1. Dynamic space-matter.

In this case, through the point O, outside the ray $(AC \to \infty)$, there passes only one straight line (OX)that does not intersect the original straight ray $(AC \to \infty)$. The fact of reality is that when moving along $(AC \to \infty)$to infinity, within the dynamic $(\varphi \neq const)$angle of parallelism, there is always a dynamic bundle of straight lines in $(X-)$a dynamic field, with a non-zero $(\varphi \neq 0)$angle of parallelism, and not intersecting the ray $(AC \to \infty)$at infinity. We are talking about a set of straight lines passing through the point O, outside the straight line $(AC \to \infty)$and parallel to the original ray $(AC \to \infty)$. This is "length without width" in Euclidean axiomatic, with the principle of uncertainty $(X-)$of the line-trajectory. In the axes (XYZ), as we see, Euclidean space loses its meaning. It simply does not exist.

Such dynamic $(\varphi \neq const)$space-matter has its own geometric facts, like axioms, that do not require proof.

Axioms of dynamic space-matter

1. A non-zero, dynamic angle of parallelism $(\varphi \neq 0) \neq const$)of a bundle of parallel lines determines the orthogonal fields of $(X-) \perp (Y-)$parallel lines - trajectories, as isotropic properties of space-matter.

2. Zero angle of parallelism $(\varphi = 0)$gives "length without width" with zero or non-zero Y_0 - the radius of a sphere-point "having no parts" in Euclidean axiomatic.

3. A pencil of parallel lines with zero angle of parallelism $(\varphi = 0)$, "equally located to all its points", gives a set of straight lines in one "width less" Euclidean straight line.

4. Internal $(X-), (Y-)$and external $(X+), (Y+)$fields of the trajectory lines are non-zero $X_0 \neq 0$ or $(Y_0 \neq 0)$ material sphere-points, form an Indivisible Region of Localization $НОЛ(X \pm)$ or $НОЛ(Y \pm)$ dynamic space-matter.

5. In unified fields $(X+ = Y-)$, $(Y+ = X-)$there are no two identical sphere-points and lines-trajectories of orthogonal lines-trajectories.$(X-) \perp (Y-)$

6. The sequence of Indivisible Localization Regions $(X \pm)$, $(Y \pm)$, $(X \pm)$… along the radius $X_0 \neq 0$ or $Y_0 \neq 0$ sphere-points on one line-trajectory gives n convergence, and on different trajectories m convergence.

7. Each Indivisible Area of Localization of space-matter corresponds to a unit of all its Criteria of Evolution – KE, in a single $(X+ = Y-)$,$(Y+ = X-)$ space-matter on $m-n$ convergences,

$$НОЛ = КЭ(X- = Y+)КЭ(Y- = X+) = 1, \quad НОЛ = КЭ(m)КЭ(n) = 1,$$

in a system of numbers equal by analogy of units.

8. Fixing an angle $(\varphi \neq 0) = const$)or $(\varphi = 0)$a bundle of straight parallel lines, space-matter, immediately gives the 5th postulate of Euclid and the axiom of parallelism.

Any point of fixed lines-trajectories is represented by local basis vectors of Riemannian space: $\boldsymbol{e_i} = \frac{\partial X}{\partial x^i}\boldsymbol{i} + \frac{\partial Y}{\partial x^j}\boldsymbol{j} + \frac{\partial Z}{\partial x^k}\boldsymbol{k}$, $\quad \boldsymbol{e^i} = \frac{\partial x^i}{\partial X}\boldsymbol{i} + \frac{\partial x^j}{\partial Y}\boldsymbol{j} + \frac{\partial x^k}{\partial Z}\boldsymbol{k}$, (Korn, p. 508), with fundamental tensor $\boldsymbol{e_i}(x^n) * \boldsymbol{e_k}(x^n) = \boldsymbol{g_{ik}}(x^n)$, and topology $(x^n = \boldsymbol{XYZ})$in Euclidean space. These basis vectors can always be represented as a velocity space in vector form: $\boldsymbol{e_i} = \boldsymbol{v_i}(x^n)$, $\boldsymbol{e^i} = \boldsymbol{v^i}(x^n)$, with linear components $(x^i = c_x * t)$,$(X = c_x * t)$ space-time, then we have:$\boldsymbol{v_i}(x^n) * \boldsymbol{v_k}(x^n) = (v^2) = \Pi$, the usual potential of space-matter, as a certain acceleration on the length. That is, Riemannian space is a fixed $(\varphi \neq 0 = const)$ state of the geodesic$(x^s = const)$ lines dynamic$(\varphi \neq const)$ space-matter $(x^s \neq const)$. That is, Riemannian space is a fixed $(\varphi \neq 0 = const)$state of a geodesic$(x^s = const)$ lines dynamic $(\varphi \neq const)$ space-matter $(x^s \neq const)$. There is no such mathematics of Riemannian space $\boldsymbol{g_{ik}}(x^s \neq const)$, with a variable geodesic. There is no geometry of the Euclidean non-stationary sphere, no geometry of Lobachevsky space, with variable asymptotes of hyperbolas. A special case of negative curvature $\left(K = -\frac{Y^2}{Y_0} = \frac{(+Y)(-Y)}{Y_0}\right)$(Smirnov v.1, p.186) of Riemannian space is the space of Lobachevsky geometry (Mathematical Encyclopedia v.5, p.439). There are nine distinctive features of Lobachevsky geometry from Euclidean geometry (Fig. 1.2).

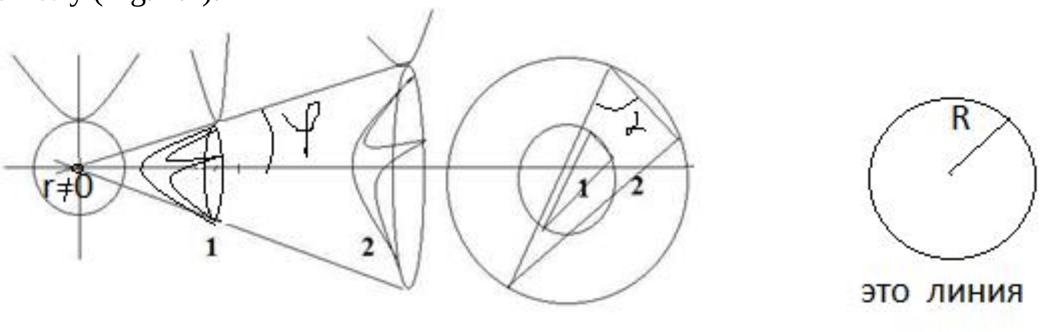


Fig. 1.2 Isotropic dynamics.

One of the features of Lobachevsky geometry is the sum of $(0^0 < \sum\alpha < 180^0)$the angles of a triangle, in contrast to their Euclidean projection $(\sum\alpha = 180^0)$onto a plane. Equal areas $S_1 = S_2$of triangles, in equal angles of parallelism $\varphi_1 = \varphi_2$ of a bundle of parallel straight lines, give projectivity similar triangles in the Euclidean plane with equal angles at the vertices. A circle in the Euclidean plane is a line in Lobachevsky geometry. Here, Euclidean "length without width" is the radius of a circle in Lobachevsky geometry. The larger the radius, the longer the "line". Such circles on the surface of the Euclidean sphere are a set of straight lines in the Universe. In our case, the Euclidean sphere is also dynamic. How can we create theories of the "Big Bang" or "cyclic Universe" in such a sphere? The answer is no way. This is about nothing. The zero radius of such a circle $(r = 0)$means that such a circle does not exist, and there are no such lines. This is a conversation about nothing, they simply do not exist. This is about the questions of singularity with their infinite criteria and impossibilities. They do not exist either in mathematics or in Nature. There is no such mathematics of Riemannian space $\boldsymbol{g_{ik}}(x^s \neq const)$, with a variable geodesic. There is no geometry of the Euclidean non-stationary sphere, there is no geometry of the Lobachevski space, with variable asymptotes of hyperbolas. These orthogonal (X$-$) $\perp$ $(Y-)$lines-trajectories have dynamic spheres inside, non-stationary Euclidean space $(\varphi \neq const)$. And these (X$-$) $\perp$ $(Y-)$ lines-trajectories have their own fields of a single and $(\varphi \neq const)$dynamic (X$+ = Y-$), $(Y+ =$ X$-$)space - matter. In the Euclidean grid of axes $(X_i) \perp (Y_i)$, we do not see it, and cannot imagine it. And this is already another $(\varphi \neq const)$technology of mathematical and physical theories, in which the existing technology of Euclidean axiomatics $(\varphi = 0)$ or $(\varphi = const)$Riemannian space is a limiting and special case, respectively. At the same time, all the Criteria of Evolution are formed in a single way in the multidimensional $W^N = K^{+N} T^{-N}$ space of velocities, multidimensional space-time.

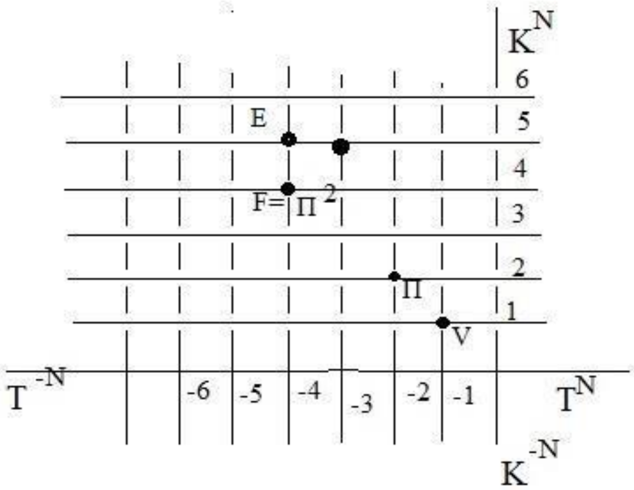


Fig. 2. Criteria of Evolution in space-time.

Here for (N=1), $V = K^{+1} T^{-1}$ is the velocity, $W^2 = \Pi$ is the potential, $\Pi^2 = F$ is the force. Their projections onto the coordinate (K) or time (T) space-time give: charge ΠK= q (Y + =X -) in electro (Y+ =X -) magnetic fields, or mass ΠK=m(X+=Y-) in gravitational (X+=Y-) mass fields, then the density $(\rho = \frac{m}{V} = \frac{\Pi K}{K^3} = \frac{1}{T^2} = \nu^2)$ is the square of the frequency, energy $E = \Pi^2 K$, momentum $(p = \Pi^2 T)$, action $(\hbar = \Pi^2 KT)$, etc., of a single NOL= (X+=Y-) (Y+ =X -) =1, space-matter.

4.3.Selected properties

The main property of matter is movement. Therefore, $(\varphi \neq const)$we correlate the properties of such a dynamic space with the properties of matter. It is one and the same. It is (X$+ = Y-$),$(Y+ =$ X$-$) single, discrete with (X$\pm$)and $(Y\pm)$Indivisible Areas of Localization, which we relate to indivisible quanta of space-matter in the form of: proton (X$\pm = p$), electron $(Y\pm = e)$, neutrinos (X$\pm = \nu_\mu$) and (X$\pm = \nu_e$) photons$(Y\pm = \gamma_o)$ $(Y\pm = \gamma)$. From $(m)$the convergence (X$\pm$)of $(Y\pm)$such quanta, their sequence follows in the form:

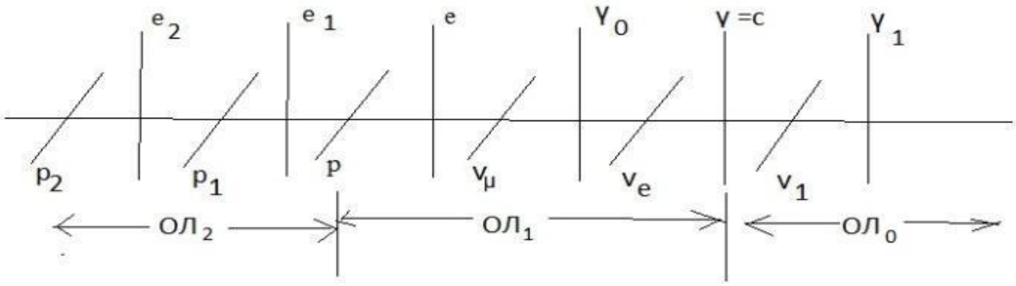


Fig. 3.1 Indivisible quanta of space-matter.

"dark photon" ($Y\pm\ =\gamma_o$)is introduced for the continuity of a single (X+=Y-) (Y+ =X -) space-matter. Such electro (Y + =X -) magnetic fields have the dynamics of Maxwell's equations:

$$c*rot_Y B(X-)=rot_Y \mathrm{H}(X-)=\varepsilon_1\frac{\partial E(Y+)}{\partial T}+\lambda E(Y+);$$

$$rot_X E(Y+)=\ -\mu_1\frac{\partial \mathrm{H}(X-)}{\partial T}=-\frac{\partial \mathrm{B}(X-)}{\partial T};$$

The dynamics $E(Y+)$of the electric field generates an inductive magnetic $\mathrm{B}(X-)$field, and vice versa. For example, a charged ball in a moving carriage has no magnetic field. But a compass on the platform will show a magnetic field. This is Oersted's experiment, which observed $(X-)$the magnetic field of moving $(Y+)$electrons of a conductor current.

And the same equations of the dynamics of gravitational (X+=Y-) mass fields are derived in a unified way:

$$c*rot_X M(Y-)=rot_X N(Y-)=\varepsilon_2*\frac{\partial G(\mathrm{X}+)}{\partial T}+\lambda*G(\mathrm{X}+)$$

$$\mathrm{M(Y-)}=\mu_2*N(Y-);\qquad rot_Y G(\mathrm{X}+)=\ -\mu_2*\frac{\partial N(Y-)}{\partial T}=-\frac{\partial M(Y-)}{\partial T};$$

The dynamics of $G(\mathrm{X}+)$the gravitational field generates an inductive mass $M(Y-)$field, and vice versa. Similarly, when (X+)masses (stars) move, mass $(Y-)$fields are generated in induction. Here it is appropriate to dwell on the well-known formula ($E=mc^2$), which we will dwell on in more detail. A body with a non-zero $(m\neq 0)$mass emits light with energy (L)in the system(x_0,y_0,z_0,ct_0) coordinates, with the law of conservation of energy: ($\mathrm{E}_0=\mathrm{E}_1+\mathrm{L}$), before and after radiation. For the same mass, and this is the key point (**the mass ($m\neq 0$)does not change**), in another (x_1,y_1,z_1,ct_1)coordinate system, the law of conservation of energy with ($\gamma=\sqrt{1-\frac{v^2}{c^2}}$) Lorentz transformations, Einstein wrote in the form ($\mathrm{H}_0=\mathrm{H}_1+\mathrm{L}/\gamma$). Subtracting their difference, Einstein obtained:

$$(\mathrm{H}_0-\mathrm{E}_0)=(\mathrm{H}_1-\mathrm{E}_1)+\mathrm{L}(\frac{1}{\gamma}-1),\ \text{or}\ (\mathrm{H}_0-\mathrm{E}_0)-(\mathrm{H}_1-\mathrm{E}_1)=\mathrm{L}(\frac{1}{\gamma}-1),$$

With separation of the difference in radiation energy. Both inertial coordinate systems are moving, but (x_1,y_1,z_1,ct_1)moves with a speed (v)relative to (x_0,y_0,z_0,ct_0). And it is clear that blue and red light have a difference in energy, which Einstein wrote down in the equation. Einstein wrote the equation itself as the difference in kinetic energies in the first expansion.

$$(\mathrm{K}_0-\mathrm{K}_1)=\frac{\mathrm{L}}{2}(\frac{v^2}{c^2}..),\qquad \text{or}\qquad \Delta\mathrm{K}=(\frac{\Delta\mathrm{L}}{c^2})\frac{v^2}{2}$$

Here ($\frac{\Delta\mathrm{L}}{c^2}=\Delta m$)the factor, has the properties of the mass of "radiant energy", or: $\Delta\mathrm{L}=\Delta mc^2$. This formula has been interpreted in different ways. The annihilation energy $\mathrm{E}=\mathrm{m}_0c^2$of the rest mass, or: ${\mathrm{m}_0}^2=\frac{\mathrm{E}^2}{c^4}-p^2/c^2$, in relativistic dynamics. Here the mass with zero momentum$(p=0)$, has energy: $\mathrm{E}=\mathrm{m}_0c^2$, and the zero mass of a photon: ($\mathrm{m}_0=0$), has momentum and energy $\mathrm{E}=\mathrm{p}*\mathrm{c}$. But Einstein derived another law of "radiant energy" ($\Delta\mathrm{L}=\Delta mc^2$), with mass properties. This is not the energy of a photon, and this is not the energy ($\Delta E=\Delta mc^2$)of the mass defect of the nucleons of the nucleus of an atom. Einstein saw what no one else saw. Like a moving charge, with the induction of the magnetic field of Maxwell's equations, a moving mass (mass($m\neq 0$) does not change), induces mass energy ($\Delta\mathrm{L}=\Delta mc^2$), which Einstein discovered. For example, a charged sphere inside a moving carriage (**the charge ($q\neq 0$) does not change)** has no magnetic field. But a compass on the platform will show the magnetic field of a sphere in a moving carriage. It was precisely this inductive magnetic field, from moving electrons of a conductor current, that Oersted discovered. Then came Faraday's experiments, the induction of vortex electric fields in an alternating magnetic field, the laws of induction and self-induction, and Maxwell's equations. By analogy with the inductive energy of a magnetic field from a moving charge, Einstein derived a formula for the inductive, "radiant" energy of mass fields, from moving non-zero masses (the **mass ($m \neq 0$) does not change)** , including stars in galaxies. And here Einstein went beyond the Euclidean ($\varphi = 0$)axiomatics of space-time. In the axioms of dynamic space-matter ($\varphi \neq const$), we are talking about inductive $m(Y-)$mass fields, in complete analogy with Maxwell's equations. This is what Einstein saw, and no one else.

Newton presented the formula, but did not say WHY the force of gravity arises. Writing down the equation of the General Theory of Relativity, Einstein took the gravitational potential of zero mass: $\frac{E^2}{p^2} = c^2$, in the form of $\frac{L^2(Y-)}{p^2} = Gv^2(X+) = \frac{8\pi G}{c^4}T_{ik}$ the energy-momentum tensor. The false idea of Einstein's General Theory of Relativity is that it is believed that the equation presents a non-zero mass, as a source of curvature of space-time, as a source of gravity. In the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter in full form:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = \frac{8\pi G}{c^4}T_{ik}.$$

there is no mass: ($M = 0$), in its classical understanding. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary ($\lambda \neq 0$)Euclidean space-time. In physical truth, in the equation of the General Theory of Relativity, Einstein, in the unified Criteria of Evolution, the formula (law) of Newton is "sewn up":

$$E = c^4K, P = c^4T, (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y=m_1)(c^2K_Y=m_2)}{c^2(c^2T^2=K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the gravitational force acts in fields with zero mass. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$in the external potential field of gravity $c^2(X+)$, with their Equivalence Principle, gives the force. Let's define how this approach works. For example, for the Sun and the Earth ($M = 2 * 10^{33}g$)and ($m = 5.97 * 10^{27}g$), we get ($U_1 = \frac{(G=6.67*10^{-8})(M=2*10^{33})}{R=1.496*10^{13}} = 8.917 * 10^{12}$) gravitational potential at a distance from the Earth and $U_2 = \frac{(G=6.67*10^{-8})(m=5.97*10^{27})}{R=6.374*10^{8}} = 6.25 * 10^{11}$, the potential of the Earth itself. Then ($\Delta U = U_1 - U_2 = 8.917 * 10^{12} - 6.25 * 10^{11} = 8.67 * 10^{12}$), or ($\Delta U = 8.29 * 10^{12}$), we get:

$$\Delta U = \frac{8\pi G}{(c^4=U^2=F)}(T_{ik} = \frac{(U^2K)^2}{U^2T^2} = \frac{U^2(UK=m)^2}{U^2T^2} = \frac{Mm}{T^2}), \text{ or } \quad \frac{\Delta U}{\sqrt{2}} = \frac{8\pi G}{F}\frac{Mm}{T^2}, \quad F = \frac{8\pi G}{(\Delta U/\sqrt{2})}\frac{Mm}{T^2} = \frac{GMm}{(\Delta U*T^2/\sqrt{2})/8\pi}$$

without dark masses. It remains to calculate $\frac{\Delta U*T^2}{8\pi\sqrt{2}} = \frac{8.29*10^{12}*(365.25*24*3600=31557600)^2}{8\pi\sqrt{2}} = 2.3 * 10^{26}$, which corresponds to the square of the distance ($R^2 = 2.24 * 10^{26}$)from the Earth to the Sun, or , Newton's law. This approach corresponds to reality. Let's say more, it is from the equation of $F = \frac{GMm}{R^2}$ Einstein 's General Theory of Relativity that the equations of quantum gravity are derived in mathematical truth. In words, we are talking about the dynamics of the quantum gravitational potential Δc_{ik}^2, on the diverging (spiral) wavelength of the quantum. There is their mathematical representation $\Delta c_{ik}^2 = K * G(X+)$:

Let us denote ($\Delta e_{лп} = 2\psi e_k$), $T_{ik} = \left(\frac{\mathcal{E}}{P}\right)_i \Delta \left(\frac{\mathcal{E}}{P}\right)_{лп} = \left(\frac{\mathcal{E}}{P}\right)_i 2\psi \left(\frac{\mathcal{E}}{P}\right)_к = 2\psi T_{ik}$, as an energy tensor ($\boldsymbol{\mathcal{E}}$) – (P)momentum with a wave function (ψ). From this follows the equation:

$$R_{ik} - \frac{1}{2}Re_i\Delta e_{лп} = к\left(\frac{\mathcal{E}}{P}\right)_i \Delta \left(\frac{\mathcal{E}}{P}\right)_{лп} \text{ or}$$

$$R_{ik}(X+) = 2\psi\left(\frac{1}{2}Re_ie_k(X+) + кT_{ik}(Y-)\right), \text{ and } \quad R_{ik}(X+) = 2\psi\left(\frac{1}{2}Rg_{ik}(X+) + кT_{ik}(Y-)\right).$$

This is the equation of the quantum Gravitational potential with the dimension $\left[\frac{K^2}{T^2}\right]$of the potential ($\Pi = v_Y^2$)and the spin ($2\psi$). In the brackets of this equation, part of the equation of General Relativity in the form of a potential Π(X+)gravitational field. In field theory (Smirnov, v.2, p.361), the acceleration of mass ($Y-$)trajectories in ($X+$)the gravitational field of a single ($Y-$) = ($X+$)space-matter is represented by the divergence of the vector field:

$$divR_{ik}(Y-)\left[\frac{K}{T^2}\right] = G(X+)\left[\frac{K}{T^2}\right], \text{ with acceleration } G(X+)\left[\frac{K}{T^2}\right] \text{and}$$

$$G(X+)\left[\frac{K}{T^2}\right] = grad_l\Pi(X+)\left[\frac{K}{T^2}\right] = grad_n\Pi(X+) * \cos\varphi_x\left[\frac{K}{T^2}\right].$$

The relation $G(X+) = grad_l\Pi(X+)$is equivalent to $G_x = \frac{\partial G}{\partial x}$; $G_Y = \frac{\partial G}{\partial y}$; $G_z = \frac{\partial G}{\partial z}$; representation. Here the total differential is $G_x dx + G_Y dy + G_z dz = d\Pi$. It has an integrating factor of the family of surfaces $\Pi(M) = C_{1,2,3...}$, with the point M, orthogonal to the vector lines of the field of mass $(Y-)$trajectories in $(X+)$the gravitational field. Here $e_i(Y-) \perp e_k(X-)$. From this follows the quasipotential field:

$$t_T(G_x dx + G_Y dy + G_z dz) = d\Pi\left[\frac{K^2}{T^2}\right], \qquad \text{And} \qquad G(X+) = \frac{1}{t_T} grad_l\Pi(X+)\left[\frac{K}{T^2}\right].$$

Here $t_T = n$for the quasipotential field. Time $t = nT$, is $n$the number of periods $T$of quantum dynamics. And $n = t_T \neq 0$. From here follow the quasipotential surfaces$\omega = 2\pi/t$ quantum gravitational fields with period $T$and acceleration:

$$G(X+) = \frac{\psi}{t_T} grad_l\Pi(X+)\left[\frac{K}{T^2}\right].$$

$$G(X+)\left[\frac{K}{T^2}\right] = \frac{\psi}{t_T}\left(grad_n(Rg_{ik})(\cos^2\varphi_{x_{MAX}} = G)\left[\frac{K}{T^2}\right] + (grad_l(T_{ik})\right).$$

In models, it looks something like this:

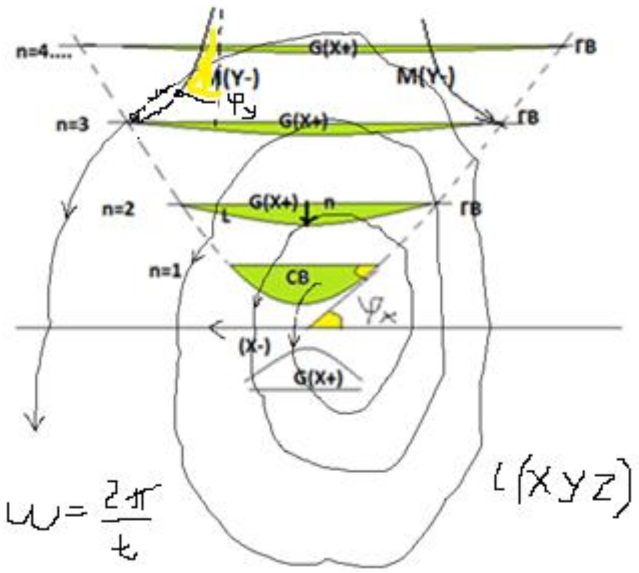


Fig. 3.2 Quantum gravitational fields.

This is a fixed in the section, selected direction of the normal $n \perp l$. **The addition of all such quantum fields of a set of quanta $rot_X G(X+)\left[\frac{K}{T^2}\right]$of any mass forms a common potential "hole" of its gravitational field,** where the Einstein equation is already in effect, with the formula (law) of Newton "sewn up" in the equation. In dynamic space-matter, we are talking about the dynamics $rot_X G(X+)\left[\frac{K}{T^2}\right]$of fields on closed $rot_X M(Y-)$trajectories. Here is a line along the quasi-potential surfaces of the Riemannian space, with the normal $n \perp l$. The limiting angle of parallelism of mass $(Y-)$trajectories in $(X+)$the gravitational field gives the gravitational constant ($\cos^2\varphi(X-)_{MAX} = G = 6.67 * 10^{-8}$). Here $t_T = \frac{t}{T} = n$, the order of the quasi-potential surfaces, and $(\cos\varphi(Y-)_{MAX} = \alpha = \frac{1}{137.036})$.

$$G(X+)\left[\frac{K}{T^2}\right] = \frac{\psi * T}{t}\left(G * grad_n Rg_{ik}(X+) + \alpha * grad_n T_{ik}(Y-)\right)\left[\frac{K}{T^2}\right].$$

This is the general equation of quantum gravity (X+ = Y-) of the mass field of accelerations, $\left[\frac{K}{T^2}\right]$and the wave ψfunction, as well as $T$the period of quantum dynamics $\lambda(X+)$, with spin (↓↑), (2ψ). Acceleration fields, as is known, are already force fields.

Based on this, models of the products of proton and electron annihilation are considered in the form:

Fig. 3.3 Models of the products of proton-electron annihilation
in a single space-matter $(X\pm=p^+)=(\boldsymbol{Y}-=\gamma_0^+)(\boldsymbol{X}+=\nu_e^-)(\boldsymbol{Y}-=\gamma_0^+)$of proton and electron $(Y\pm=e^-)=(\boldsymbol{X}-=\nu_e^-)(Y+=\gamma^+)(\boldsymbol{X}-=\nu_e^-)$. In the simplest model of the hydrogen atom, there are no exchange photons in the electro (Y + =X -) magnetic interaction of the orbital electron and the proton of the nucleus, including any atom. The electron $(Y\pm=e^-)$emits an exchange $(Y-=\gamma^+)$photon, but the proton cannot emit an exchange $(Y-=\gamma^+)$photon. The proton in the nucleus of the atom does not emit an exchange photon. And another question, why do the orbital electrons of the atom not repel each other in interaction, if they are attracted in interaction with the protons of the nucleus. There is an obvious contradiction here. In the presented models there are no such problems and contradictions. Two free electrons will repel (**a**), be on equipotential orbits of the atom (**b**) or follow each other in a uniform electric E (Y +) field (**c**), in the presented models:

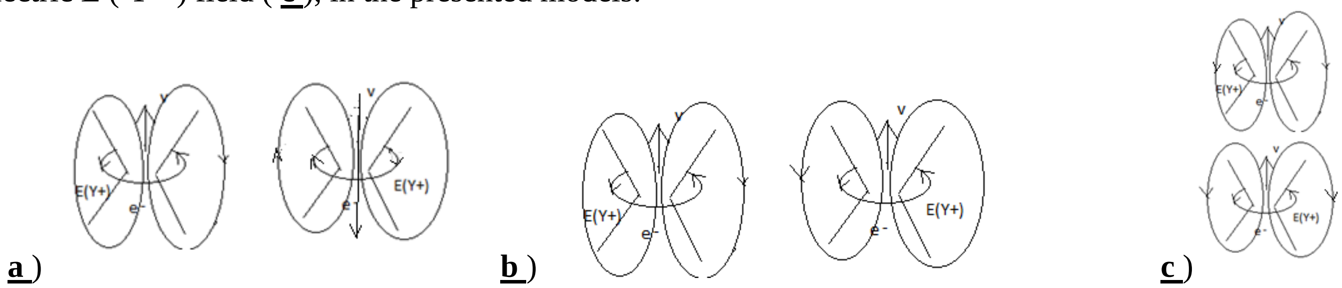


Fig.3. 4. Different states of electrons.
Under certain conditions, the electrons of a conductor, in the presence of an electric field in it, can follow each other and even "stick together like magnets."

An electron emits and absorbs a photon: $(e\leftrightarrow\gamma)$. Their speeds are related by the relation: The speeds of a photon $(v_e=\alpha*c)$and a superluminal photon $(v_\gamma\leftrightarrow\alpha*v_{\gamma_2})$are connected in exactly the same way $(\gamma\leftrightarrow\gamma_2)$. They are connected by red lines in Fig. 3. How is this possible? Let us present the electron model in more detail.

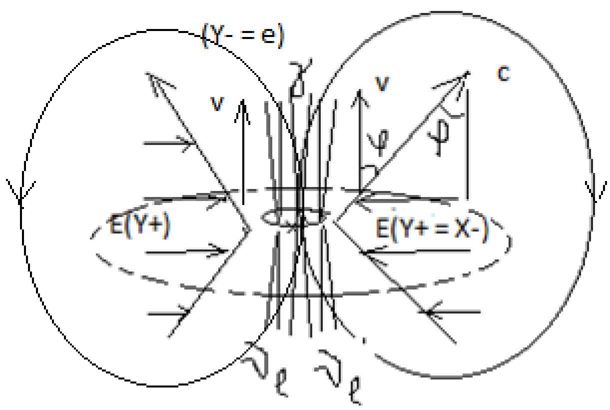


Fig.3.5. Electron model.

The electron has the shape of a torus, with (γa photon inside. Indivisible electrons are repelled by external $E(Y+)$fields of electric charges. There is a Coulomb law of such interaction:

$$F=\frac{q^2}{r^2}=\frac{p}{t},\qquad p=\frac{\hbar}{r},\qquad t=\frac{r}{v},\qquad F=\frac{q^2}{r^2}=\frac{\hbar(v=\alpha c)}{r^2},$$

$$\alpha=\frac{q^2}{\hbar c}=\frac{(4.8056*10^{-10})^2}{3.1647*10^{-17}}=0.00728\approx\frac{1}{137},\quad \text{or:}\quad (v=\alpha c),\ \text{where:}\quad \alpha=\frac{v}{c}=\cos(\varphi_Y)$$

The fine structure constant $(\alpha)$of the electric $(Y+=e)$field of a charge is the cosine of the angle of parallelism of the electron $\cos(\varphi_Y)$mass trajectories $(Y-=e)$. We understand that the dynamics of the electric $(Y+=e)$field generates a vortex in the inductionB(X−) magnetic field, according to Maxwell's equations: $c*rot_Y B(X-) \equiv \varepsilon_1 \frac{\partial E(Y+)}{\partial T}$. And the spin properties of an electron in B(X−)a magnetic field are quite obvious here. An electron emits and absorbs a photon. But the main thing is that the space of velocities of mass trajectories of an electron has inside the electron, with a near-zero angle of parallelism $(\varphi \approx 0)$, the maximum speed of a photon (virtual photon). That is, the speed of light $(v_e = \alpha * c)$inside an electron emitting a photon. We are talking about virtual photons of each electron, including in the presented models. These are the facts.

In a dynamic$(Y-)$ space-matter, we write down the emission or absorption by the electron $(Y-=e) \leftrightarrow (Y- = \gamma)$photon. And exactly the same, the space of velocities $(Y- = \gamma)$of mass trajectories of a photon, has inside the photon, with a near-zero $(\varphi \approx 0)$angle of parallelism, the maximum speed of a superluminal $(v = 137*\mathrm{c})$photon. In other words, if a photon exists, then in fact, inside the photon there is a superluminal space of velocities, and an ordinary photon $(Y\pm = \gamma = c)$ can emit or absorb a superluminal $(Y \pm = \gamma_2)$photon. According to the usual formulas of Einstein's Special Theory of Relativity, for a photon $(Y\pm = \gamma)$, the speed of a superluminal photon $(Y \pm = \gamma_2)$, will have the same speed of light:

$$w = \frac{u+v}{1+\frac{uv}{c^2}}, \qquad v = \frac{c+137*c}{1+\frac{137*c*c}{c^2}} = \frac{c(1+137)}{(1+137)} = c.$$

Superluminal photons can be detected by recording the increase in momentum$(E = p*(1+\alpha)*\mathrm{c})$ ordinary $(Y\pm = \gamma)$photons of any energy that absorb superluminal $(Y \pm = \gamma_2)$photons from the quanta $(p_4/e_4)$of the galactic core. Here we proceed from the fact that in the spectrum (Fig. 3) of indivisible quanta of space-matter, the quanta $(Y\pm = e_2)$of the star's core emit $(Y\pm= e)$ordinary electrons, which in turn emit $(Y\pm = \gamma)$photons. The principle of exchange interaction does not work here. The question then is what is actually happening (not in the "exchange the ball" models). For the experimental data $m(p) = 938{,}28MeV$, $G = 6{,}67*10^{-8}$. $m_e = 0{,}511\ MeV$, $(\ m_{\nu_\mu} = 0{,}27\ MeV)$, and the simplest transformations, we obtained the calculated data:

$$(X-) = cos^2\varphi_X = \left(\sqrt{G}\right)^2 = G, \qquad \left(\frac{Y=K_Y}{K}\right)(Y-) = cos\ \varphi_Y = \alpha = \frac{1}{137{,}036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y = m_Y}{\left(\frac{Y^2}{K^2}=\frac{G}{2}\right)}, \qquad \text{where} \qquad 2m_Y = Gm_X \ ,$$

$$m = \frac{F=\Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X = m_X}{\left(\frac{X^2}{K^2}=\frac{\propto^2}{2}\right)}, \qquad \text{where} \qquad 2m_X = \propto^2 m_Y$$

$$(\propto^2/\sqrt{2})*\Pi K*(\propto^2/\sqrt{2}) = \propto^2 * m(e)/2 = m(\nu_e) = 1{,}36*10^{-5}MeV \quad \text{or} \quad \propto^2 m_Y/2 = m_X$$

$$\sqrt{G/2}*\Pi K*\sqrt{G/2} = G*\frac{m(p)}{2} = m(\gamma_0) = 3{,}13*10^{-5}MeV \quad \text{or} \quad Gm_X/2 = m_Y$$

$$m(\gamma) = \frac{Gm(\nu_\mu)}{2} = 9{,}1*10^{-9}MeV.$$

On the other hand, for the proton wavelength $\lambda_p = 2{,}1*10^{-14}$см, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286*10^{24}$Гц, is formed by the frequency $(\gamma_0^+)$of quanta, with mass $2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+}).1\text{г} = 5{,}62*10^{26}MeV$, or

$$(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58*10^{-32}\text{г} = 3{,}13*10^{-5}MeV$$

Similarly, for an electron $\lambda_e = 3{,}86*10^{-11}$см, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77*10^{20}$Гцis formed by the frequency $(\nu_e^-)$of quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-)})$, where is $\alpha(Y-) = \frac{1}{137{,}036}$a constant, we obtain:

$$(m_{\nu_e^-}) = \frac{\alpha^2\hbar(\nu_{(\nu_e^-)})}{2c^2} = \frac{1*1{,}0545*10^{-27}*7{,}77*10^{20}}{(137{,}036^2)*2*9*10^{20}} = 2{,}424*10^{-32}\text{г} = 1{,}36*10^{-5}MeV,$$

for the neutrino mass. Such coincidences cannot be accidental. Let's look further. $(Y- = e^-)$Mass field dynamics Electron generates its electric $(Y+ = e^-)$field with electromagnetic $(Y+ = X-)$dynamics, as already charge field. Exactly such dynamics of fields of proton, with the specified mass fields. Separating electromagnetic $(Y+ = X-)$fields from mass fields $(Y- = X+)$we obtain their charges:

$$(X+)(X+) = (Y-) \text{and} \frac{(X+)(X+)}{(Y-)} = 1 = (Y+)(Y-);\ (Y+= X-) = \frac{(X+)(X+)}{(Y-)}, \text{ or:}$$

$$\frac{(\boldsymbol{X}+=\nu_e^-/2)(\sqrt{\mathbf{2}}*\boldsymbol{G})(\boldsymbol{X}+=\nu_e^-/2)}{(Y-=\gamma^+)} = q_e(Y+)$$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\mathbf{2}}*\boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36*10^{-5})^2*\sqrt{2}*6,67*10^{-8}}{4*9,07*10^{-9}} = 4,8*10^{-10}\text{СГСЕ}$$

$$(Y+)(Y+) = (X-) \text{and} \frac{(Y+)(Y+)}{(X-)} = 1 = (X+)(X-);\ (Y+= X-) = \frac{(Y-)(Y-)}{(X+)}, \text{ or:}$$

$$\frac{(\boldsymbol{Y}-=\gamma_0^+)(\boldsymbol{\alpha}^2)(\boldsymbol{Y}-=\gamma_0^+)}{(\boldsymbol{X}+=\nu_e^-)} = q_p(Y+= X-),$$

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3,13*10^{-5}/2)^2}{2*137,036^2*1.36*10^{-5}} = 4,8*10^{-10}\text{СГСЕ}$$

Such coincidences also cannot be accidental. Such circumstances give grounds to speak about other models and other (non-exchange) principles of interaction. By means of transformations it is always possible to arrive at another model of a physical fact, but with other causes in other connections. Such models are mathematical, but the question is, where is the truth? For example, (+) charge of a proton in quarks and (+) charge of a positron without quarks. This is a fundamental contradiction. Both models work, but the physical reasons are lost. There is no answer to the question, WHY is it so? The quark-gluon fields of the proton, during its annihilation $(p^+)+(p^-)$, should transform into quantum fields of photons. But there is no such procedure. Why, where and how do quarks disappear during π- meson decays is an open question. Feynman diagrams work yes, but the proton does not emit a photon in a charge interaction with the electron of the atom. These are the fundamental foundations of all atomic structures, the structure of matter. WHY is it so - there is no answer. Here we will answer WHY a particle has exactly these decay products or annihilations of indivisible quanta. We will proceed from general ideas $\psi(X) = e^{a(X)}\overline{\psi}(X)$Dirac equations, when $Y = e^{a(X)}(X+)$the dynamic field of a quantum

$$(X\pm) = ch\left(\frac{X}{Y_o}\right)(X+)cos\varphi(X-) = 1, \qquad cos\varphi(X-) = \sqrt{G}, \text{ or } (Y\pm) = ch\left(\frac{Y}{X_o}\right)(Y+)cos\varphi(Y-) = 1,$$

$cos\varphi(Y-) = \frac{1}{137.036} = \alpha$. Where $(cos\varphi \neq 0)$in both cases. In mass fields $m(Y-= X+)$, we will take the measured mass and the estimated time(T) decay of particles. From the most general ideas:

$m = \frac{\Pi^2}{Y''} = \frac{\Pi^2 T^2}{Y=\exp(z)} = T\Pi(\frac{K}{T})(\frac{K}{T})T\exp(-z)$, with a unit charge $q(X-= Y+) = 1$, and the speed of light $c = 1$ in the quantum itself, space-matter $m = T\frac{(\Pi K=q=1)}{G\alpha}(\frac{K}{T} = c = 1)\exp(-z)$, Where $z = \frac{(m_X=\Pi X)}{\Pi=c^2=1)} = X(MeV)$and $z = \frac{(m_Y=\Pi Y)}{\Pi=c^2=1)} = Y(MeV)$in a dynamic, hyperbolice$^{a(X)}$ space Dirac equations. For $G = 6,67*10^{-8}$, $\alpha = \frac{1}{137.036}$, $\nu_\mu = 0,27\ MeV$, $\gamma_o = 3,13*10^{-5}MeV$, $\nu_e = 1,36*10^{-5}MeV$,$\gamma = 9,1*10^{-9}MeV$

mass spectrum according to decay (annihilation) products

Stable particles with annihilation products in a single $(Y\mp= X\pm)$space-matter:

$(X\pm= p) = (Y-= \gamma_o)(X+= \nu_e)(Y-= \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{\nu_e}{\alpha^2}\right) = 938,275\ MeV$;

$(Y\pm= e) = (X-= \nu_e)(Y+= \gamma)(X-= \nu_e) = \left(\frac{2\nu_e}{\alpha^2} + \frac{\gamma*\alpha}{2G}\right) = 0,511\ MeV$;

unstable particles already according to the products and time of decay.$G\alpha = 4.8673*10^{-10}$

$(Y\pm= \mu) = (X-= \nu_\mu)(Y+= e)(X-= \nu_e) = \frac{(T=2.176*10^{-6})}{G\alpha}\exp\left(\nu_\mu + e + \frac{\nu_e ch1}{\alpha^2} = 1,1751\right) = 105,66\ MeV,$

Here and further in the calculations we will designate in underlined font,($\underline{\mu} = 1,1751$) indicator exp(). It shows the features of fragmentation of the dynamic field $\exp(a(X))$in the Dirac equation.

$(Y\pm= \pi^\pm) = (Y+= \mu)(X-= \nu_\mu) = \frac{(T=2.76586*10^{-8})}{2G\alpha}\exp\left(\underline{\mu} + \nu_\mu ch1\right) = 139,57\ MeV,$ ($\underline{\pi^\pm} = 1,59173$)

$(X-= \pi^0) = (Y+= \gamma_o)(Y+= \gamma_o) = \frac{(T=7.8233*10^{-17})}{G^2\alpha}\exp\left(\frac{2\gamma_0^2}{G\alpha}\right) = 134,98\ MeV$, ($\underline{\pi^0} = 4,025599$)

$(X-= \eta^0) = (X+= \pi^0)(Y-)(X+= \pi^0)(Y-)(X+= \pi^0) = \frac{(T=5.172*10^{-19})}{(G\alpha)^2}\exp\left(\frac{3\underline{\pi^0}}{2} - \frac{\gamma ch2}{G}\right) = 547,853\ MeV,$

$(X-= \eta^0) = (Y-= \pi^+)(X+= \pi^0)(Y-= \pi^+) = \frac{(T=5.1*10^{-19})}{\sqrt{2}(G\alpha)^2}\exp\left(2\underline{\pi^\pm} + \frac{\underline{\pi^0}}{2}\right) = 547,853\ MeV,$

$(Y\pm= K^+) = (Y+= \mu)(X-= \nu_\mu) = \frac{(T=1.335*10^{-8})}{G\alpha}\exp 2\left(\underline{\mu} + \nu_\mu\right) = 493,67\ MeV,$

$(Y\pm = K^{+}) = (Y+= \pi^{+})(X-= \pi^{0}) = \frac{(T=1.01398*10^{-8})}{G\alpha}\exp\left(\underline{\pi^{+}} + \underline{\pi^{0}}/2\right) = 493{,}67\ MeV.\ \underline{K^{-}} = 3{,}16535$

$(Y-= K_S^0) = (X+= \pi^{0})(X+= \pi^{0}) = \frac{(T=0{,}885*10^{-10})}{G\alpha}\exp\left(2\underline{\pi^{0}} - \frac{\gamma}{G}\right) = 497{,}67\ MeV,$

$(X-= K_L^0) = (Y-= \pi^{\pm})(X+= \nu_e)(Y-= e^{\mp}) = \frac{(T=4{,}9296*10^{-8})}{G\alpha}\exp\left(\underline{\pi^{\pm}} + e^{\mp} + \frac{2\nu_e}{\alpha^2}\right) = 497{,}67\ MeV,$

$(X-= K_L^0) = (Y-= \pi^{\pm})(X+= \nu_{\mu})(Y-= \mu^{\mp}) = \frac{(T=5{,}1713*10^{-8})}{G\alpha}\exp\left(\underline{\pi^{\pm}} - \frac{\mu^{\mp}}{2} + 2\nu_{\mu}\right) = 497{,}67\ MeV,$

$(X- = \rho^{0}) = (Y+ = \pi^{+})(Y+ = \pi^{+}) = \frac{(T=5{,}02*10^{-24})}{G\alpha}\exp\left(\frac{2\pi^{\pm}}{\sqrt{\alpha}}(1 + \frac{1}{2\sqrt{\alpha}}\right) = 775{,}49\ MeV;$

$(X\pm = \rho^{+}) = (X+ = \pi^{0})(Y- = \pi^{+}) = \frac{(T=6{,}47566*10^{-24})}{G\alpha}\exp\left(\frac{\pi^{0}}{\sqrt{\alpha}} - \frac{\pi^{+}(\sqrt{\alpha}-1)}{2}\right) = 775{,}4\ MeV;$

Similarly, hadrons

$(Y\pm = n) = (X-= \nu_e)(Y+= e)(X-= p) = (T = 878{,}77)\exp\left(\frac{\nu_e}{\sqrt{G}} + \frac{e}{2} - p\sqrt{G}\right) = 938{,}57\ MeV,$

$(X\pm = \Lambda^{0}) = (X+= p^{+})(Y-= \pi^{-}) = \frac{(T=2.604*10^{-10})}{G\alpha}\exp(\alpha p^{+} + \underline{\pi^{-}}/2) = 1115{,}68\ MeV,$ $\underline{\Lambda^{0}} = 7{,}642837$

$(Y\pm = \Lambda^{0}) = (Y+= n)(X-= \pi^{0}) = \frac{(T=1.5625*10^{-10})}{G\alpha}\exp\left(\alpha n + \frac{\underline{\pi^{0}}}{2ch1}\right) = 1115{,}68\ MeV,$ $\underline{\Lambda^{0}} = 8{,}153$

$(Y-= \Sigma^{+}) = (X+= p^{+})(X+= \pi^{0}) = \frac{(T=8.22*10^{-11})}{G\alpha}\exp\left(\alpha p^{+} + \frac{\underline{\pi^{0}}}{2}\right) = 1189{,}37\ MeV,$

$(X-= \Sigma^{+}) = (Y+= n)(Y+= \pi^{+}) = \frac{(T=8.1*10^{-11})}{G\alpha ch1}\exp(\alpha n + \pi^{+}) = 1189{,}37\ MeV,$

$(X-= \Sigma^{-}) = (Y+= n)(Y+= \pi^{-}) = \frac{(T=1.25*10^{-10})}{G\alpha}\exp(\alpha n + \pi^{+}) = 1189{,}37\ MeV,$

$(X-= \Sigma^{0}) = (Y+= \Lambda^{0})(Y+= \gamma) = \frac{(T=7.4*10^{-20})}{G^2\alpha*ch1}\exp\left(\frac{\underline{\Lambda^{0}}+\gamma/G}{2}\right) = 1192{,}64\ MeV,$ $\underline{\Lambda^{0}} = 7{,}642837,$

$(Y\pm = \Xi^{0}) = (Y+= \Lambda^{0})(X-= \pi^{0}) = \frac{(T=2.5984*10^{-10})}{G\alpha}\exp(\underline{\Lambda^{0}} - \underline{\pi^{0}}\sqrt{\alpha}) = 1314{,}86\ MeV,$

$\underline{\Lambda^{0}} = 8{,}153,\ \underline{\Xi^{0}} = 7{,}809,$

$(X\pm = \Xi^{-}) = (X+= \Lambda^{0})(Y-= \pi^{-}) = \frac{(T=1.3917*10^{-10})}{G\alpha}\exp(\underline{\Lambda^{0}} + \underline{\pi^{-}}/2) = 1321{,}71\ MeV,$

$\underline{\Lambda^{0}} = 7{,}642837,\ \underline{\Xi^{-}} = 8{,}43869,$

$(X-= \Omega^{-}) = (Y+= \Lambda^{0})(Y+= K^{-}) = \frac{(T=8.018*10^{-11})}{G\alpha}\exp(\underline{\Lambda^{0}} - \underline{K^{-}}/2) = 1672{,}45\ MeV,$

$\underline{\Lambda^{0}} = 7{,}642837, \underline{K^{-}} = 3{,}16535$

$(X-= \Omega^{-}) = (Y+= \Xi^{0})(Y+= \pi^{-}) = \frac{(T=6.734*10^{-11})}{G\alpha}\exp(\underline{\Xi^{0}} + \underline{\pi^{-}}) = 1672{,}45\ MeV,\ \underline{\Xi^{0}} = 7{,}809,$

$(Y-= \Omega^{-}) = (X+= \Xi^{-})(X+= \pi^{0}) = \frac{(T=7.1147*10^{-11})}{G\alpha}\exp(\underline{\Xi^{-}} + \underline{\pi^{0}}/ch2) = 1672{,}45\ MeV,\ \underline{\Xi^{-}} = 8{,}275,$

There are other methods for calculating the mass spectrum, but this logical construction gives the calculation of the mass spectrum with minimal parameters. The initial parameters here are only the decay products. This model is still imperfect, but there are no problems and contradictions of the Standard Model.

It is appropriate to note here that from the relations: $m_Y = \frac{Gm_X}{2},\ m_X = \frac{\propto^2 m_Y}{2}$, their transformations follow in the form: $m_Y = \frac{G\left(\frac{\propto^2 m_Y}{2}\right)}{2}$, or $(z = G \propto^2/4\ ) = 8.88 * 10^{-13})$. In exactly the same way we obtain $m_X = \frac{\propto^2\left(\frac{Gm_X}{2}\right)}{2}$, or $(z = G \propto^2/4\ ) = 8.88 * 10^{-13})$. The full calculation of the mass spectrum in ОЛ$_j$, and ОЛ$_i$levels of physical vacuum, has the same result in both calculations $(zp = \nu_1)$, $(ze = \gamma_1)$and so on. And already from these circumstances, follow the answers to the questions of what the magnetic field of the proton and the electric field of the electron consists of. For the proton

$(X\pm = p^{+}) = (Y-= \gamma_0^{+})(X+= \nu_e^{-})(Y-= \gamma_0^{+})$, where we have quanta

$(Y\pm = \gamma_0^{+}) = (X- = \nu_1^{+})(Y+= \gamma_2^{-+})(X- = \nu_1^{+})$, its p(X -) field is formed by the fields

$(X-) = 2(Y+= \gamma_0^{+})$of quanta, which in their $(Y+ = \gamma_0^{+})$field contain $(X- = \nu_1^{+})$quanta, in a single $(Y+ = X-)$space-matter. In other words, the magnetic field p(X -) of the proton forms the vortex (according to the equations) trajectories $(X-= \nu_e^{-})$of quanta. We have already considered them in "Unified Theory2", in the models of neutron quanta $(Y- = p/n)$,$(Y- = 2n)$ Strong Interaction of Nucleons of the Nuclear Force.

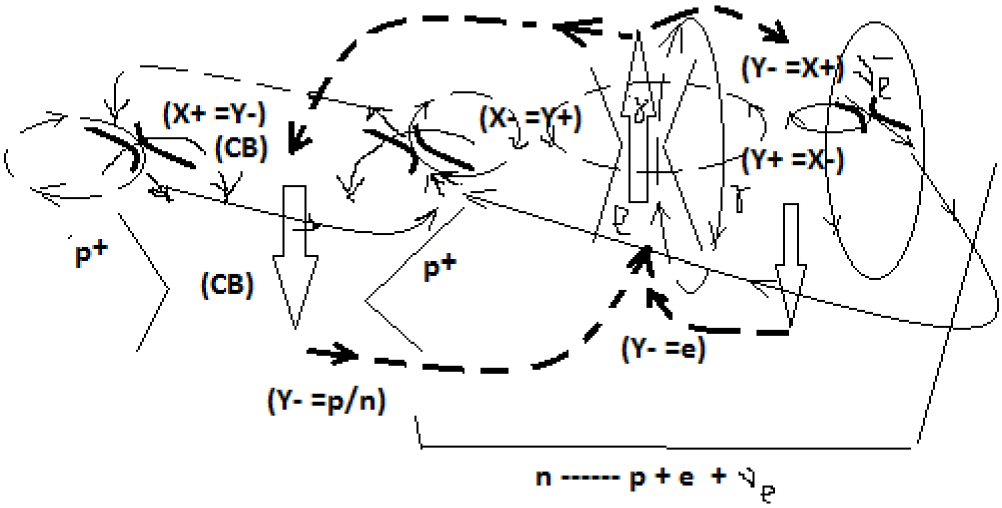


Figure 3.6. Quantum $(Y- = p/n)$and similar$(Y- = 2n)$ Strong Interaction
The proton here has the shape of a torus. Similarly, for the electron, the electric field consists of virtual (γ)photons. The proton here has the shape of a torus. Similarly, for the electron.

EMERGENT PROPERTIES OF MASS

In the most general form, in $(X-)_j$the field of the Universe, on $(m-n)$convergences in the quantum coordinate system of a single $(X\pm= Y\mp)$space-matter, in contrast to electromagnetic $(Y+= X-)$fields, mass $(Y- = X)$fields have distinguished properties in their own Evolution Criteria (energy, momentum...). From simple relations of relativistic dynamics, for example: $m = \frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$, the following well-known relations follow: $m^2c^2 - (m^2v^2 = p^2) = m_0c^2$, or $m^2c^4 - p^2c^2) = m_0c^4$, $\frac{E^2}{c^4} - \frac{p^2}{c^2} = m_0$. For zero rest mass $(m_0 = 0)$, we talked about the "radiant energy" $(E = pc)$of the momentum in this case of $(p = Ft)$the gravitational force in fields with zero mass. Now, what is energy in principle, for any form of a single $(X\pm= Y\mp)$space-matter. In the unified criteria of evolution, energy $(E = \Pi^2 K = \Pi_1 K \Pi_2)$is the state of two potentials $(\Pi_1\Pi_2 = F)$at a distance $(K)$and capable of doing work $(A = FK)$. These are well-known classical concepts. But how does energy produce mass, that is the question. And here there are several emergent properties.

1. For example, $m = \frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$when a proton is accelerated $m_0 = p(\mathrm{X}+)$, we speak of an increase in its mass (X+)field, with an unchanged interaction constant $G(\mathrm{X}-) = cos^2\varphi_x(X-)$.

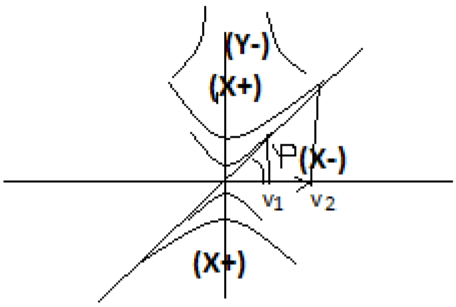


Figure 1. Dynamics of mass fields

When protons collide in colliders, the proton slows down $(v_2 \to v_1)$and "drops" the excess mass field $(\mathrm{X}+ = Y-)$onto the mass trajectory in the physical vacuum. Here, inertial properties manifest themselves in the form of the mass of $(Y-)$a quantum, with its decay into a mass spectrum.

2. The second, already considered case of induction of mass fields, which was presented by Einstein. Similar to the induction of a magnetic field when moving a charge, Einstein derived a formula, the law of induction of a mass $(Y-)$trajectory when moving the gravitational (X+)field of non-zero masses, including stars in galaxies. This is the law.

3. Next we talked about the quantum quasipotential gravitational field of the proton

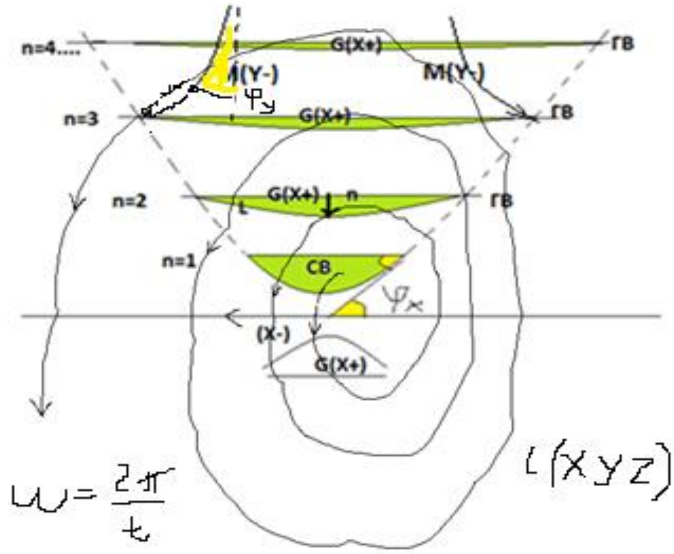


Figure 8. Quantum gravitational fields.

with mass $(Y-)$trajectories of electron orbits of atoms with known principles of uncertainty and wave functions in them. Here the problem of repulsion of many equally charged electrons in the orbits of one atom is solved. And here it is difficult to imagine the exchange character of the charge interaction of both orbital electrons among themselves and electrons with protons of the atomic nucleus.

4. We also talked about the mass defects of the quanta $(\mathrm{X}+)(\mathrm{X}+)=(Y-)$of the Strong Interaction of the nucleons of the nucleus $(Y-=p/n)$or $(Y-=2n)$, where is $(E=\alpha * p\approx 6{,}85\ MeV)$the minimum specific binding energy of the nucleons of the nucleus. Below this energy, the nucleus, if formed, is only for the period of decay. This is the difference in the mass of the nucleon outside the nucleus and in the nucleus, in the form of the binding energy of the nucleons of the nucleus. It is calculated using known procedures.

5. In the presented figure of the quantum gravitational field, we considered the derivation of the equations of the quantum gravitational field from the equation of Einstein's General Theory of Relativity in any coordinate system, as a consequence. We talked about the gravitational field of attraction with the Newtonian force and zero mass of this field. A set of such quantum gravitational fields forms a "potential well" of the general gravitational field of any mass, the curvature of which is determined by the energy-momentum tensor of the equation of Einstein's General Theory of Relativity. Everything works.

A physical fact is the charge isopotential of a proton $p(X-=Y+)e$and an electron in a hydrogen atom with a mass ratio $(p/e\approx 1836)$. By analogy, we speak of the charge isopotential $\nu_\mu(X-=Y+)\gamma_0$, and $\nu_e(X-=Y+)\gamma$, of subatoms, with a mass ratio $(\nu_\mu/\gamma_0\approx 8642)$and, $(\nu_e/\gamma\approx 1500)$respectively. In this case, subatoms $(\nu_\mu/\gamma_0)$are held by the gravitational field of planets, and sub atoms $(\nu_e/\gamma)$are held by the gravitational field of stars. This follows from calculations of atomic structures (p/e), sub atoms of planets $(p_1/e_1)(p/e)(\nu_\mu/\gamma_0)$, stars $(p_2/e_2)(p_1/e_1)(p/e)(\nu_\mu/\gamma_0)(\nu_e/\gamma)$, for: $e_1=2\nu_\mu/\alpha^2=10{,}2GeV$), $e_2=2p/\alpha^2=35{,}2TeV$), НОЛ $=e_1*3{,}13*\gamma_0=1$, and НОЛ $=e_2*3{,}13*\gamma=1$. And also, for $p_1=\frac{2e}{G}=15{,}3TeV$, and $p_1(X-=Y+)e_1$ "heavy atoms" inside the stars themselves. If quanta $(m_X=p_1^-)=\frac{2(m_Y=e^-)}{G}=(15{,}3\ TeV)$and exist $(m_Y=e_2^-)=\frac{2(m_X=m_p)}{\alpha^2}=(35{,}24\ TeV)$, then similar to the generation of (p_1/n_1)uranium $p^+\approx n$nuclei by quanta of the Earth's core , $(2\alpha p_1^-=238p^+={}^{238}_{92}U)$, with subsequent decay into a spectrum of atoms, quanta $p_2^-=\frac{2e_1^-}{G}=3{,}06*10^5TeV$, and (p_2/n_2), $(p_2\approx n_2)$of the Sun's (star's) core, generate nuclei of "stellar uranium", $(2\alpha p_2^-=290p_1^+={}^{290}U^*)$, with their exothermic decay into a spectrum of "stellar" atoms (p_1^+/e_1^-)in the solid surface of the star (Sun) without interactions with ordinary (p^+/e^-)hydrogen atoms and a spectrum of atoms. The mass of the quanta of the planetary core is calculated in exactly the same way:

$$(m_X=p_1^-)=\frac{2(m_Y=e^-)}{G}=\frac{2(0.511\ MeV)}{6.67*10^{-8}}=15{,}3\ TeV$$

Moreover, there are surprising ratios of their masses:

$$\text{НОЛ}=M(e_2=3{,}524\ \mathrm{E}7\ )(k=3.13)M(\gamma=9{,}07\ \mathrm{E}-9\ )=1$$

$$\text{НОЛ} = M(e_4 = 1{,}15\ \text{E}16\ )(k = 3.13)M(\gamma_2 = 2{,}78\ \text{E} - 17\ ) = 1$$

Here we are talking about Indivisible Areas of Localization of dynamic space-matter. And this means that the core of a star, as well as stars, are in the energy level of physical vacuum at the level of ordinary (γ)photons emitted by them. Then, exactly the same way, the core of galaxies, as well as galaxies themselves, are in the energy level of physical vacuum at the level of superluminal (γ_2)photons emitted by them.

Based on these calculations, the dynamic space-matter of the photon has exactly the same model, but with different parameters of superluminal speeds.

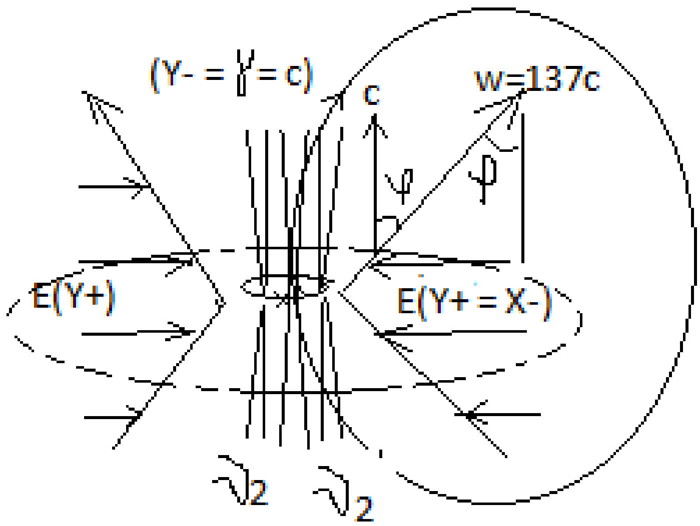


Fig. 3.6. Dynamic space-matter of photon

And exactly the same way, the space of velocities of mass trajectories of a photon has inside the photon, with a near-zero angle of parallelism, the ultimate velocity of a superluminal $(v_2 = 137 * \text{c})$photon. The velocity of a photon (c)is the projection of the velocity $(v_2 = 137\text{c} = \gamma_2)$. In other words, inside the photon we have a superluminal velocity of a photon $(v_2 = 137\text{c})$. The important thing is that the usual$(Y\pm = \gamma = c)$ a photon can emit and absorb a superluminal photon $(Y \pm = \gamma_2)$just as an ordinary electron can $(Y\pm = e)$emit an ordinary photon $(Y\pm = \gamma)$. And the source of ordinary photons are stars. And the source of superluminal photons is the "heavy" (e_2)electrons of the galaxy's core. Superluminal photons can be detected by recording an increase in momentum:$(E = p * (1 + \alpha) * \text{c}\ )$ ordinary $(Y\pm = \gamma)$photons of any energy that absorb superluminal $(Y \pm = \gamma_2)$photons from the quanta $(p_4/e_4)$of the galactic core.

Speaking about other models of non-exchange character and principles of interaction, we can speak about the structural form of charged (Y- = p^+/n) and neutral (Y- =2n) quanta of Strong Interaction of the nucleus in their single $(Y\pm = X\mp)$space-matter. They are connected and emit a quantum of interaction $(2\alpha * \text{p}\ \approx 2 * \left(\frac{1}{137}\right) * 938{,}28 \approx 13{,}7MeV)$, with the specific binding energy $(\text{E}_{\text{уд}} \approx 6{,}9\text{MeV})$of the nucleons of the nucleus. For the maximum specific binding energy $(\text{E}_{\text{уд}} \approx 8{,}5\text{MeV})$, the emitted quantum of the Strong Interaction binding in the nucleus is $(\text{E} \approx 17\text{MeV})$. It was discovered in the experiment as a fact. Such charged (Y- = p^+/n) and neutral (Y- =2n) quanta of the Strong Interaction of the nucleus have levels and shells in the nucleus, as the cause of the formation of levels and shells of the electrons of the atom.

From the axioms of such a dynamic $(\varphi \neq const)$space-matter, as geometric facts that do not require proof, $(m - n)$convergence, are formed by Indivisible Areas of Localization of both indivisible $(X\pm)$and $(Y\pm)$quanta of dynamic space-matter. Indivisible quanta $(X\pm = p)$, $(Y\pm= e)$, $(X \pm = \nu_\mu)$, $(Y \pm = \gamma_o)$, $(X\pm = \nu_e)$, $(Y\pm = \gamma)$, form OL_1 – the first Area of their Localization. In exactly the same way, OL_2, OL_3 – Areas of Localization of indivisible quanta are formed.

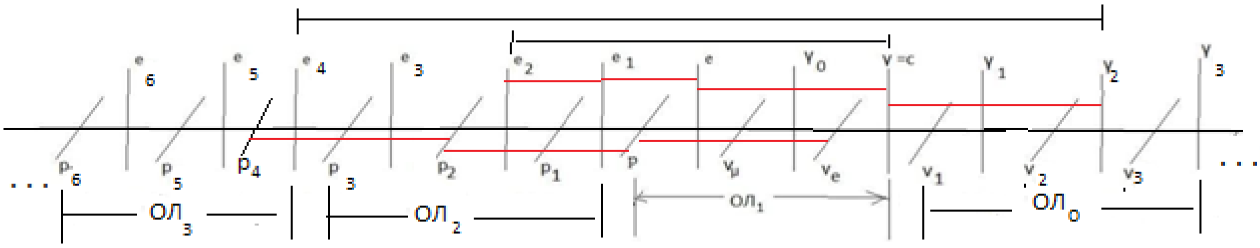


Fig. 4 Quantum coordinate system

Let us highlight the facts necessary here. An electron emits and absorbs a photon: $(e \leftrightarrow \gamma)$. Their velocities are related by the relation: . The velocities of a photon $(v_e = \alpha * c)$and a superluminal photon $(v_\gamma \leftrightarrow \alpha * v_{\gamma_2})$are related in exactly the same way $(\gamma \leftrightarrow \gamma_2)$. They are connected by the red lines in Fig. 4. Sequences of emission and absorption of indivisible (stable) quanta, in such a quantum coordinate system:

$$\dots (p_8^+ \to p_6^-), (p_6^- \to p_4^+), (p_4^+ \to p_2^-), (p_2^- \to p^+),..$$

with the corresponding nucleus of the atom: $(p^+/e^-)$the matter of an ordinary atom, $(p_2^-/e_2^+)$the antimatter of the nucleus of a "stellar atom", $(p_4^+/e_4^-)$the matter of a galaxy's nucleus, $(p_6^-/e_6^+)$the antimatter of a quasar's nucleus and " $(p_8^+/e_8^-)$the matter of a "quasar galaxy's nucleus". Further, we proceed from the fact that the quantum $(e_{*1}^-)$of the matter $(Y- = p_1^-/n_1^- = e_{*1}^-)$of the planet's nucleus emits a quantum

$$(e_{*1}^+ = 2 * \alpha * (p_1^- = 1{,}532E7\ MeV)) = 223591MeV, \quad \text{or:} \frac{223591}{p=938{,}28} = e_*^+ = 238{,}3 * p$$

mass of the uranium nucleus, the quantum of "antimatter" $M(e_*^+) = M(238{,}3 * p) = {}^{238}_{92}U$, the uranium nucleus. Such "antimatter" $(e_*^+ = {}^{238}_{92}U = Y-)$is unstable and disintegrates exothermically into a spectrum of atoms in the core of planets. Such calculations are consistent with the observed facts.

In the superluminal level of $w_i(\alpha^{-N}(\gamma = c))$the physical vacuum, such (p_2^-/e_2^+)stars do not manifest themselves. Further, we are talking about the substance $(p_3^+ \to p_1^-)$of the core of $(Y- = p_3^+/n_3^0 = e_{*3}^+)$the "black spheres", around which, in their gravitational field, globular clusters of stars are formed. Similarly, further, we are talking about the radiation of matter of antimatter and vice versa: $(p_6^+ \to p_5^-)$, $(p_5^- \to p_3^+)$, $(p_3^+ \to p_1^-)$, $(p_1^- \to v_\mu^+)$. The general sequence of them is as follows: $p_8^+, p_7^+, p_6^-, p_5^-, p_4^+, p_3^+, p_2^-, p_1^-, p^+, v_\mu^+, v_e^-$ .... Further: $НОЛ = M(e_4 = 1{,}15\ \mathrm{E}16)(k = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E} - 17) = 1$. These quanta of the galaxy core are surrounded by quanta $(p_4/e_4)$of the star core $v_i(\gamma_2 = \alpha^{-1}\mathrm{c}) = 137 * \mathrm{c}$emitted separately, and are the cause of their formation. Such galaxy cores, in the equations of quantum gravity, have spiral arms of mass trajectories, already: (p_2/e_2), in superluminal space of velocities. Below the energy of light photons $(v_{\gamma_2} = 137 * \mathrm{c})$in the physical vacuum, galaxies do not manifest themselves. Outside galaxies, we are talking about quanta of the core of mega stars $(Y- = p_5^-/n_5^- = e_{*5}^-)$. They generate many quanta $(e_{*5}^- = 2 * \alpha * p_5^- = e_{*4}^+ = 290p_4^+)$of the galaxy core. Similarly, further.

The important thing is that an ordinary photon $(Y\pm = \gamma)$can emit and absorb a superluminal photon $(Y \pm = \gamma_2)$in exactly the same way as an electron $(Y\pm = e)$emits an ordinary photon $(Y\pm = \gamma)$. The source of ordinary photons are stars. And the source of superluminal photons is the "heavy" electrons of the galaxy's core.

$$НОЛ = M(e_2 = 3{,}524\ \mathrm{E}7)(k = 3.13)M(\gamma = 9{,}07\ \mathrm{E} - 9) = 1$$
$$НОЛ = M(e_4 = 1{,}15\ \mathrm{E}16)(k = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E} - 17) = 1$$

Moreover, for a photon $(Y\pm = \gamma)$, the speed of a superluminal photon $(Y \pm = \gamma_2)$will have the same speed of light: $w = \frac{c+137*c}{1+\frac{137*c*c}{c^2}} = \frac{c(1+137)}{(1+137)} = c$. These connections are shown in Fig. 4. In essence, we are talking about the "immersion" of quanta of the core of stars and galaxies, in the corresponding levels of the physical vacuum. As we see, the quanta of the core of galaxies are "immersed" in the superluminal space of velocities. The task is to search for such photons in the direction of the galactic core as a source of superluminal photons $(Y \pm = \gamma_2)$. For example, an orbital hydrogen electron emits a photon when it moves from one orbit to another. Understood. So, the emitted photons, from the same orbits of hydrogen electrons in the direction of the galactic core, and in the direction perpendicular from the galactic core, can have the following: $E = p * c * (1 + \alpha)$, energy difference. The decisive word here will be said by trial experiments. The same decisive word will be given by trial experiments to detect quasipotential , quantum gravitational acceleration fields.

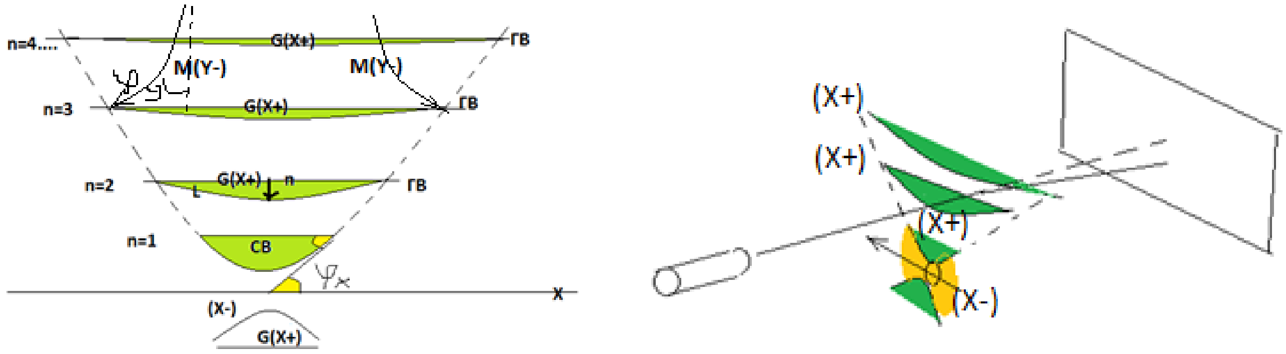


Fig. 5 Quantum gravitational fields

The essence of the experiment is to pass a laser photon through quantum gravitational fields of accelerations, for example: $(X\pm=p)$- a proton, $(X\pm=\,^4_2\alpha)$- a particle, a helium nucleus. These are the levels of mass G (X + = Y -) trajectories of electron (Y - = e $^{-)}$ orbits of an atom.

4.4.In the depths of the physical vacuum

Like the Cartesian, any other coordinate system in the Euclidean axiomatic, it is already possible to represent the quantum coordinate system on $(m)$and (n)convergence of space-matter, the points of which are indivisible quanta, in full form.

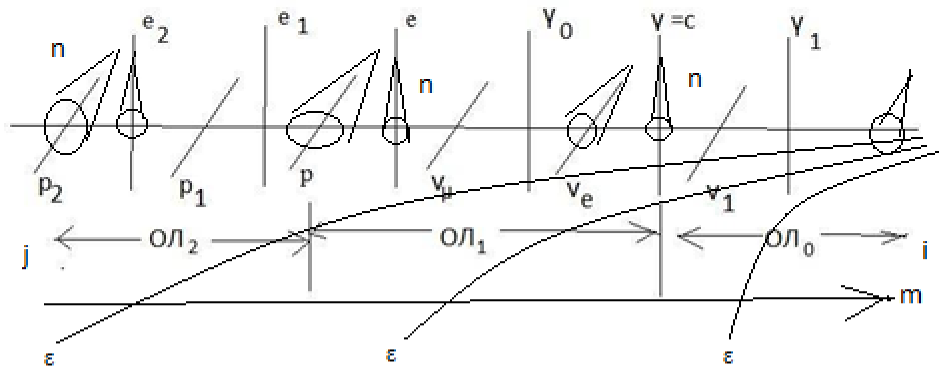


Fig.6 Quantum coordinate system

Already in such a quantum coordinate system, we can consider the properties of the space-matter of the Universe, visible and invisible for photons and neutrinos $(ОЛ_1)$of the level. We are talking about the visible expansion, fixed $(Y\pm=\gamma=c)$by photons $(ОЛ_1)$of the level of indivisible quanta of space-matter $(p,\ e,\nu_\mu,\ \gamma_{0,}\ \nu_e,\gamma)$in the quantum coordinate system. Now we will represent the indivisible quanta of space-matter in the form of $ОЛ_{ji}(m)$their (m)convergence.

$$ОЛ_j \ldots ОЛ_3 \ldots (p_3\ e_3\ p_2\,e_2\,p_1\,e_1\ = ОЛ_2)\big(p,e,\nu_\mu,\ \gamma_{0,}\ \nu_e,\gamma = ОЛ_1\big)(\nu_1\gamma_1\,\nu_2\gamma_2\,\nu_3\gamma_3\ = ОЛ_0) \ldots ОЛ_{-1}ОЛ_{-2} \ldots ОЛ_i$$

In this case, the speed of the electron $(ОЛ_1)$of level: $(w=\left(\alpha=\frac{1}{137}\right)*c$, or $(w=\alpha^{(N=1)}*c$.

Einstein's Theory of Relativity and quantum relativistic dynamics allow superluminal speeds in space-time.

$$\overline{W_Y}=\frac{c+Nc}{1+c*Nc/c^2}=c, \qquad \overline{W_Y}=\frac{a_{11}Nc+c}{a_{22}+Nc/c}=\text{c, For } a_{11}=a_{22}=1.$$

Here $(\uparrow a_{11}\downarrow)(\downarrow a_{22}\uparrow)=1$cosines of the angles of parallelism in the form: $\cos(\varphi_X)*\cos(\varphi_Y)=1$. Then the speeds of subphotons $(\gamma_i\,)$of the physical vacuum are equal to: $(w_i=\alpha^{(-N=-1,-2\ldots)}*c)$superluminal speeds in $(ОЛ_i)$the levels of the physical vacuum. Similarly, the space of speeds in $(ОЛ_j)$the levels in the form: $(w_j=\alpha^{(+N=1,2,3\ldots)}*c)$, subject to the limiting$(w_j*w_i=\alpha^{+N}c*\alpha^{+N}c=\Pi=c^2)$ potentials in Einstein's postulates for $(ОЛ_1)$the level. In the same potentials, the mass spectrum of indivisible quanta of the entire quantum coordinate system is calculated $ОЛ_{ji}(m)$at (m)convergence, similar to the calculations of the masses of $m(X+=Y-)=ПК$, $(ОЛ_1)$level. $m_Y=Gm_X/2,\ m_X=\alpha^2\ m_Y/2$.Full calculation of the mass spectrum in $ОЛ_j$, and $ОЛ_i$levels of physical vacuum, has the form:

Table 1.

	Quanta of the nucleus	$2\alpha*p_j=N*p_{j-1}$	N	(X±) = p $^+{}_J$(M eV)	(Y±) = e $_J$(M eV)
				$p^+{}_{27}=2e_{26}/G$	$e_{27}=2\,p_{25}/\alpha^2$

OL +11				p^+_{27} =2.7 E111 M eV	e_{27} = 1.48 9 E108 MeV
	o Exaquasar	$2\alpha * p^-_{26} = 290 p^+_{25}$	14	$p^-_{26} = 2e_{25}/G$ p^-_{26} = 7.9 E107 MeV	$e_{26} = 2p_{24}/\alpha^2$ e_{26} = 9.1 E103 MeV
		$2\alpha * p^-_{25} = 238 p^+_{24}$		$p^-_{25} = 2e_{24}/G$ p^-_{25} = 3.96 E103 MeV	$e_{25} = 2p_{23}/\alpha^2$ e_{25} = 2.6 E100 MeV
OL +10	Superquasar . ● Galact . 1st kind	$2\alpha * p^+_{24} = 25 p^-_{23}$	13	$p^+_{24} = 2e_{23}/G$ p^+_{24} = 2.4 E99 MeV	$e_{24} = 2p_{22}/\alpha^2$ e_{24} = 1.32 E96 MeV
	black spheres	$2\alpha * p^+_{23} = 290 p^-_{22}$		$p^+_{23} = 2e_{22}/G$ p^+_{23} = 7.0 1 E95 M eV	$e_{23} = 2p_{21}/\alpha^2$ e_{23} =8.1 E91 M eV
	o superquasar 1st kind	$2\alpha * p^-_{22} = 238 p^+_{21}$	12	$p^-_{22} = 2e_{21}/G$ p^-_{22} = 3.5 E91 MeV	$e_{22} = 2p_{20}/\alpha^2$ e_{22} =2.3 4 E88 M eV
OL +8		$2\alpha * p^-_{21} = 25 p^+_{20}$		$p^-_{21} = 2e_{20}/G$ p^-_{21} = 2 , 16 E87 M eV	$e_{21} = 2p_{19}/\alpha^2$ e_{21} = 1 , 17 E84 M eV
	●● Superquasar Galact . Type 2	$2\alpha * p^+_{20} = 290 p^-_{19}$	11	$p^+_{20} = 2e_{19}/G$ p^+_{20} = 6 , 2 26 E83 M eV	$e_{20} = 2p_{18}/\alpha^2$ e_{20} = 7 , 2 E79 M eV
	black spheres	$2\alpha * p^+_{19} = 238 p^-_{18}$		$p^+_{19} = 2e_{18}/G$ p^+_{19} = 3 , 13 E79 M eV	$e_{19} = 2p_{17}/\alpha^2$ e_{19} = 2 , 08 E76 M eV
OL +7	oo superquasars 2 genera	$2\alpha * p^-_{18} = 25 p^+_{17}$	10	$p^-_{18} = 2e_{17}/G$ p^-_{18} = 1 , 9 E75 M eV	$e_{18} = 2p_{16}/\alpha^2$ e_{18} = 1 , 04 E72 M eV
		$2\alpha * p^-_{17} = 290 p^+_{16}$		$p^-_{17} = 2e_{16}/G$ p^-_{17} = 5 , 5 3 E71 M eV	$e_{17} = 2p_{15}/\alpha^2$ e_{17} = 6 , 38 E 6 7 MeV
	● megastar galaxies	$2\alpha * p^+_{16} = 238 p^-_{15}$	9	$p^+_{16} = 2e_{15}/G$ p^+_{16} = 2 , 7 8 E 6 7 MeV	$e_{16} = 2p_{14}/\alpha^2$ e_{16} = 1.8 4 E 6 4 MeV
OL +6	black spheres	$2\alpha * p^+_{15} = 25 p^-_{14}$		$p^+_{15} = 2e_{14}/G$ p^+_{15} = 1 ,7 E 6 3 MeV	$e_{15} = 2p_{13}/\alpha^2$ e_{15} = 9.26 E 59 MeV
	o megastars	$2\alpha * p^-_{14} = 291 p^+_{13}$	8	$p^-_{14} = 2e_{13}/G$ p^-_{14} = 4.91 E 59 MeV	$e_{14} = 2p_{12}/\alpha^2$ e_{14} = 5.67 E 55 MeV
	Superplanets	$2\alpha * p^-_{13} = 238 p^+_{12}$		$p^-_{13} = 2e_{12}/G$ p^-_{13} = 2.46 E 55 MeV	$e_{13} = 2p_{11}/\alpha^2$ e_{13} = 1.64 E 52 MeV
OL +5	● quasar galaxies of the 1st type	$2\alpha * p^+_{12} = 25 p^-_{11}$	7	$p^+_{12} = 2e_{11}/G$ p^+_{12} = 1 , 51 E 51 MeV	$e_{12} = 2p_{10}/\alpha^2$ e_{12} = 8 , 2 2 E 47 MeV
	black spheres	$2\alpha * p^+_{11} = 290 p^-_{10}$		$p^+_{11} = 2e_{10}/G$ p^+_{11} = 4 , 36 E 47 MeV	$e_{11} = 2p_{9}/\alpha^2$ e_{11} = 5 , 03 E 43 MeV
	o quasars 1st kind	$2\alpha * p^-_{10} = 238 p^+_{9}$	6	$p^-_{10} = 2e_{9}/G$ p^-_{10} = 2, 19 E 43 MeV	$e_{10} = 2p_{8}/\alpha^2$ e_{10} =1, 45 E 40 MeV
OL +4		$2\alpha * p^-_{9} = 25 p^+_{8}$		$p^-_{9} = 2e_{8}/G$ p^-_{9} =1.3 4 E 39 MeV	$e_{9} = 2p_{7}/\alpha^2$ e_{9} = 7.3 E 35 MeV
	●● quasar galaxies of type 2	$2\alpha * p^+_{8} = 290 p^-_{7}$	5	$p^+_{8} = 2e_{7}/G$ p^+_{8} = 3.8 7 E 35 MeV	$e_{8} = 2p_{6}/\alpha^2$ e_{8} = 4.47 E 31 MeV
	black spheres	$2\alpha * p^+_{7} = 238 p^-_{6}$		$p^+_{7} = 2e_{6}/G$ p^+_{7} = 1.94 E 31 MeV	$e_{7} = 2p_{5}/\alpha^2$ e_{7} =1.3 E2 8 MeV
OL +3	o o quasars 2 genera	$2\alpha * p^-_{6} = 25 p^+_{5}$	4	$p^-_{6} = 2e_{5}/G$ p^-_{6} = 1.19 E2 7 MeV	$e^+_{6} = 2p_{4}/\alpha^2$ e^+_{6} = 6.48 E 23 MeV
	Intergalactic black spheres	$2\alpha * p^-_{5} = 290 p^+_{4}$		$p^-_{5} = 2e_{4}/G$ p^-_{5} = 3.4 47 E 23 MeV	$e_{5} = 2p_{3}/\alpha^2$ e_{5} = 3.97 E1 9 MeV
	● star Galactics	$2\alpha * p^+_{4} = 238 p^-_{3}$	3	$p^+_{4} = 2e_{3}/G$ p^+_{4} = 1.7 E1 9 M eV	$e^-_{4} = 2p_{2}/\alpha^2$ e^-_{4} = 1.15E+1 6 M eV
OL +2	Galactic black spheres	$2\alpha * p^+_{3} = 25 p^-_{2}$		$p^+_{3} = 2e_{2}/G$ p^+_{3} = 1.057 E 15 MeV	$e3 = 2p_{1}/\alpha^2$ e_{3} = 5.7 55 E 11 MeV
	o Stars	$2\alpha * p^-_{2} = 290 p^+_{1}$	2	$p^-_{2} = 2e_{1}/G$ p^-_{2} = 3.0 5 E 11 MeV	$e2 = 2p/\alpha^2$ e2 = 3,524 E7 M eV
	Planets	$2\alpha * p^-_{1} = 238 p^+$		$p^-_{1} = 2e/G$ p^-_{1} = 1 , 532 E7 M eV	$e_{1} = 2\nu_{\mu}/\alpha^2$ e_{1} = 10 178 M eV
		$2\alpha * p^+ = 25 \nu^-_{\mu}$	1	$p^+ = 2\gamma_{0}/G$ p^+ = 938.28 MeV	$e^- = 2\nu_{e}/\alpha^2$ e^- = 0.511 MeV

OL_{+1}	level	$2\alpha * v_\mu^+ = 292 v_e^-$		$v_\mu = \alpha^2 e_1/2$ $v_\mu = 0.27\,1$ MeV	$\gamma_0 = G p/2$ $\gamma_0 = 3.13*10^{-5}$ MeV
			0	$v_e = \alpha^2 e/2$ $v_e = 1.36*10^{-5}$ MeV	$\gamma = G v_\mu/2$ $\gamma^+ = 9.07*10^{-9} MeV$
OL_0	Physical vacuum level			$v_1 = \alpha^2 \gamma_0/2$ $v_1 = 8.3*10^{-10}$ M eV	$\gamma_1 = G v_e/2$ $\gamma_1 = 4.5*10^{-13}$ MeV
			-1	$v_1 = \alpha^2 \gamma/2$ $v_2 = 2.4*10^{-13}$ MeV	$\gamma_2 = G v_1/2$ $\gamma_2 = 2.78*10^{-17}$ MeV
				$v_3 = \alpha^2 \gamma_1/2$ $v_3 = 1.2*10^{-17}$ MeV	$\gamma_3 = G v_2/2$ $\gamma_3 = 8.05*10^{-21}$ MeV
OL_{-1}	Physical vacuum level		-2	$v_4 = \alpha^2 \gamma_2/2$ $v_4 = 7.4*10^{-22}$ MeV	$\gamma_4 = G v_3/2$ $\gamma_4 = 4.03*10^{-25}$ MeV
				$v_5 = \alpha^2 \gamma_3/2$ $v_5 = 2.14*10^{-25}$ MeV	$\gamma_5 = G v_4/2$ $\gamma_5 = 2.47*10^{-29}$ MeV
			-3	$v_6 = \alpha^2 \gamma_4/2$ $v_6 = 1.07*10^{-29}$ MeV	$\gamma_6 = G v_5/2$ $\gamma_6 = 7.13*10^{-33}$ MeV
OL_{-2}	Physical vacuum level			$v_7 = \alpha^2 \gamma_5/2$ $v_7 = 6,57*10^{-34}$ MeV	$\gamma_7 = G v_6/2$ $\gamma_7 = 3.58*10^{-37}$ MeV
			-1	$v_8 = \alpha^2 \gamma_6/2$ $v_8 = 1.897*10^{-37}$ MeV	$\gamma_8 = G v_7/2$ $\gamma_8 = 2.2*10^{-41}$ MeV
				$v_9 = \alpha^2 \gamma_7/2$ $v_9 = 9.5*10^{-42}$ MeV	$\gamma_9 = G v_8/2$ $\gamma_9 = 6,33*10^{-45}$ MeV
OL_{-3}	Physical vacuum level		-2	$v_{10} = \alpha^2 \gamma_8/2$ $v_{10} = 5,8*10^{-46}$ MeV	$\gamma_{10} = G v_9/2$ $\gamma_{10} = 3,2*10^{-49}$ MeV
				$v_{11} = \alpha^2 \gamma_9/2$ $v_{11} = 1.685*10^{-49}$ MeV	$\gamma_{11} = G v_{10}/2$ $\gamma_{11} = 1.9*10^{-53}$ MeV
			-3	$v_{12} = \alpha^2 \gamma_{10}/2$ $v_{12} = 8.46*10^{-54}$ MeV	$\gamma_{12} = G v_{11}/2$ $\gamma_{12} = 5,62*10^{-57}$ MeV
	Physical vacuum OL_{-4} levels			$v_{13} = \alpha^2 \gamma_{11}/2$ $v_{13} = 5.2*10^{-58}$ MeV	$\gamma_{13} = G v_{12}/2$ $\gamma_{13} = 2,8*10^{-61}$ MeV
			-4	$v_{14} = \alpha^2 \gamma_{13}/2$ $v_{14} = 1.5*10^{-61}$ MeV	$\gamma_{14} = G v_{13}/2$ $\gamma_{14} = 1.7*10^{-65}$ MeV
				$v_{15} = \alpha^2 \gamma_{10}/2$ $v_{15} = 7.5*10^{-66}$ MeV	$\gamma_{15} = G v_{14}/2$ $\gamma_{15} = 5*10^{-69}$ MeV
	Physical vacuum OL_{-5} levels		-1	$v_{16} = \alpha^2 \gamma_{14}/2$ $v_{16} = 4.6*10^{-70}$ MeV	$\gamma_{16} = G v_{15}/2$ $\gamma_{16} = 2.5*10^{-73}$ MeV
				$v_{17} = \alpha^2 \gamma_{15}/2$ $v_{17} = 1.33*10^{-73}$ MeV	$\gamma_{17} = G v_{16}/2$ $\gamma_{17} = 1.5*10^{-77}$ MeV
			-2	$v_{18} = \alpha^2 \gamma_{16}/2$ $v_{18} = 6.7*10^{-78}$ MeV	$\gamma_{18} = G v_{17}/2$ $\gamma_{18} = 4.4^3*10^{-81}$ MeV
	Physical vacuum OL_{-6} levels			$v_{19} = \alpha^2 \gamma_{17}/2$ $v_{19} = 4.1*10^{-82}$ MeV	$\gamma_{19} = G v_{18}/2$ $\gamma_{19} = 2.2*10^{-85}$ MeV
			-3	$v_{20} = \alpha^2 \gamma_{18}/2$ $v_{20} = 1.18*10^{-85}$ MeV	$\gamma_{20} = G v_{19}/2$ $\gamma_{20} = 1.36*10^{-89}$ MeV
				$v_{21} = \alpha^2 \gamma_{19}/2$ $v_{21} = 5.9*10^{-90}$ M eV	$\gamma_{21} = G v_{20}/2$ $\gamma_{21} = 3.94*10^{-93}$ MeV
	Physical vacuum OL_{-7} levels		-4	$v_{22} = \alpha^2 \gamma_{20}/2$ $v_{22} = 3.6*10^{-94}$ MeV	$\gamma_{22} = G v_{21}/2$ $\gamma_{22} = 1.975*10^{-97}$ M eV
				$v_{23} = \alpha^2 \gamma_{21}/2$ $v_{23} = 1.05*10^{-97}$ MeV	$\gamma_{23} = G v_{22}/2$ $\gamma_{23} = 1,2*10^{-101}$ MeV
			-4	$v_{24} = \alpha^2 \gamma_{22}/2$ $v_{24} = .5.26*10^{-102}$ MeV	$\gamma_{24} = G v_{23}/2$ $\gamma_{24} = 3.494*10^{-105}$ M eV

$$НОЛ = w_j(e_{26}) * w_i(\gamma_{24}) = (\alpha^{13} w_e) * (\alpha^{-13} w_e) = w_e^2 = П_e = 1$$

НОЛ=9,1 E103 *(3,14=L/d) *3.494*10^{-105}=1.

But in the Earth's atmosphere, it is possible to detect particles with energy $p_2 = 305$ E15 eVor e $_2$ = 3.524 E 13 eV, at least.

Fragmentation of the physical vacuum.

The fact of the birth of an electron-positron pair by a high-energy photon is interesting. This is a fact. In this case, one can imagine a model of the dynamics of space-matter of this process.

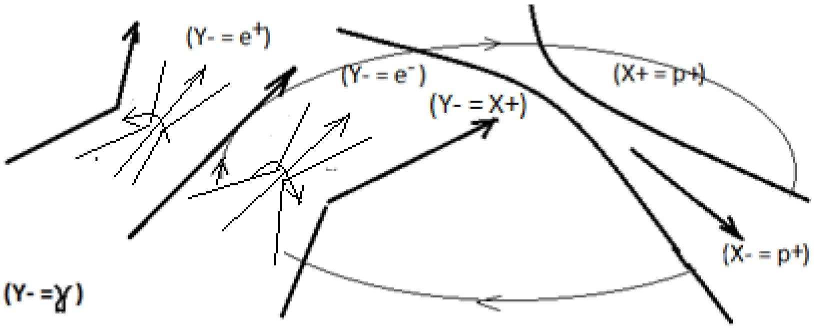


Fig. 7 birth of an electron-positron pair

Thus, a high-energy $(Y- = \gamma)$photon gives birth to an electron $(e^- e^+)$positron pair in the field $(X+ = p^+)$of the Strong Interaction $(X\pm = p^+)$of the proton nucleus. The energy of such a photon. As is known, should be equal to $(E = 2 * 0{,}511\ MeV)$. In the unified Criteria of Evolution, any quantum density $(\rho = \nu^2)$is represented by the symmetry of two quanta with the frequency $(\nu = \frac{E}{\hbar})$and energy $(E = \hbar\nu)$of an electron and a positron, in this case. In exactly the same way, we speak about the generation of quanta of the (p_1/n_1)uranium $(p^+ \approx n)$nucleus by the quanta of the Earth's core, $(2\alpha p_1^- = (Y -) = 238p^+ = {}^{238}_{92}U)$, with subsequent decay into a spectrum of atoms. From the considered properties of the physical vacuum, we say that from the "bottom of the physical vacuum" of infinitely large densities $(\rho_i(X-) \to \infty)$of the dynamic space-matter of the Universe:

$$(X \pm)_{ji} = p_j \begin{pmatrix} R_j(X-) \to \infty \\ \rho_j(X-) \to 0 \end{pmatrix} \nu_i \begin{pmatrix} r_i(X-) \to 0 \\ \rho_i(X-) \to \infty \end{pmatrix} = 1, \qquad (Y \pm)_{ji} = e_j \begin{pmatrix} r_j(Y-) \to 0 \\ \rho_j(Y-) \to \infty \end{pmatrix} \gamma_i \begin{pmatrix} R_i(Y-) \to \infty \\ \rho_i(Y-) \to 0 \end{pmatrix} = 1,$$

"drop out" quanta $(X \pm)_i$of intermediate densities $(0 < \rho_i(X -) < \infty)$, right up to large-scale quanta $(X \pm)_j$of dynamic space-matter. We are talking about quanta of the quasar core $(X\pm = p_6)$, quanta $(X\pm = p_5)$of intergalactic "black spheres", quanta $(X\pm = p_4)$of the core of galaxies, quanta of $(X\pm = p_3)$ galactic "black spheres", quanta $(X\pm = p_2)$of the core of stars generated by the physical vacuum of infinitely high densities $(\rho_i(X-) \to \infty)$. And such large-scale quanta emit and generate other quanta of the space-matter of the Universe.

Already as a consequence of such circumstances, we can say that $(p_1/n_1)$the quanta of the core of the planets, including the Earth, generate quanta $(2\alpha p_1^- = 238p^+ = {}^{238}_{92}U)$uranium nuclei, $(p^+ \approx n)$, with subsequent decay into a spectrum of atoms in exothermic decay reactions.

Thus, the physical vacuum between objects of the Universe is a multi-level space of speeds, in which the photon has its own speed. The photon cannot penetrate into the superluminal space of speeds, and it cannot slow down. And we are talking about the fact that a clot of energy of mass $(Y -)$trajectories can fragment in the physical vacuum of the Universe into indivisible quanta of space-matter, with a certain mass, with the well-known $(E = mc^2)$Einstein formula.

In classical relativistic dynamics , $R^2 - c^2t^2 = \frac{c^4}{b^2} = \bar{R}^2 - c^2\bar{t}^2$space-time itself experiences acceleration: $b^2(R \uparrow)^2 - b^2c^2(t \uparrow)^2 = (c^4 = F)$. In the unified Criteria, $\left(b = \frac{K}{T^2}\right)(R = K) = \frac{K^2}{T^2} = \Pi$ we speak of the potential in the velocity space $(\frac{K}{T} = \overrightarrow{e})$of a vector space in any $\vec{e}(x^n)$coordinate system where $\Pi = g_{ik}(x^n)$the fundamental tensor of the Riemannian space. Then in the general case we have:

$$\Pi_1^2 - \Pi_2^2 = (\Pi_1(X+) - \Pi_2(Y-))(\Pi_1(X-) + \Pi_2 * (Y+)) = (\Delta\Pi_1(X+= Y-)) \downarrow (\Delta\Pi_2(X-= Y+)) \uparrow = F$$

This force on the entire radius $(R = K)$of the visible sphere of the unified $(X\pm= Y\mp)$space-matter of the Universe, gives (dark) energy $(U = FK)$of the dynamics of the Universe, in gravitational $(X+= Y-)$mass and in electromagnetic $(Y+ = X -)$ fields. Therefore, this is the energy of the relativistic dynamics of the Universe.

$$(\Pi_1^2-\Pi_2^2)K=(\Pi_1-\Pi_2)K(\Pi_1+\Pi_2)=(\Delta\Pi_1)(X+=Y-)\downarrow K(\Delta\Pi_2)(X-=Y+)\uparrow=FK=U$$

What is its nature? On the radius $(R=K)$of the dynamic sphere of the Universe there is a simultaneous dynamic of a single $(X\pm=Y\mp)$space-matter. Considering the dynamics of potentials in gravitational mass $(X+=Y-)$fields, as is already known, $(\Pi_1-\Pi_2)=g_{ik}(1)-g_{ik}(2)\neq 0$we are talking about the equation of "gravity" $R_{ik}-\frac{1}{2}Rg_{ik}-\frac{1}{2}\lambda g_{ik}=kT_{ik}$General Theory of Relativity, in any system$g_{ik}(x^m\neq const)$ coordinates, and at different levels of singularity $ОЛ_j, ОЛ_i$ physical vacuum of the entire Universe. In this case: $\left(R_{ik}-\frac{1}{2}Rg_{ik}=\Delta\Pi_1=kT_{ik}+\frac{1}{2}\lambda g_{ik}\right)(X+=Y-)$, in addition to the curvature of space-matter caused by the (kT_{ik})energy-momentum tensor, we also talk about the dynamics of the physical vacuum: $\frac{1}{2}\lambda(g_{ik}=4\pi a^2*\rho)$, where from $(a(t)\to\infty)$and $(\rho=\frac{1}{(T\to\infty)^2}\equiv H^2)$, НОЛ $=(T_i\to\infty)(t_i\to 0)=1$, the Universe disappears in time $(t_i\to 0)$, at infinite radii $(a(t)\to\infty)$, with the Hubble parameter $(H=\frac{\dot{a}}{a})$ of the inflationary $(a=cT*ch\frac{ct}{cT})$model. We are talking about a sphere ($x^m=\mathrm{X,Y,Z,ct}\neq const$) non-stationary Euclidean space-time, in the form:

$$(x^m=\mathrm{X,Y,Z,ct})*\{\left(ch\frac{X(X+=Y-)}{Y_0=R_0(X-)}\right)(\mathrm{X+=Y-})*\cos\varphi_{\mathrm{X}}(\mathrm{X-=Y+})=1\}.$$

The gradient of such $(\Delta\Pi_1)$a potential, it is also known, gives the equations of quantum gravity with inductive $M(Y-)$(hidden) mass fields in the gravitational field. We are talking about $(\Delta\Pi_1\sim T_{ik})\downarrow(X+=Y-)$the energy-momentum $T_{ik}=\left(\frac{E=\Pi^2K}{p=\Pi^2T}\right)_i\left(\frac{E=\Pi^2K}{p=\Pi^2T}\right)_k=\frac{K^2}{T^2}\equiv(\Pi)$, gravitational $(X+=Y-)$mass fields of the entire Universe, with a decrease in the density of mass $(Y-)$trajectories in the Planck scales.

$$\Pi K=\frac{(K_i\to\infty)^3}{(T_i\to\infty)^2}=\left(\frac{1}{(T_i\to\infty)^2}=(\rho_i\to 0)\downarrow\right)\left({K_i}^3=V_i\uparrow\right)(X+=Y-)\ =(\rho_i\downarrow V_i\uparrow)(X+=Y-),$$

$$(R_j)*(R_i=1{,}616*10^{-33}sm)=1,\qquad (R_j)=6{,}2*10^{32}sm\qquad (\rho_i(Y-)\to 0).$$

In quantum gravity, we talk about the dynamics of quanta: $e(Y-)_j\ \to\gamma(Y-)_i$in $ОЛ_j$, and $ОЛ_i$ levels of the physical vacuum on $(m)$the convergence of the entire Universe. In the unified Criteria of the Evolution of space-matter, the density $(\rho=\frac{\text{ПК}}{\text{К}^3}=\frac{1}{\text{Т}^2}=\nu^2)$, gives $\text{c}=\frac{r(Y-)_J\to 0}{T(Y-)_J\to 0}$near-zero parameters of the instantaneous "Explosion" of an infinitely large $(\rho(Y-)_J=\frac{1}{{T(Y-)_J}^2}\to\infty)$density of dynamic masses in $(Y+=X-)_J$field of the Universe. At infinitely small $(T(Y-)_J\to 0)$periods of dynamics, in dynamic space-matter: НОЛ $=(T(Y-)_J\to 0)*(t(Y+=X-)_J\to\infty)=1$, in $(X-)_J$the field of the Universe, an infinite number of events occur, $(t(Y+=X-)_J\to\infty)$in "compressed time", at the level ν_i/γ_i quanta and with the beginning of $\left(T(Y-)_J=1\right)*\left(t(Y+=X-)_J=1\right)=1$time counting $\left(t(X-)_J=1\right)$).

From the axioms НОЛ $=$ КЭ$(m=j)*$КЭ$(n=i)=1$, or $(\rho(Y+=X-)_J\to 0)(\rho(X-)_i\to\infty)=1$, of the single space-matter of the initial Universe, quanta $(\rho(X-=Y+)_i\to\infty)$are born immediately. And already in such $(\rho(X+=Y-)_i\to 0)$physical vacuum, quanta $(\gamma(Y-)_i=(\rho(Y-)_i\to 0)$with near-zero mass density are initially born. And we are talking about the radius of the sphere of non-stationary Euclidean expanding space, $R(X-)_J\to\infty$, at (m)convergence, and $r(X-)_i\to 0$, at(n) convergence, that is superluminal speeds: $(w_i=\alpha^{(-N=-1,-2\dots)}*c)$, in $(ОЛ_i)$the levels of the physical vacuum. In the axioms of dynamic space-matter НОЛ $=$ КЭ$(m=j)*$КЭ$(n=i)=1$, there are Indivisible Regions of Localization: $(X\pm)_{ji}=p_j(X^n)\nu_i(X^n)$and $(Y\pm)_{ji}=e_j(Y^n)\gamma_i(Y^n)$states of quanta, with mutually orthogonal $(X^n)\perp(Y^n)$coordinate systems. This means that if there are $(Y-=e_j)$, then there are always $(Y-=\gamma_i)$ quanta. Similarly, $(X-=p_j)$, $(X-=\nu_i)$quanta. From this follows the quadratic form of the dynamics of the energy of quanta: $(\Delta E^2=\hbar^2\Delta(\rho=\nu^2)$.

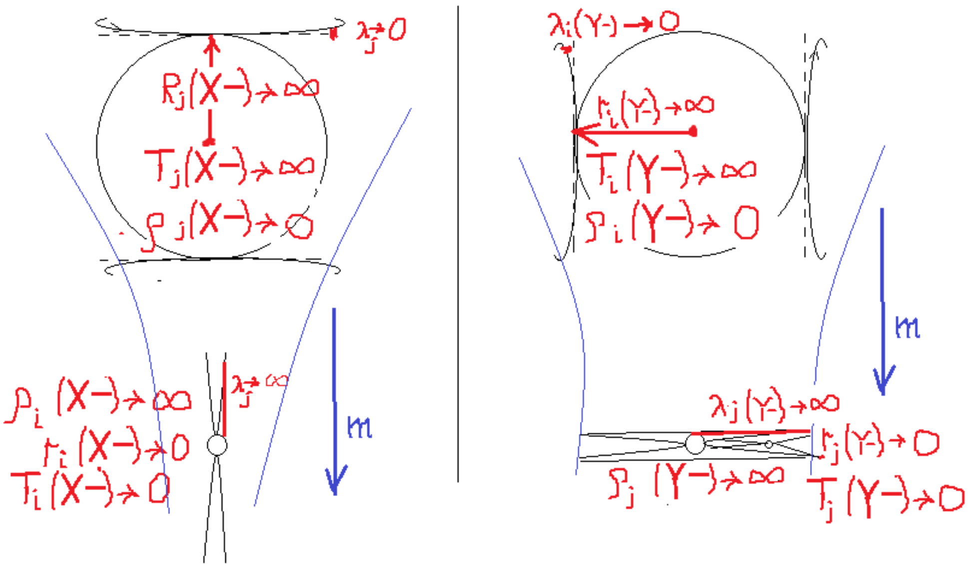


Fig.8 to the dynamics of space-matter of the Universe

The larger the radius of the dynamic sphere, $(r \to R)$the smaller the curvature $(\lambda_\infty \to \lambda_0)$of space-matter and vice versa, in accordance with the properties НОЛ $= (r\lambda_\infty) = (R\lambda_0) = 1$of space-matter itself. Here: $\lambda(X-) = (r \to R)tg\,\varphi(X-)$and $\lambda(Y-) = (r \to R)tg\,\varphi(Y-)$, respectively. Exactly so, the ratios of densities НОЛ $= (\rho_\infty\lambda_\infty) = (\rho_0\lambda_0) = 1$, with constant field potentials. And exactly such properties (T)- the period of the dynamics of quanta and (t)- their relative time of events, НОЛ $= (T_0 t_\infty) = (t_0 T_\infty) = 1$. At infinitely large radii, the Universe disappears in time.(t_0) and the density of space-matter is reduced to zero (ρ_0), in all cases. The opposite picture in hyperbolic properties occurs in the depths of the physical vacuum of the Universe. Such a state of dynamic space-matter is represented by quanta:

$$(X\pm)_{ji} = p_j\begin{pmatrix} R_j(X-) \to \infty \\ \rho_j(X-) \to 0 \end{pmatrix} v_i \begin{pmatrix} r_i(X-) \to 0 \\ \rho_i(X-) \to \infty \end{pmatrix} = 1, \quad (Y\pm)_{ji} = e_j\begin{pmatrix} r_j(Y-) \to 0 \\ \rho_j(Y-) \to \infty \end{pmatrix} \gamma_i \begin{pmatrix} R_i(Y-) \to \infty \\ \rho_i(Y-) \to 0 \end{pmatrix} = 1$$

Properties of dynamic spheres $(r \to R)$in velocity space:

$\big(W_j(X-) = \alpha^N c \to 0\big)\big(v_i(X-) = \alpha^{-N} * c \to \infty\big) = 1$: the following relations take place:

НОЛ $= \big(R_j(X-) \to \infty\big)\big(\lambda_j(X-) \to 0\big) = 1$, НОЛ $= (r_i(X-) \to 0)(\lambda_i(X-) \to \infty) = 1$,

and $\big(W_j(Y-) = \alpha^N c \to 0\big)\big(v_i(Y-) = \alpha^{-N} * c \to \infty\big) = 1$

НОЛ $= (R_i(Y-) \to \infty)(\lambda_i(Y-) \to 0) = 1$, НОЛ $= \big(r_j(Y-) \to 0\big)\big(\lambda_j(Y-) \to \infty\big) = 1$.

The selected states of the physical vacuum set the modality of the properties of matter, for example, a proton, electron and antimatter, respectively. Quanta of space-matter have the properties of emitting and absorbing. An electron $(Y\pm = e)$emits and absorbs $(Y\pm = \gamma)$a photon. Therefore, we can say that $(Y\pm = e_j)$quanta of higher density of mass $\rho(Y-)$fields successively emit quanta $(Y\pm = e_{j-2})$of lower density, and then $(Y\pm = \gamma)$quanta emit $(Y\pm = \gamma_{i-2} \ldots .\gamma_{i-22})$quanta into the full depth of the physical vacuum, with a near-zero density. Conversely, quanta $(X\pm = p)$of higher density of mass $\rho(X-)$fields are absorbed successively by quanta $(X\pm = p_{j+2})$of lower density. In this case, the conditions are formed: $\rho_j(X-) \to \infty$, and $R_j(X-) \to \infty$, a new cycle of the dynamics of the Universe. Different densities $(\rho_\infty)$and (ρ_0)in different $(Y- = X+)_j$and $(X- = Y+)$fields, give a difference in densities $(\Delta(\rho = \nu^2) \neq 0)$. It is this $(\Delta\rho = \frac{\Delta E^2}{\hbar^2})$difference in densities that is the cause of the emission and (or) absorption of energy of space-matter quanta. We are talking about quantum (non-vanishing) dynamics

$$(R_j(X-) \to \infty) \to (R_i(X-) \to 0)\text{And}(R_i(Y-) \to \infty) \to (R_j(Y-) \to 0)$$

space-matter, in a quantum $(m-n)$coordinate system. The argument of such dynamics is the "dark energy" of the expansion $(R_i(Y-) \to \infty)$of space-matter. Such dynamics of accelerations:

$(b = \rho R)$, $(\rho_j(X-) \to 0)(R_j(X-) \to \infty) =$ НОЛ, And$(\rho_i(Y-) \to 0)(R_i(Y-) \to \infty) =$ НОЛ

quanta of dynamic space-matter, is determined and has the property of the uncertainty principle. In other words, in these $(X\pm)_{ji}$and $(Y\pm)_{ji}$levels $R_j(X-)$of $R_i(Y-)$physical vacuum, the properties of any point are the properties of the space-matter of the entire Universe. This is the space of velocities in which all the Criteria of Evolution of matter are formed. Let's call them the Background Criteria of Evolution of charge and mass $(X-)_j$trajectories $(Y-)_i$, with their quantum dynamics. And already on this background

$(\rho_j(X-)\to 0)$, $(\rho_i(Y-)\to 0)$that is: $(\rho\equiv\nu^2)$, the dynamics of the Dominant, any Criteria of Evolution, in the multidimensional space of velocities, goes towards increasing frequencies $(\uparrow\rho\equiv\uparrow\nu^2)$, as well as densities of quanta of dynamic space-matter at their (m)convergence.

On the other hand, such properties give quantum entanglement of the entire dynamic space-matter of the Universe as a whole. We are talking about the simultaneous and opposite dynamics of any Evolution Criteria on infinite $R_j(X-)$radii $R_i(Y-)$of spheres-points in each level of $(m-n)$convergence of the physical vacuum. To understand, this is similar to a tablecloth on a table, where " let's say, two objects A and B $i\psi=\sqrt{(+\psi\,(-\psi\,)}$lie " at any distances. If you "pull the tablecloth" (the background quantum of space-matter), then objects A and B with opposite properties (say, the wave function of convergence quanta (m)) will change simultaneously at any distances. In this case, object A does not interact with object B. And this happens at all $(m-n)$levels of spheres-points of the space-matter of the entire Universe.

In the overall picture, we have the dynamics of (m)convergence quanta $(\uparrow\nu^2)$in one sphere-point, but already $(n)$the convergence $(\downarrow\nu^2)$of spheres-points of the entire Universe, with the indicated quantum entanglement and the uncertainty principle at each $(m-n)$level of the physical vacuum. And such dynamics are accompanied by radiations ("explosions") of quanta $\left(Y\pm=e_j\right)$ ... $(Y\pm=\gamma_{i-2}\,\ldots.\gamma_{i-22})$, into the full depth of the physical vacuum, with the subsequent generation of structural forms similar to the generation nuclei $(Y\pm=e_+^*)=238p^+$, with their decay into a spectrum of atoms. And this happens everywhere. We are talking about the superluminal space of velocities $(w_i=\alpha^{(-N=-1,-2\ldots)}*c)$, $\gamma_i(Y-)$photons $(\text{ОЛ}_i)$of the level, with their period of dynamics $\mathrm{c}=\frac{\lambda(Y-)_{i\to\infty}}{T(Y-)_{i\to\infty}}$, $T(Y-)_i\to\infty$. This means that at infinite radii $R(X-)_J\to\infty$, "at the bottom" of the physical vacuum, at each of its points $r(X-)_i\to 0$, at (n)convergences, the Universe "disappears" in time: $t=(n\to 0)*T(Y-)_i=0$. "At the bottom" of the physical vacuum, in (ОЛ_i)levels, we cannot record events with a photon $\gamma_i(Y-)$with a period of dynamics $T(Y-)_i\to\infty$. In this case, any density: $(\rho(Y-)_J=\frac{1}{T(Y-)_J{}^2}\to\infty)$dynamic masses, "falls" into the depths of $(\rho(Y-)_i\to 0)$the physical vacuum $(\text{ОЛ}_i)$of levels, at (n)convergence at each point of the space-matter of the entire $(R(X-)_J\to\infty)$Universe. The masses themselves $e(Y-)_J=(X+=p_j)(X+=p_j)$have the structural form of "black spheres" with "jets" $e(Y-)_J\to\gamma_i(Y-)$of decays. And each time there is a generation $2\alpha\left(X+=p_j\right)=e(Y-)_{J-1}$quanta in mass trajectories. This creates the effect of an "expanding Universe" with the effect of the primary $(T(Y-)_J\to 0)$"Big Bang". In this case, the speed of light,$\gamma(Y-)$ photon (ОЛ_1)level, remains unchanged at any level of physical vacuum: $\mathrm{c}=\frac{\lambda(Y-)_{i\to\infty}}{T(Y-)_{i\to\infty}}=\mathrm{c}=\frac{\lambda(Y-)_{j\to 0}}{T(Y-)_{j\to 0}}=\mathrm{c}=\frac{\lambda(X-)_{i\to 0}}{T(X-)_{i\to 0}}$. For$\gamma(Y-)$ photons (ОЛ_1)level, "falling" to near-zero mass densities $(\rho(Y-)_i=\frac{1}{T(Y-)_i{}^2}\to 0)$, with acceleration $G(\mathrm{X}+)\left[\frac{\mathrm{K}}{\mathrm{T}^2}\right]=\upsilon*\mathrm{H}\left[\frac{\mathrm{K}}{\mathrm{T}^2}\right]$, where(H) fixed Hubble constant: $\mathrm{H}=\frac{\upsilon}{R}$. Wavelength$\gamma(Y-)$ photons increases, when "falling into near-zero density" at the limiting radii $(R(X-)_J\to\infty)$of the Universe, in the extreme depth of the physical $(r(X-)_i\to 0)$vacuum. These "relic $\gamma(Y-)$photons" $(\text{ОЛ}_1)$of the level (red in the figure) are seen in experiments. Further we talk about superluminal $\gamma_i(Y-)$photons.

The mathematical truth is that at the infinite radii of the entire space-matter of the Universe ($\mathrm{R}_j(X-)\to\infty$) with its mass ($\lambda_i(Y-)\to\infty$) trajectories, the density of matter ($\rho_j(X-)\to 0$), ($\rho_i(Y-)\to 0$), tends to zero. At any point of the sphere $\mathrm{R}_j(X-)\to\infty$of the Universe, the non-locality (simultaneity) of the dynamics of the set of points chosen in symmetries is valid at the level $(\mathrm{X}-=\mathrm{Y}+)_j$of energies of the electromagnetic field of the physical vacuum. The proper time of dynamics (t) is reduced to zero in the axioms NOL=($t_i(Y+)\longrightarrow 0$)($T_i(Y-)\longrightarrow\infty$)=1, dynamic space-matter, as well as dynamics(b $=(R_j(X-)\to\infty)(\rho_j(X-)\to 0)\ =const)$ acceleration of (b $=(\lambda_i(Y-)\to\infty)(\rho_i(Y-)\to 0)=const)$mass trajectories. In other words, the mathematical truth is the disappearance of the mass density of dynamic space-matter at infinities, and the Universe disappears in time $t_i(Y+=X-)\longrightarrow 0$, with constant acceleration (b $=const$) of all space-matter. On the other hand, ($r_i(X-)\to 0$) takes place $(\rho_i(X-)\to\infty)$ and the beginning ($\lambda_j(Y-)\to 0$), $(\rho_j(Y-)\to\infty)$, of such (the "Explosion"), "instantaneous" $T_j(Y-)\to 0$period of the dynamics of the Universe. In this case, we have:

1. The energy of radiation and (or) absorption $\Delta E^2 = \hbar^2 \Delta\rho$of quanta of space-matter, in the form known to us: $E = mc^2$, or $E = \hbar\nu$, where $m = \nu^2 V$, and so on, but already on $ОЛ_{ji}(m-n)$the spectrum of the quantum coordinate system of space-matter of the entire Universe. We are talking about radiation $(\rho_\infty(Y- = e_j) \to \rho_0(Y- = \gamma_i)$mass and $(\rho_\infty(X- = p_j) \to \rho_0(X- = \nu_i)$charge fields.
2. We always have a vortex: $rot_Y B(X-)$both $rot_Y M(Y-)$the dynamics of quanta (X±)and $(Y\pm)$in a single space – matter (X−= Y+), (Y−= X+).
3. The dynamics $(\Delta\rho)$of densities themselves occur due to the "step (quantum) failure" of densities (ρ_∞), into the "endless void $(\rho_\infty \to \rho_0)$. "
4. Combination of densities: $\rho(X-)\rho(Y-) = 1$, this is the Indivisible Region of Localization of a single and dynamic space – matter (X−= Y+), (Y−= X+). Quantum dynamics $\rho(X-)$of the field $(X\pm)$, always generates $\rho(X+ = Y-)$a field, and the quantum dynamics $\rho(Y-)$of the field $(Y\pm)$, always generates $\rho(Y+ = X-)$a field.
5. $\rho(Y-)$The emission and absorption $\rho(X-)$of densities $(\rho_\infty \to \rho_0)$occurs simultaneously with their quantum dynamics $\rho(Y-) \to \rho(Y+ = X-)$and $\rho(X-) \to \rho(X+ = Y-)$. This is a multi-stage and multi-level process in the quantum $ОЛ_{ji}(m-n)$coordinate system.
6. It is necessary to take into account, in this case, the scale of $(r = 10^{-33} sm)(R = 10^{33} sm) = 1$ such dynamics of each such a $(R\lambda = 1)$quantum $(r\lambda = 1)$of their $ОЛ_{ji}(m-n)$spectrum. This is the wavelength $(Y\pm)$of quanta. $(\lambda_i(Y-) = 10^{33} sm)(\lambda_i(Y+ = X-) = 10^{-33} sm) = 1$ dynamic space-matter in the physical vacuum of the Universe

The quantum dynamics of the space-matter of the Universe in the quantum coordinate system, during the expansion of the Universe is caused by the primary "failure" of densities $\rho_j(Y- = e_j)$ to near-zero mass ↓ $(\rho_i(Y- = \gamma_i) \approx 0)$densities of the physical vacuum. In the axioms of dynamic space-matter:

4.5.Intergalactic spacecraft without fuel engines.

The physical reality is the different space of the velocities of the Sun and the Earth. Without any fuel engines, the Earth flies in the space of the physical vacuum at a speed of $30 км/с$, and the Sun at a speed of the order of $265 км/с$. We are talking about the main property of space-matter - movement. The mass flow $(Y-)_A$ of the apparatus is created by the fields of Strong and Gravitational Interaction of energy quanta $(X\pm = p_1)$, $(X\pm = p_2)$, $ОЛ_2$ the level of indivisible quanta of the space-matter of the physical vacuum, interconnected by the same $(X+)$ fields on the trajectories $(X-)$ of the module, without an external energy source.

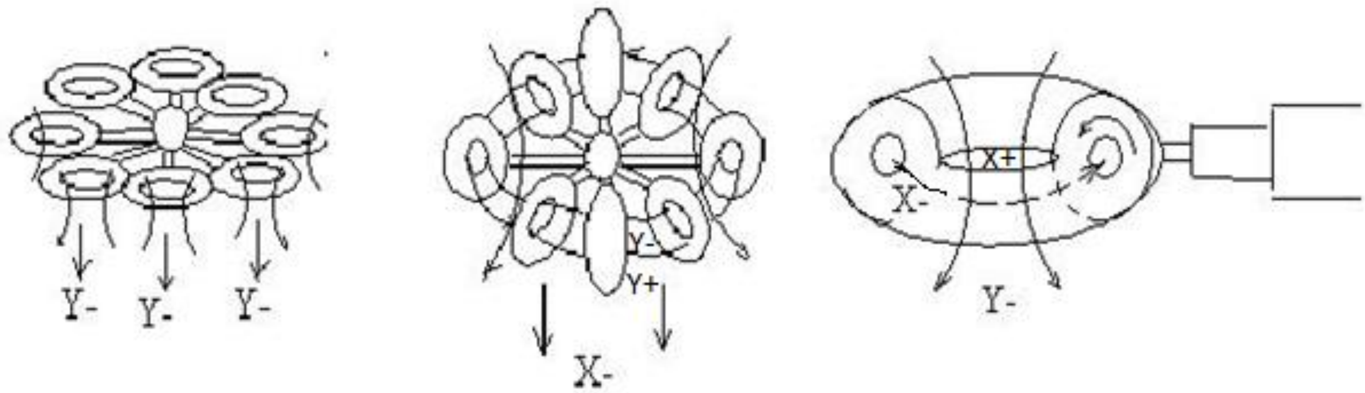


Fig.9. Intergalactic spacecraft without fuel engines.

Consistently including the space of velocities, the apparatus $(Y-)_A$, $(X-)_A$ in the level of the singularity of the physical vacuum, the apparatus goes along the radial trajectory from the level of the singularity of the physical vacuum of the quantum $(X\pm)$ of the space-matter of the planet, $(Y\pm)$ the space-matter of the star , $(X\pm)$the space-matter of the galaxy, $(Y\pm)$the space-matter of the cluster of galaxies, to other clusters and galaxies in field of the Universe, with reverse inclusions when returning to the planet of one's own or another galaxy. Thus, to create mass fields $(Y- = \gamma_i)_A$, space of velocities, it is necessary to use fields $(Y-)_A = (X+ = p_j) + (X+ = p_j)$ of "heavy" quanta as "working substance" closed on $(X-)$ the trajectory of the "ring" of the device, in the conditions of

НОЛ $= (e_j)(k)(\gamma_i) = 1$, Indivisible Area of Localization. These are the conditions in the quantum coordinate system when the quantum (e_j) does not manifest itself below the energy level (γ_i) of physical vacuum quanta. These levels correspond to:

НОЛ $= M(e_1)(k = 3.13)m(\gamma_0) = 1$	НОЛ $= \sqrt{G}M(p_1)(k = 1.8)\sqrt{G}m(\nu_\mu) = 1$
НОЛ $= M(e_2)(k = 3.13)m(\gamma) = 1$	НОЛ $= \sqrt{G}M(p_2)(k = 1.7)\sqrt{G}m(\nu_e) = 1$
НОЛ $= M(e_3)(k = 3.86)m(\gamma_1) = 1$	НОЛ $= \sqrt{G}M(p_3)(k = 17)\sqrt{G}m(\nu_1) = 1$
НОЛ $= M(e_4)(k = 3.13)m(\gamma_2) = 1$	НОЛ $= \sqrt{G}M(p_4)(k = 1.8)\sqrt{G}m(\nu_2) = 1$
НОЛ $= M(e_5)(k = 3.15)m(\gamma_3) = 1$	НОЛ $= \sqrt{G}M(p_5)(k = 1.8)\sqrt{G}m(\nu_3) = 1$
НОЛ $= M(e_6)(k = 3.9)m(\gamma_4) = 1$	НОЛ $= \sqrt{G}M(p_6)(k = 18.9)\sqrt{G}m(\nu_4) = 1$
....	....
НОЛ $= M(e_{26})(k = 3.14)m(\gamma_{24}) = 1$	НОЛ $= \sqrt{G}M(p_{25})(k = 1.8)\sqrt{G}m(\nu_{23}) = 1$

We are talking about the quantum coordinate system ОЛ$_{ji}(m-n)$ in the space-matter of the Universe, in each ОЛ$_j$or ОЛ$_i$ level there are three $(X-=Y+)$ charge and two $(X-=Y+)$ mass isopotential. And in this quantum coordinate system, "heavy" (p_j/e_j) quanta are represented, each of which has its own "depth" of energy levels $(\nu_1/\gamma_i)$of physical vacuum quanta. Let's represent them as models of such $R_{ji}(m)$ Indivisible Regions of space – matter of the Universe.

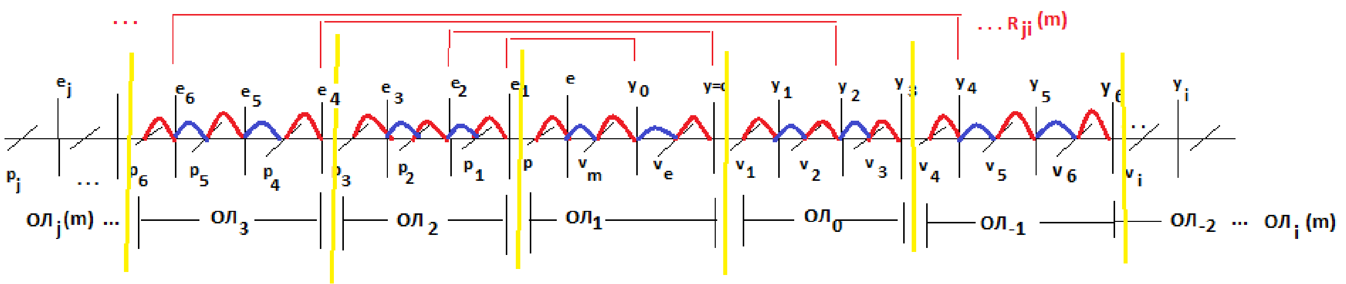


Fig.10.2. spectrum of indivisible quanta

This is a certain sphere in the space-matter, in the center of which are "heavy" (p_j/e_j) quanta, which determine the "bottom", and "up" along the radius, to the level (ν_i/γ_i) of physical vacuum quanta space-matter of the Universe, for any similar object inside this sphere. These are spheres around a planet, a star, a galaxy, a quasar.... On the example of quants:

$$\text{НОЛ}(X \pm = p_1^+) = (\boldsymbol{Y}-= e^+)(X+= \nu_\mu^-)(\boldsymbol{Y}-= e^+) = \frac{2m_e}{G} = 15{,}3\ TeV\ ,$$

$$\text{НОЛ}(Y \pm = e_2^-) = (\boldsymbol{X}-= p^-)(Y+= e^+)(\boldsymbol{X}-= p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV\ ,$$

we are talking about the synthesis of matter $(X \pm = p_1^+)$, on colliding beams $(e^+e^+ \to p_1^+)$ of positrons with virtual quanta (ν_μ^-), and $(Y \pm = e_2^-)$ on colliding beams $(p^-p^- \to e_2^-)$ of antiprotons of positrons with virtual quanta (e^+), similar to an electron $(e^- = \nu_e^-\gamma^+\nu_e^-)$. We can also talk about the sequential synthesis of "heavy" (p_j/e_j) quanta, namely, substances $(X\pm = p_j^+)$, for $(Y-)_A$, $(X-)_A$ apparatus, in individual processes.

$(\ldots \leftarrow p_6^+ \leftarrow e_5^+ \leftarrow p_3^+ \leftarrow e_2^+ \leftarrow p^+)$ and $(\ldots \leftarrow p_7^+ \leftarrow e_6^+ \leftarrow p_4^+ \leftarrow e_3^+ \leftarrow p_1^+ \leftarrow e^+)$synthesis. It is essential that the electron (e^-) emits and absorbs the photon (γ^+) , but it cannot emit and absorb the "dark" photon (γ_0). This "dark" photon is emitted and absorbed by the "heavy" electron $(e_1) \to (\gamma_0)$. Similarly, the "heavy" proton $(p_1) \to (\nu_\mu)$ emits and absorbs the muon neutrino. These are invisible quanta, not interacting, and non-contact with quanta (p^+/e^-) of the atoms of the periodic table. We can neither see nor fix them. But these invisible quanta (blue color in the indicated sequences) have charge isopotentials and can form Structural Forms not visible to us, similar to ordinary (p^+/e^-) atoms. These are: structures (ν_μ/γ_0) ,(p_1/e_1)... This is how we gradually master the potentials of the core of planets, the core of stars, the core of galaxies and the core of quasars. But for the $(Y-)_A$ apparatus, we can form only contact quanta (p_4^+) of the galactic nuclei and quanta $(p_6^+)$of the substance of the quasar nucleus. And the apparatus itself $(Y-)_A$, sequentially "plunges" into the physical vacuum, as: НОЛ $= (e_4)(k)(\gamma_2) = 1$, НОЛ $= (e_6)(k)(\gamma_4) = 1$, and superluminal $(\gamma_2 = 137 * c)$, и $(\gamma_4 = 137^2 * c)$velocity spaces.This is how we gradually master the potentials of the nucleus of planets, the nucleus of stars, the nucleus of galaxies and the nucleus of quasars. At the same time, the device itself $(Y-)_A$, sequentially "plunges" into the physical vacuum, as:

НОЛ $= (e_2)(k)(\gamma) = 1$, НОЛ $= (e_4)(k)(\gamma_2) = 1$, НОЛ $= (e_6)(k)(\gamma_4) = 1$ ..., light (γ=c) and superluminal

$(\gamma_2 = 137 * c)$, $(\gamma_4 = 137^2 * c)$ velocity space. These are quite admissible in the Special $\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c,$ and in the Quantum $\overline{W_Y} = \frac{a_{11}Nc+c}{a_{22}+Nc/c} =$ c, Theories of Relativity in Euclidean $a_{ii} = \cos(\varphi = 0)$, $a_{11} = a_{22} = 1$, angles of parallelism. The $(Y-)_A$ apparatus itself moves in the specified sphere of the space-matter of the Universe, in different levels of physical vacuum. It is worth noting that the volume of space-matter of a star is "immersed" in the space of velocities $(\gamma = c)$, the volume of galaxies is "immersed" in the space of velocities $(\gamma_2 = 137 * c)$, the volume of quasars is "immersed" in space $(\gamma_4 = 137^2 * c)$ are already superluminal speeds. The apparatus represented by $(Y-)_A$ moves in the specified sphere, in the space of velocities $(\gamma_2 = 137 * c)$ of the galaxy nucleus, or $(\gamma_4 = 137^2 * c)$ of the quasar nucleus. The question is, how does the crew feel in the central capsule of the apparatus, in the superluminal space of speeds? Just like the Earth, being in the sphere of the space-matter of the star, the Sun, does not feel 265 km / s of the speed of the Sun (read apparatus) in the space-matter of the Galaxy. Capsule with crew, covered with material and fields $(Y-)_A$ of the vehicle. The capsule moves to another $(ОЛ)_j$ level. In the indicated spheres $R_{ji}(m)$ of Indivisible Regions, spheres of space - matter, speeds $p_j e_j(m)$ quanta $w_j(p_j e_j) * v_i(v_i \gamma_i) = c^2$, because $w_j = \alpha^{+N} * c)(v_i = \alpha^{-N} * c) = c^2$. And these speeds (N=j=1,2,3…), $w_j(p_j e_j) = (\alpha = \frac{1}{137})^{+N} * c \to 0$, in the very center $(Y-)_A$ apparatus. Such properties of space-matter.

Now let's consider the real physical properties of the quantum $(Y- = \frac{p^+}{n})$ of the Strong Interaction of the ordinary nucleus $ОЛ_1(p, e, \nu_\mu^-, \nu_e^-, \gamma)$ of the physical vacuum level. Its mass (Y-) trajectories are formed by gravity (X+ =Y-) mass fields of two protons (X+ =p)(X+ =p)=(Y-), in atomic mass units: $(Y- = \frac{\alpha * p^+}{931{,}5\ MeV} = \frac{938{,}28\ MeV}{137{,}036*931{,}5\ MeV} = 0{,}0073 aem)$, for a proton with mass: $m(p) = 1aum + \frac{\alpha p}{931{,}5\ MeV} aum = 1{,}0073\ aum$. At the same time, we understand that and energy $E(1aum) = mc^2 = 1.6604 * 10^{-27} * (2{,}997924 * 10^8)^2 * (1Дж = 6.2422 * 10^{18} eV) = 931.5 MeV$

$1aem = \frac{m({}^{12}_{6}C)}{12} = 1.6604 * 10^{-27} kg$. We are talking about inductive mass (Y-), in the equation $rot_y G(X+) = -\frac{\partial M(Y-)}{\partial T}$ of dynamics. This is exactly how the mass $(Y-)_A$ apparatus trajectories are formed, by "heavy" quanta $(Y- = Np_j^+)_A$, on (X-) trajectories of a closed ring, in different levels of the physical vacuum, in the superluminal velocity space. (X-) trajectories of a closed ring, in fact, a vortex field of dynamic equations: $rot_Y G(X+) = -\frac{\partial M(Y-)}{\partial T}$, similar to induction $rot_X E(Y+) = -\frac{\partial B(X-)}{\partial T}$, of the magnetic field of the coil. There are several such (X-) "coil turns" in $(Y-)_A$ apparatus to increase the density $\rho(Y-) = \frac{\partial M(Y-)}{\partial T}\left[\frac{1}{T^2} = \frac{m=K^3/T^2}{V=K^3}\right]$ mass $(Y-)_A$ vehicle trajectories. Thus, it is necessary to create full periods of quanta $(Y- = \gamma_i)_A$, the space of velocities by the fields $(Y-)_A = (X+ = p_j) + (X+ = p_j)$ of "heavy" quanta as a "working substance", closed on the trajectory (X-) of the "ring" of the apparatus with Indivisible Localization Area $НОЛ = (e_j)k(\gamma_i) = 1$. From the ratios for quanta, $T_J(X- = p_J) \to \infty$, $\lambda_J(X- = p_J) \to \infty$, the greater the quantum mass $(X- = p_J)$ formed $(p_j = 2(e_{j-1})/G)$ by quanta (e_{j-1}), the greater $\lambda_J(X- = p_J)$, the greater the diameter of the "ring" D of the device. For ratios $(E = \Pi^2 K_X)(X-)(E = \Pi^2 K_Y)(X+) = НОЛ(X\pm = p_J)$, there are ratios $\uparrow E(X-) \downarrow E(X+) = НОЛ(X\pm = p_J)$, or $\uparrow K_X(X-) K_Y \downarrow (X+) = НОЛ(X\pm = p_J)$, as well as for masses $\uparrow (m = \Pi K_X)(X-)(m = \Pi K_Y) \downarrow (X+) = НОЛ(X\pm = p_J)$. The entire mass is concentrated in the field $(X- = p_J)$ formed by the electric fields $(X- = p_J) = (Y+ = e_{J-1})(Y+ = e_{J-1})$ of mass $(Y- = e_{J-1})$ trajectories, in the form $m(X- = p_j) = 2m(Y- = e_{j-1})/G)$ of mass fields. It means that in the created quanta $НОЛ = \lambda(Y+ = e_{J-1})\lambda(Y- = e_{J-1}) = 1$ it is enough to know the wavelength $\lambda(Y+ = e_{J-1}) = \frac{1}{\lambda(Y- = e_{J-1})}$, to calculate the order of the quanta $N(e_J)$ that form the trajectory of the "working substance" quanta $(X- = p_j)$.

For example, if for you need a "ring" of diameter, $D = \frac{2\lambda(X- = p_J)}{(\pi \approx 3)}$, $D = 10 м$, then

$\lambda(X- = p_J) = 15 м = \lambda(Y+ = e_{J-1})$. That is, there is a quantum $\lambda(Y- = e_{J-1}) = \frac{1}{\lambda(Y+ = e_{J-1})} = 6{,}67 * 10^{-3} см$ length. This corresponds to the relations $\lambda(Y- = e_{J-1}) = 6{,}67 * 10^{-3} см = 2\pi * \alpha^N (\lambda_e = 3.3 * 10^{-8} см)$, whence

$\alpha^N = 2*10^{-5}$, for $(J-1)$ gives $N = \log_\alpha 2*10^{-5} = \frac{\ln(2*10^{-5})}{\ln(\alpha = 1/137)} = \frac{-10{,}82}{-4{,}92} = 2.2 \approx 2$. Then $(N_j = 3)$ corresponds to the order of quanta $(\alpha^3 * c) = W(e_4)$ of the working substance $(X- = p_4^+)$, in a "ring" with a diameter of 10m. Such "rings" give an intergalactic apparatus. The speed of an intergalactic apparatus with such a "working substance" $(X- = p_4^+)$, at the singularity level $НОЛ = m(e_4)*m(\gamma_2) = 1$, is $V(Y- = \gamma_2) = \alpha^{-1} * c \approx 137 * c$. For Earth time of 10 years, you can fly $(r = 10лет * \alpha^{-1} * c)км$ or $(r = 10*365{,}25*24*3600*137*3*10^5 = 1{,}3*10^{16}\,км = 8{,}8*10^7\,а.е = 425{,}8пк$. That is, our galaxy (30 kpc), the device will fly by in about 705 years. For the crew of such a vehicle, the proper time is $T = \alpha(705лет) = 5{,}14лет$, the singularity (γ_2) level time. The greater the mass of the quantum (p_j), the greater the length of its "wave" $\lambda(X- = p_j)$. For $(N_J = 4)$ quasar nucleus matter $(X- = p_6^+)$ quanta, have $(N_{J-1} = 3)$. Then from the relation $2\pi * \alpha^N(\lambda_e) = \lambda(Y- = e_{J-1=3}) = 6{,}28*(1/137)^3 * 3.3*10^{-9}\,см = 8{,}14*10^{-15}\,см$, and we calculate

$$\lambda(Y+ = e_{J-1=5}) = \frac{1}{\lambda(Y- = e_{J-1})} = \frac{1}{8{,}14*10^{-15}\,см} = 1{,}23*10^{14}\,см = \lambda(X- = p_6^+)$$

. This is $1{,}2*10^{14}\,см \approx 10^9\,км = 8{,}2\ \ а.е.$ the diameter of the nucleus $(X- = p_6^+)$ of an extragalactic quasar with nucleus quanta. The "working substance" of such quanta $НОЛ = m(e_4)*m(\gamma_2) = 1$ is given by flights already outside the galaxies in the Universe. For 10 years of Earth time, you can fly in the Universe, $(r = 10лет * (V(\gamma_4) = \alpha^{-2} * c) = 1{,}78*10^{18}\,км$ or 183 500 light years. For own time $t = \alpha^2(10лет)$ in the device or 4 hours 40 minutes. This is the time for $(Y- = \gamma_4)$ quanta, in the intergalactic level of the singularity of the physical vacuum.

5.«Black holes»

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5.1.Introduction.

It is generally accepted (in 2020) that there is a “supermassive compact object in the center of the Galaxy.” And there is the fact of the presence of dynamic space-matter,

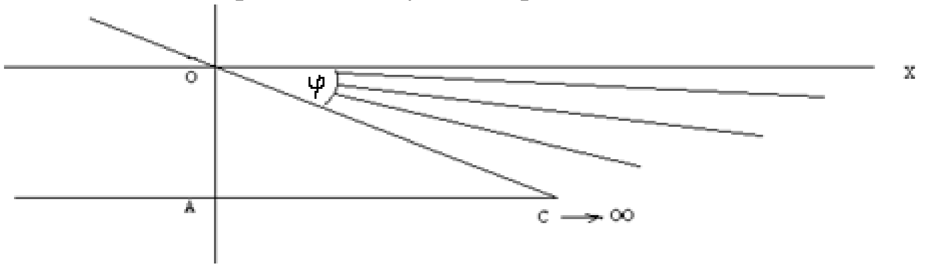


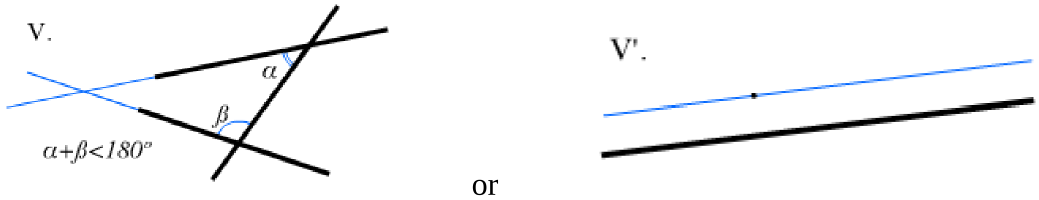
Fig. 1 dynamic space of a bunch of parallel straight lines

within the always dynamic $(\varphi \neq const)$ angle of parallelism. There is no matter outside space, and there is no space without matter, therefore space, as a form of matter, is one whole. Infinity (AC→ ∞) cannot be stopped, therefore such dynamic space-matter always exists. The main property of matter, motion, is represented by dynamic space-matter, with non-stationary Euclidean space. The limiting case $((\varphi = 0) = const)$of $((\varphi \neq 0) = const)$dynamic space-matter is the Euclidean axiomatics and Riemannian space in particular.

1. “A point is something of which nothing is a part”) (“Principles” by Euclid) . and is a Point something that has no parts,

2. Line - length without width.

3. and 5th postulate about parallel straight lines that do not intersect. If a straight line intersecting two straight lines forms interior one-sided angles less than two right angles, then, extended indefinitely, these two straight lines will meet on the side where the angles are less than two right angles.



or

rice. 2 Euclidean axiomatics

Within the framework of the Euclidean $(\varphi = 0)$axes grid, we do not see dynamic $(X+= Y-),(X-= Y+)$ space-matter, and we will not be able to imagine it. Therefore, the axioms of dynamic space-matter are introduced as facts that do not require proof. Already in these axioms the problem of the Euclidean axiomatics of a point, as a set of indivisible sphere-points, is solved in one indivisible sphere-point, but already on (n) convergence, dynamic space-matter.

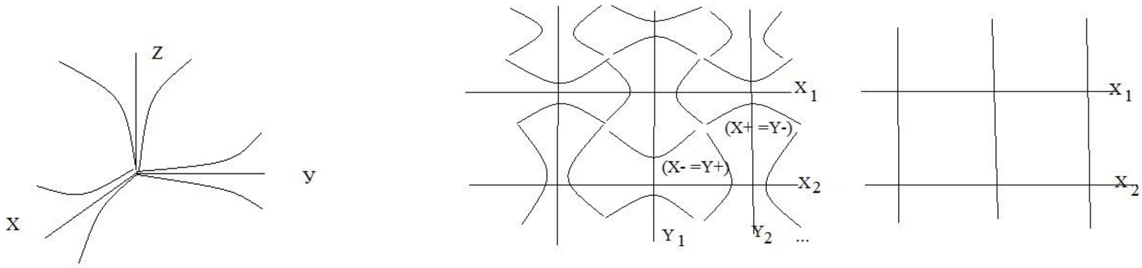


Fig.3 dynamic space-matter/

Any fixation (in experiments) of a non-zero $(\varphi \neq 0)$angle of parallelism gives a multi-leaf Riemannian space.

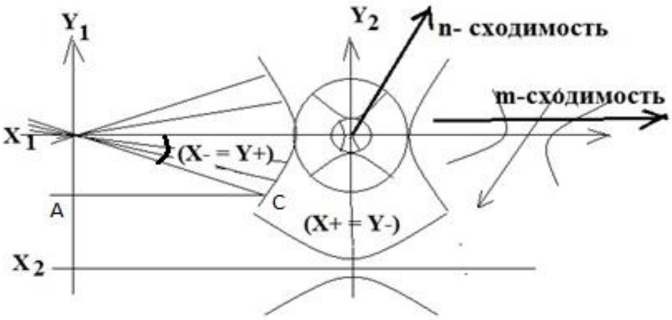


Fig. 3a. dynamic space-matter

Now within the framework of the axioms of dynamic space-matter in the form:

1. A non-zero, dynamic angle of parallelism $(\varphi \neq 0) \neq const$, a beam of parallel straight lines, determines the orthogonal fields $(X-) \perp (Y-)$of parallel lines - trajectories, as isotropic properties, of space-matter.

2. Zero angle of parallelism $(\varphi = 0)$, gives a “length without width” with a zero or non-zero Y_0 radius of a sphere-point “having no parts” in the Euclidean axiomatics.

3. A bundle of parallel lines with zero angle of parallelism $(\varphi = 0)$, “equally located to all its points , ” produces many straight lines in one “widthless” Euclidean straight line.

4. Internal $(X-),(Y-)$and external $(X+),(Y+)$fields of line-trajectories are non-zero $X_0 \neq 0$ or $Y_0 \neq 0$material sphere-point, form an Indivisible Area of Localization $НОЛ(X\pm)$or $НОЛ(Y\pm)$dynamic space-matter.

5. In unified fields $(X-=Y+)$, $(Y-=X+)$orthogonal lines-trajectories, $(X-) \perp (Y-)$ there are no two identical sphere-points and lines-trajectories.

6. A sequence of Indivisible Areas of Localization $(X\pm)$, $(Y\pm)$, $(X\pm)$... along a radius

$X_0 \neq 0$ or $Y_0 \neq 0$ a sphere-point on one line-trajectory gives n convergence, and on different trajectories m convergence.

7. Each Indivisible Area of Localization of space-matter corresponds to a unit of all its Evolution Criteria - CE, in a single $(X- = Y+)$ space $(Y- = X+)$-matter at $m-n$ convergences,

$$НОЛ = КЭ(X- = Y+)КЭ(Y- = X+) = 1, \quad НОЛ = КЭ(m)КЭ(n) = 1,$$

in a system of numbers of units equal by analogy.

8. Fixation of an angle $(\varphi \neq 0) = const$ or $(\varphi = 0)$ a bundle of straight parallel lines, space-matter, gives Euclid's 5th postulate and the axiom of parallelism.

Any point of fixed line-trajectories is represented by local basis vectors of Riemannian space:

$$\boldsymbol{e_i} = \frac{\partial X}{\partial x^i}\boldsymbol{i} + \frac{\partial Y}{\partial x^j}\boldsymbol{j} + \frac{\partial Z}{\partial x^k}\boldsymbol{k}, \qquad \boldsymbol{e^i} = \frac{\partial x^i}{\partial X}\boldsymbol{i} + \frac{\partial x^j}{\partial Y}\boldsymbol{j} + \frac{\partial x^k}{\partial Z}\boldsymbol{k},$$

with fundamental tensor $e_i(x^n) * e_k(x^n) = g_{ik}(x^n)$ and topology $(x^n = X, Y, Z)$ in Euclidean space. That is, Riemannian space is a fixed $(\varphi \neq 0) = const)$ state of dynamic $(\varphi \neq const)$ space-matter. These basis vectors can always be represented as: $(x^i = c_x * t)$, $(X = c_x * t)$ linear components of space-time, then$\boldsymbol{v_i}(x^n) * \boldsymbol{v_k}(x^n) = (v^2) = \boldsymbol{\Pi}$, we obtain the usual potential of space-matter, as a certain acceleration on the length. That is, Riemannian space is a fixed $(\varphi \neq 0 = const)$state of the geodesic$(x^s = const)$ lines dynamic$(\varphi \neq const)$space-matter $(x^s \neq const)$. Local basis vectors correspond to the velocity space $W^N = K^{+N} T^{-N}$, in multidimensional space-time. Space-time is a special case of a fixed state of dynamic space-matter. At the same time, all Criteria for the Evolution of Matter are formed in multidimensional space-time. They are presented in the "Unified Theory 2", in the form of: ($P = W^2$) potential, ($F = P^2$) force, energy: charge PK=q (Y+ =X -) in
electro (Y+ =X -) magnetic fields, or mass PK=m (X+=Y-) in gravit (X+=Y-), mass fields, then density $\rho = \frac{m}{V} = \frac{ПК}{K^3} = \frac{1}{T^2} = \nu^2$is the square of frequency, energy $E = P^2 K$, impulse ($p = P^2 T$), action ($\hbar = P^2 KT$)…, a single space-matter.

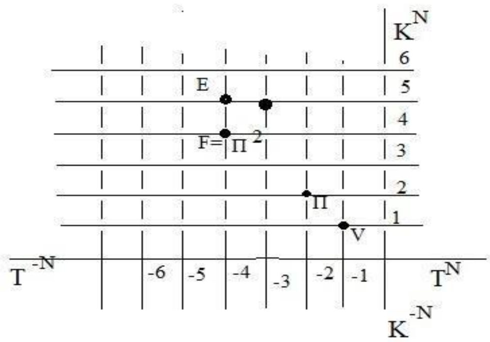


Fig.4 unified Criteria for the Evolution of space-matter.

Let us immediately note the "point that has no parts" in the Euclidean axiomatics, and the non-zero radius $X_0 \neq 0$or $Y_0 \neq 0$material sphere-point of the axioms of dynamic space-matter. In addition, there is a minimum Planck length ($\lambda = 10^{-33}$ см). These are questions of singularity that are not here, plus the mathematical prohibitions of division by zero.

As part of a dynamic $(\varphi \neq const)$ space-matter, we have a non-stationary Euclidean space -time (X , Y , Z , cT), or a geodesic variable $(\boldsymbol{x^s} \neq const)$, fundamental tensor $\boldsymbol{g_{ik}}(\boldsymbol{x^s})$ Riemannian space. For example, the no stationary space of Lobachevski geometry, with variable asymptotes of hyperbolas. There is no such mathematics yet.

In other words, we will consider the issues of "black holes" in the axioms of Euclidean space-time, as a special case $(\varphi = 0)$or $((\varphi \neq 0) = const)$dynamic
$(\varphi \neq const)$space-matter.

5.2.Assumptions

Within the framework of classical physics, even 100-200 years ago, and in the laws of conservation of energy

$$E_k = \frac{mv^2}{2} \quad \text{and } E_n = mgh, \quad \text{for} \quad g = \frac{GM}{R^2} \quad \text{and} \quad h = R \quad \text{Earth,}$$

the maximum speed was determined: $\frac{v^2}{2} = \frac{GM}{R}$, $\quad v^2 = \frac{2GM}{R}$, in which the body may not return to Earth (M). And even then, the hypothesis of super massive ($M \neq 0$) “black stars”, from which light does not come out, arose. The sphere of such “black stars” $R_0 = \frac{2GM}{c^2}$ was called the Schwarzschild sphere. The reason was considered to be Newton’s gravitational force, $F = \frac{2GMm}{R^2}$. Here
R is the distance between the centers of massive ($M \neq 0$) and ($m \neq 0$)massive spheres, the Earth and the Moon, for example. But if a small ball is lowered into the diametrical hole of a large massive sphere ($R \to 0$), then the force does not increase indefinitely.

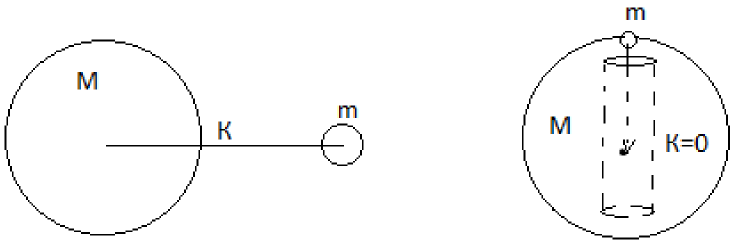


Fig.4a. Newton's law

Newton's law doesn't apply here. Newton introduced the very concept of force from the springy collision of two balls, with inverse proportionality to their accelerations of expansion.

$$\frac{m_1}{m_2} = \frac{a_2}{a_1}, \qquad m_1 a_1 = m_2 a_2 = F.$$

Newton called this invariant of variable parameters force and said to measure it in newtons without any exchange interaction. Let us immediately note that in dynamic ($\varphi \neq const$)space-matter, all the Evolution Criteria of the space of velocities, and in Riemannian space too: $\boldsymbol{e_i}(x^n) = \boldsymbol{v_i}$, $\boldsymbol{e_k}(x^n) = \boldsymbol{v_k}$, $\boldsymbol{g_{ik}}\,(x^n) \equiv \boldsymbol{v^2}$, as a potential in the coordinate -time space of velocities $W^N = K^{+N} T^{-N}$, in multidimensional space-time. For charges PC=q (Y+ =X -) in electric (Y+ =X -) magnetic fields, and masses PC=m (X+=Y-) in gravitational (X+=Y-) mass fields, Maxwell and gravitational equations are derived fields.

$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+)$	$c * rot_Y M(Y-) = rot_Y N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$
$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T}$;	M(Y-) = $\mu_2 * N(Y-)$;$rot_y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T}$

As well as transformations of the relativistic dynamics of the Special Theory of Relativity and quantum relativistic dynamics within the limits of parallelism angles.

$$\overline{X} = \frac{X - WT}{\sqrt{1 - W^2/c^2}}. \quad \overline{T} = \frac{T - \frac{W}{c^2}X}{\sqrt{1 - W^2/c^2}}. \quad \overline{W} = \frac{V + W}{1 + VW/c^2}.$$

$$\overline{K_Y} = \frac{a_{11}K_Y + cT}{\sqrt{1 - W^2/c^2}}, \quad \overline{T} = \frac{K_Y/c + a_{22}T}{\sqrt{1 - W^2/c^2}}, \quad \overline{W_Y} = \frac{a_{11}W_Y + c}{a_{22} + W_Y/c}$$

, in conditions, $(a_{22} \neq a_{11}) \neq 1$,

For zero angles of parallelism in the Euclidean axiomatics, with velocities lower than the speed of light $W_Y < c$, there are limiting cases of transition of quantum relativistic dynamics of vector components, $a_{22} = (\cos(\alpha^0 = 0) = 1) = a_{11}$, $a_{22} = 1$, $a_{11} = 1$, $Y = WT$,

$$(\overline{K_Y} = \overline{Y}) = \frac{(a_{11} = 1)(K_Y = Y) \pm WT}{\sqrt{1 - W^2(X-)/c^2}}, \quad \overline{Y} = \frac{Y \pm WT}{\sqrt{1 - W^2/c^2}}, \quad \overline{T} = \frac{K_Y/c + (a_{22} = 1)T}{\sqrt{1 - W^2(X-)/c^2}}$$

In other words, in Euclidean axiomatics it is impossible in principle to create the Quantum Theory of Relativity. Both theories: Special Theory of Relativity and Quantum Theory of Relativity, allow superluminal ($v_i = N * c$) velocity space:

$$\overline{W_Y} = \frac{c + Nc}{1 + c * Nc/c^2} = c, \qquad \overline{W_Y} = \frac{a_{11}Nc + c}{a_{22} + Nc/c} = c, \quad \text{For} \quad a_{11} = a_{22} = 1.$$

Already within the framework of such ideas, we will consider “black holes”. In classical physics with the Euclidean axiomatic of space-time, for super massive “black stars” ($M \neq 0$), with a gravitational radius $R_0 = \frac{2GM}{c^2}$, of any mass in theory. And for the masses

$(M \neq 0) = const$, inside $(R < R_0)$ such a sphere, there must be a superluminal space of velocities $(v_i > c)$or $(v_i = N * c)$, $(N > 1)$. This does not contradict either the Special Theory of Relativity or the Quantum Theory of Relativity. In the quantum coordinate system of the dynamic $(\varphi \neq const)$ space-matter, we are talking about superluminal space of velocities $v_i = \alpha^{-N} * c$, where $\alpha = 1/137{,}036$ the constant.

But let's return to the laws of classical physics, in which Newton's law of gravity has limits of application, and did not answer the question WHY do masses attract? Studying Maxwell's equations, like electromagnetic fields with Lorentz transformations in two (x_0, y_0, z_0, ct_0) and(x_1, y_1, z_1, ct_1) coordinate systems, and from the laws of conservation of energy, back in 1905, Einstein derived a formula, which we will dwell on in more detail.

Body with non-zero$(m \neq 0)$ mass, emits light with energy (L) in system(x_0, y_0, z_0, ct_0) coordinates, with the law of conservation of energy: $(\mathrm{E}_0 = \mathrm{E}_1 + \mathrm{L})$, before and after radiation. For the same mass, and this is the key point (the mass $(m \neq 0)$does not change), in a different coordinate (x_1, y_1, z_1, ct_1) system, the law of conservation of energy with $(\gamma = \sqrt{1 - \frac{v^2}{c^2}})$ Lorentz transformations, Einstein wrote in the form $(\mathrm{H}_0 = \mathrm{H}_1 + \mathrm{L}/\gamma)$. Subtracting their difference, Einstein got:

$$(\mathrm{H}_0 - \mathrm{E}_0) = (\mathrm{H}_1 - \mathrm{E}_1) + \mathrm{L}(\frac{1}{\gamma} - 1), \text{ or } (\mathrm{H}_0 - \mathrm{E}_0) - (\mathrm{H}_1 - \mathrm{E}_1) = \mathrm{L}(\frac{1}{\gamma} - 1),$$

With separation of the radiation energy difference. Both inertial coordinate systems are moving, but (x_1, y_1, z_1, ct_1)moving at a speed (v) relatively (x_0, y_0, z_0, ct_0). And it is clear that blue and red light have an energy difference, which Einstein wrote down in the equation. Einstein wrote down the equation itself as the difference in kinetic energies in the first expansion.

$$(\mathrm{K}_0 - \mathrm{K}_1) = \frac{\mathrm{L}}{2}(\frac{v^2}{c^2}..), \qquad \text{or} \qquad \Delta\mathrm{K} = (\frac{\Delta\mathrm{L}}{c^2})\frac{v^2}{2}$$

Here $(\frac{\Delta\mathrm{L}}{c^2} = \Delta m)$the multiplier has the properties of the "radiant energy" mass, or: $\Delta\mathrm{L} = \Delta mc^2$. This formula has been interpreted in different ways. The annihilation energy of $\mathrm{E} = \mathrm{m}_0 c^2$the rest mass, or: $\mathrm{m}_0{}^2 = \frac{E^2}{c^4} - p^2c^2$, in relativistic dynamics. Here is the mass with zero momentum$(p = 0)$, has energy: $\mathrm{E} = \mathrm{m}_0 c^2$, and the zero mass of the photon: $(\mathrm{m}_0 = 0)$, has momentum and energy $\mathrm{E} = \mathrm{p} * \mathrm{c}$. But Einstein derived another law of "radiant energy" $(\Delta\mathrm{L} = \Delta mc^2)$, with mass properties. This is not the energy of a photon, and this is not the energy of $(\Delta E = \Delta mc^2)$a defect in the mass of nucleons in the nucleus of an atom. Einstein saw something that no one else saw. Like a moving charge, with the magnetic field induction of Maxwell's equations, a moving mass (the mass $(m \neq 0)$does not change), induces mass energy $(\Delta\mathrm{L} = \Delta mc^2)$, which is what Einstein found. For example, a charged sphere (the charge $(q \neq 0)$does not change), inside a moving carriage has no magnetic field. But the compass on the platform will show the magnetic field of the sphere in the moving carriage. It was precisely this kind of inductive magnetic field, from the moving electrons of a conductor current, that Oersted discovered. Then there were Faraday's experiments, the induction of vortex electric fields in an alternating magnetic field, the laws of induction and self-induction, and Maxwell's equations. By analogy with the inductive energy of a magnetic field from a moving charge, Einstein derived the formula for the inductive, "radiant" energy of mass fields from moving non-zero masses, including stars in galaxies. And here Einstein went beyond the Euclidean $(\varphi = 0)$ axiomatics of space-time. In the axioms of dynamic space-matter $(\varphi \neq const)$, we are talking about inductive $m(Y-)$mass fields, in complete analogy with Maxwell's equations. This is what Einstein saw, and no one else. Already from the Equivalence Principle, the potential of the inductive mass field: $v^2(Y - X+) = v * cos\varphi_x(X+) * v * cos\varphi_x(X+) = Gv^2(X+)$ in a gravitational field, a constant follows $(G = cos^2\varphi_x)$as a mathematical truth. And already writing the equation of the General Theory of Relativity, Einstein took the gravitational potential of zero mass: $\frac{E^2}{p^2} = c^2$, in the form of $\frac{\mathrm{L}^2(\mathrm{Y}-)}{p^2} = Gv^2(X+) = \frac{8\pi G}{c^4}T_{ik}$ an energy-momentum tensor. A misconception about Einstein's General Theory of Relativity is that it is believed that non-zero mass is represented in the equation as the source of space-time curvature, as the source of gravity. In the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter in its entirety:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = \frac{8\pi G}{c^4}T_{ik}.$$

There is no mass: $(M = 0)$, in its classical sense. In mathematical truth, this is the difference in relativistic dynamics at two fixed points in Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary $(\lambda \neq 0)$ Euclidean space-time. In physical truth, in the equation of the General Theory of Relativity, Einstein, in the unified Criteria of Evolution, Newton's formula (law) is "hardwired":

$$E = c^4 K, P = c^4 T, \left(c_i^2 - c_k^2 = \Delta c_{ik}^2\right) = \frac{E^2}{p^2} = \left(\frac{K^2}{T^2} = c^2\right), \quad \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4 c^4 K^2}{c^4 c^4 T^2} = \frac{G(c^2 K_Y = m_1)(c^2 K_Y = m_2)}{c^2(c^2 T^2 = K^2)} = \frac{G m_1 m_2}{c^2 K^2}, \qquad \Delta c_{ik}^2 = \frac{G m_1 m_2}{c^2 K^2}, \ \Delta c_{ik}^2 c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the force of gravity acts in fields with zero mass. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$in the external field of gravity $c^2(X+)$, with their Principle of Equivalence, gives strength. And only now, we will consider the properties of "super massive" $(M \neq 0)$ compact $(R \to 0)$ objects discovered in the galactic core as a fact of rarity. Under the conditions of: $c^2 = \left(\frac{2G(M=0)}{(R=0)} = 0\right) \neq 0$, under the conditions of the Planck limit length $(10^{-33}$ *см*), of the quantum field in space-time, under the conditions of the uncertainty principle, as well as the always dynamic one, of the quantum itself, under the conditions of a non-zero difference

$$R_{ik} - \frac{1}{2} R g_{ik} \neq 0$$

energy-momentum tensor, i.e. $(T_{ik} \neq 0)$ energy, the presence of: $c^2 = \left(\frac{2G(M=0)}{(R=0)} = 0\right) \neq 0$ gravitational potential as the reason for the curvature of the "black hole" space itself, outside the mass. The concept of "event horizon" arises in the basic solutions of Schwarzschild, the relativistic metric of the gravitating sphere, as the initial state. There are key transformations of the simplified mathematical model of the Einstein equation that lead to Schwarzschild solutions, but already in the gravitational field of space-matter outside the mass.

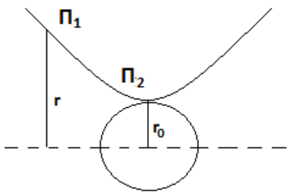


Fig.4c – gravitational potentials

Einstein's equation: $R_{ik}(1) - \frac{1}{2} R g_{ik}(2) = \frac{8\pi G}{c^4} T_{ik}$: we write in the form of gravitational potentials at two points of Riemannian space with a fundamental tensor:

$$R_{ik}(1) = e_i(x^n) e_k(x^n) = v_i v_k = \Pi_1 \qquad \text{and} \qquad g_{ik}(2) = e_i(x^n) e_k(x^n) = v_i v_k = \Pi_2$$

We understand that point (2) is represented by Euclidean space (r_0)without curvature. Note that the exact coincidence of point (2) of the curve with the circle is not in the mathematical truth of the full Einstein equation. Point (1) with curvature of Riemannian space (r) in a gravitational field. Then we will represent the gravitational potentials outside the masses in the form:

$$\Pi_1 = c^2 \left(\frac{r}{r}\right)^2, \quad \Pi_2 = c^2 \left(\frac{r_0}{r}\right)^2, \text{ with the energy-momentum tensor:}$$

$$\frac{8\pi G}{c^4} T_{ik} = \frac{E^2}{p^2} = \frac{G(\Pi^2 K)^2}{(\Pi^2 t)^2} = \frac{G \Pi^2 \Pi^2 K^2}{c^4 \Pi^2 t^2},$$

$$\Pi_1 - \Pi_2 = \frac{G \Pi^2 K^2}{c^4 t^2} = \frac{G c^2 \Pi K^2}{c^2 \Pi t^2}, \qquad \Pi_1 - \Pi_2 = \frac{c^2 G K^2}{c^2 t^2}, \text{ or:}$$

$$c^2 \left(\frac{r}{r}\right)^2 - c^2 \left(\frac{r_0}{r}\right)^2 = \frac{c^2 G K^2}{c^2 t^2}, c^2 \left(1 - \left(\frac{r_0}{r}\right)^2\right) = \frac{c^2 G K^2}{c^2 t^2}, \qquad \left(1 - \left(\frac{r_0}{r}\right)^2\right) = \frac{x^2}{c^2 t^2},$$

$$\left(1 + \frac{r_0}{r}\right)\left(1 - \frac{r_0}{r}\right) = \frac{x^2}{c^2 t^2}, \left(1 + \frac{r_0}{r}\right) c^2 t^2 - \frac{x^2}{\left(1 - \frac{r_0}{r}\right)} = s^2(x), s^2(x) = 0 \text{at } (x = 0).$$

$$\left(1 + \frac{r_0}{r}\right) c^2 t^2 - \left(1 - \frac{r_0}{r}\right)^{-1} x^2 = s^2, \text{ or:} \quad ds^2 = \left(1 + \frac{r_0}{r}\right) c^2 dt^2 - \left(1 - \frac{r_0}{r}\right)^{-1} dx^2.$$

These are the mathematical truths of the simplest model of radial relativistic space-time dynamics in a gravitational field without $(m_0 = 0)$mass: $\frac{E^2}{p^2} = c^2$, or: $\frac{E^2}{c^2} = p^2 + (m_0 = 0)^2 c^2$. And the first thing to note is the non-zero $(r_0 \neq 0)$radius by definition. This is the radius of a circle instead of a sphere in the Schwarzschild solution. And this is the condition $(R g_{ik} \neq 0)$ of the Einstein equation, as a mathematical truth in its full form. Here, talking about singularity is talking about nothing. There is no singularity in principle and by definition. The second point is that the Einstein equation considers gravity outside the sphere. There are no "travels" inside the sphere in the Einstein equation either, as in Newton's law $(r \neq 0)$. All subsequent models of "black holes" have an event horizon, and so on. Many models of "black holes", collapsing photon spheres (stars in the limit) passing the Schwarzschild sphere, their diagrams are naive, erroneous in the basic foundations and without arguments of the initial premises as causes, although mathematics and logic work further. On the contrary : $R_0 = \frac{2G(M\neq0)}{c^2}$ inside $(R < R_0) = \frac{2G(M\neq0)}{(v>c)^2}$ "black sphere", there must be a superluminal space $(v > c)$of velocities, without violating Einstein's laws $(v = Nc)$, when the velocities inside the "black sphere" $\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c$, have the speed of light for us. In this case, we are talking about the trajectory of an external photon $(x = ct)$, with the fixation of electromagnetic dynamics in the coordinate plane $(K^2) \perp (ct)$, orthogonal to the trajectory of the photon. A photon, approaching the "black sphere" cannot enter the sphere, into superluminal space, just as a photon cannot enter the physical vacuum in the vastness of the Universe. In the gravitational "well", the photon circles around the already "black hole", since nothing flies out from there, for us. The trajectory of the photon $(x = ct)$rotates on the surface of the sphere, like its geodesic. In this case, (ct)time and coordinate space (K^2)in the radial direction change places. We $(t \to \infty)$circle around the "black hole" infinitely long, and in mathematical formalism $(R \to 0)$, the geodesic lines of the photon inevitably converge to the center of the "black hole", where $(K \to 0)$the space itself disappears. This situation is called an $\overline{W_Y} = \frac{c+Nc}{1+c*Nc/c^2} = c$, inevitable singularity in the center of a "black hole" that does not exist in Nature. This contradicts $(R < R_0) = \frac{2G(M\neq0)}{(v>c)^2}$, Einstein 's laws of physics. On the contrary, all the laws of physics work in this area as in a physical vacuum. We are not saying here that this is a zero singularity. A "black hole" cannot absorb mass because this mass must accelerate to the speed of light to overcome the event horizon $M \to 0$. Even if you break an atom into protons and electrons or electron-positron pairs in Hawking radiation, they cannot reach the speed of light of the event horizon. Even if a positron was "born" under the Euclidean line, "long without width", the event horizon. This is outside the Euclidean axiomatics of space-time, outside Einstein's postulates. And this means that Hawking radiation by "black holes" is impossible. But Einstein's equation is not about this at all. Einstein's equation does not contain mass $(m = 0)$and is deeper. It specifies the potentials, force fields and energy of the gravitational field at any point in the Universe outside of mass $(m = 0)$. And not a single model answers the question, WHY does the curvature of gravity arise and where does the energy of the field come from? In such listed conditions, as arguments of mathematical truths, to talk about a singularity in the center$(R = 0)$ "black hole", this is a conversation about nothing. There is no singularity in the center of "black holes". The question is closed. But there is a fact of the presence of "super massive compact objects" discovered in the core of galaxies. And there is another representation of the properties of such objects:

$$(R < R_0) = \frac{2GM}{(v_i > c)^2}$$

with the presence of superluminal space: $(v_i > c)$inside $(R < R_0)$such "black spheres" called "black holes". There are no "holes". The mass of such "black spheres" $(M \neq 0)$is not zero. Next we will talk about the properties of "black spheres" called "black holes", within the framework of the properties of dynamic space - matter (https://vixra.org/abs/2302.0022) which are subject to experimental testing. First of all, the presence of new quanta in the cores of planets, in the cores of stars, in the cores of galaxies, in the cores of quasars and in the cores of quasar galaxies. And first of all, stable quanta of the new substance.

On colliding beams of positrons (e^+), which are accelerated in a stream of quanta $(Y- = \gamma)$, photons of **a "white" laser** in the form of:

$$\text{НОЛ}(X \pm = p_1^+) = (\boldsymbol{Y} -= e^+)(X += \nu_\mu^-)(\boldsymbol{Y} -= e^+) = \frac{2m_e}{G} = 15{,}3\ TeV,$$

On colliding beams of antiprotons (p^-), occurs:

$$\text{НОЛ}(Y \pm = e_2^-) = (\boldsymbol{X} -= p^-)(Y += e^+)(\boldsymbol{X} -= p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV.$$

indivisible and stable quanta of matter, similar to the substance of electron quanta.

We are talking about a quantum coordinate system $ОЛ_{ji}(m-n)$in the space-matter of the Universe, in each $ОЛ_j$level $ОЛ_i$there are three $(X-=Y+)$charge and two $(Y-=X+)$mass isopotentials. And in this quantum coordinate system, "heavy "(p_j/e_j) quanta, each of which has its own "depth" of energy levels(ν_1/γ_i) quanta of physical vacuum. Let's imagine them in the form of models such $R_{ji}(m)$ Indivisible Regions of space - the matter of the Universe.

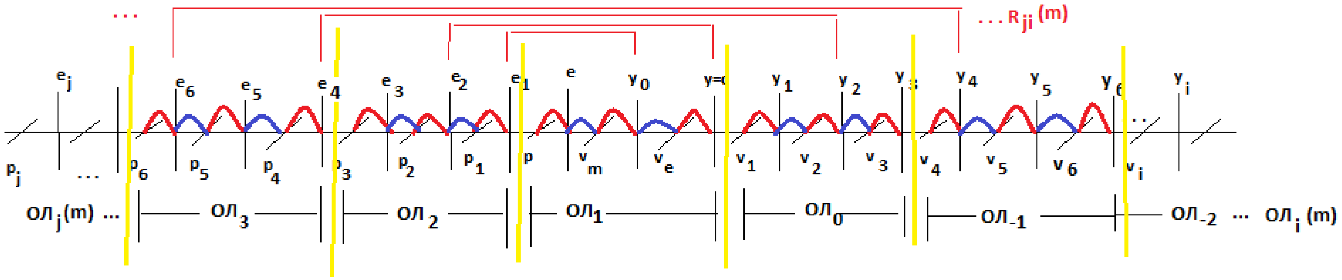


Fig.5. spectrum of indivisible quanta

This is a certain sphere in space-matter, in the center of which are "heavy"(p_j/e_j) quanta that determine "down" and "up" along the radius, up to the level(ν_i/γ_i) quanta of the physical vacuum of space-matter of the Universe, for any similar object within this sphere.

In the axioms of dynamic space-matter, $НОЛ = КЭ(m)КЭ(n) = 1$, we obtain for the masses (M) of indivisible quanta in $(ОЛ_{ji})$ levels:

$$НОЛ = M(e_1 = 1{,}15\ \mathrm{E}4\ )(k = 3.13)M(\gamma_0 = 3.13.\mathrm{E}-5\ ) = 1$$
$$НОЛ = M(e_2 = 3{,}524\ \mathrm{E}7\ )(k = 3.13)M(\gamma = 9{,}07\ \mathrm{E}-9\ ) = 1$$
$$НОЛ = M(e_3 = 5{,}755\ \mathrm{E}11\ )(k = 3.86)M(\gamma_1 = 4.5.\mathrm{E}-13\ ) = 1$$
$$НОЛ = M(e_4 = 1{,}15\ \mathrm{E}16\ )(k = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E}-17\ ) = 1$$
$$НОЛ = M(e_5 = 3{,}97\ \mathrm{E}19\ )(k = 3.13)M(\gamma_3 = 8.05.\mathrm{E}-21\ ) = 1$$
$$НОЛ = M(e_6 = 6{,}48\ \mathrm{E}23\ )(k = 3.83)M(\gamma_4 = 4{,}03\ \mathrm{E}-25\ ) = 1$$
$$НОЛ = M(e_8 = 4{,}47\ \mathrm{E}31\ )(k = 3.14)M(\gamma_6 = 7{,}13\ \mathrm{E}-33\ ) = 1$$

....

$$НОЛ = M(e_{26} = 9{,}1\ \mathrm{E}103\ )(k = 3.14)M\left(\gamma_{24} = 3{,}5\ \mathrm{E}-105\ \right) = 1$$

Obviously, we are talking about vortex mass $(Y-)$trajectories: $c * rot_X M(Y-=\gamma_i) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$ equations of dynamics in a circle $(k = 3.14 = \pi = \frac{2\pi R = l}{2R})$ in each $(ОЛ_i)$ level of the physical vacuum. These are spheres around a planet, star, galaxy, quasar... . Using quanta as an example:

$$НОЛ(X\pm=p_1^+) = (\boldsymbol{Y}-=e^+)(X+=\nu_\mu^-)(\boldsymbol{Y}-=e^+) = \frac{2m_e}{G} = 15{,}3\ TeV,$$
$$НОЛ(Y\pm=e_2^-) = (\boldsymbol{X}-=p^-)(Y+=e^+)(\boldsymbol{X}-=p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV\ ,$$

we are talking about the synthesis of matter $(X\pm=p_1^+)$using colliding beams$(e^+e^+\to p_1^+)$ positrons with virtual quanta (ν_μ^-), and$(Y\pm=e_2^-)$ on counter beams$(p^-p^-\to e_2^-)$ antiprotons and positrons with virtual quanta (e^+)similar to electrons $(e^-=\nu_e^-\gamma^+\nu_e^-)$. We can also talk about the consistent synthesis of "heavy"(p_j/e_j) quanta, namely substances $(X\pm=p_j^+)$, for $(Y-)_A$the $(X-)_A$apparatus, in individual processes.

$(...\leftarrow p_6^+\leftarrow e_5^+\leftarrow p_3^+\leftarrow e_2^+\leftarrow p^+)And(...\leftarrow p_7^+\leftarrow e_6^+\leftarrow p_4^+\leftarrow e_3^+\leftarrow p_1^+\leftarrow e^+)$ synthesis. The important thing is that the electron (e^-) emits and absorbs a photon (γ^+), but it cannot emit and absorb a "dark" photon (γ_0). This "dark" photon is emitted and absorbed by a "heavy" electron $(e_1)\to(\gamma_0\ )$. In exactly the same way, a "heavy" proton $(p_1)\to(\nu_\mu\ )$emits and absorbs a muon neutrino. These are invisible quanta that do not interact and are non-contact with quanta (p^+/e^-) atoms of the periodic table. We can neither see nor record them. But these invisible quanta (blue color in the indicated sequences) have charge isopotentials and can form Structural Forms that are invisible to us, similar to ordinary (p^+/e^-) atoms. These are: structures (ν_μ/γ_0), (p_1/e_1)... This is how we consistently master the potentials of the core of planets, the core of stars, the core of galaxies and the core of quasars. But for $(Y-)_A$ apparatus, we can only form contact quanta (p_4^+) galactic nuclei and quanta (p_6^+) substances of the core of quasars. The physical reality is the different space of the velocities of the Sun and the Earth. Without any fuel engines, the Earth flies in the space of the physical vacuum at a speed of $30км/с$, and the Sun at a speed of the order of $265км/с$. We are talking about the main property of space-matter - movement. The mass flow $(Y-)_A$ of the apparatus is created by the fields of Strong and Gravitational Interaction of energy quanta $(X\pm=p_1)$, $(X\pm=p_2)$, $ОЛ_2$ the level of indivisible quanta of the space-matter of the physical vacuum, interconnected by the same $(X+)$ fields on the trajectories $(X-)$ of the module, without an external energy source.

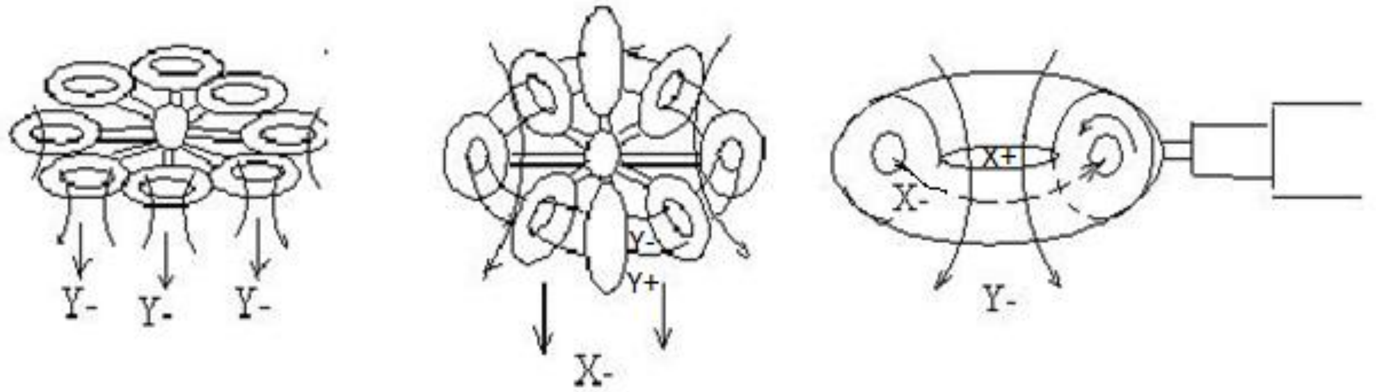


Fig.9. Intergalactic spacecraft without fuel engines.

Consistently including the space of velocities, the apparatus $(Y-)_A$, $(X-)_A$ in the level of the singularity of the physical vacuum, the apparatus goes along the radial trajectory from the level of the singularity of the physical vacuum of the quantum $(X\pm)$ of the space-matter of the planet, $(Y\pm)$ the space-matter of the star , $(X\pm)$ the space-matter of the galaxy, $(Y\pm)$ the space-matter of the cluster of galaxies, to other clusters and galaxies in field of the Universe, with reverse inclusions when returning to the planet of one's own or another galaxy. Thus, to create mass fields $(Y-=\gamma_i)_A$, space of velocities, it is necessary to use fields $(Y-)_A=(X+=p_j)+(X+=p_j)$ of "heavy" quanta as "working substance" closed on $(X-)$ the trajectory of the "ring" of the device, in the conditions of НОЛ $=(e_j)(k)(\gamma_i)=1$, Indivisible Area of Localization. And the device itself $(Y-)_A$, is consistently "immersed" in a physical vacuum, such as: НОЛ $=(e_4)(k)(\gamma_2)=1$, НОЛ $=(e_6)(k)(\gamma_4)=1$, superluminal $(\gamma_2=137*c)$, and $(\gamma_4=137^2*c)$ velocity space. This is completely acceptable in Special $\overline{W_Y}=\frac{c+Nc}{1+c*Nc/c^2}=c$, and Quantum $\overline{W_Y}=\frac{a_{11}Nc+c}{a_{22}+Nc/c}=$ c,Theories of Relativity in Euclidean $a_{ii}=\cos(\varphi=0)$, $a_{11}=a_{22}=1$, angles of parallelism . The apparatus itself $(Y-)_A$ moves in the indicated sphere of space-matter of the Universe, in various levels of physical vacuum. It is worth noting that the volume of space-matter of a star is "immersed" in velocity space $(\gamma=c)$, the volume of galaxies is "immersed" in velocity space $(\gamma_2=137*c)$, the volume of quasars is "immersed" in space $(\gamma_4=137^2*c)$ already superluminal speeds.

5.3. Admissible objects of the Universe

We will call the objects of the Universe "spheres-points" $ОЛ_{ji}(n)$ convergence, in each fixed "point $ОЛ_{ji}(m=const)$" quantum coordinate system. For example, objects:

$$НОЛ = M(e_2=3{,}524\ \text{E}7)(k=3.13)M(\gamma=9{,}07\ \text{E}-9)=1$$

similar to the kernel (p/e) ordinary atoms, we are talking about quanta (p_2/e_2) star cores. Stars with such a core have the maximum energy level of a physical vacuum, at the level (γ)photon. Below the photon energy, the star does not manifest itself in a physical vacuum. Similar to proton radiation $(p^+\to\nu_e^-)$ antineutrino, we are talking about radiation from antimatter matter and vice versa. That is: $(p_8^+\to p_6^-)$, $(p_6^-\to p_4^+)$, $(p_4^+\to p_2^-)$, $(p_2^-\to p^+)$, with the corresponding atomic nucleus : (p^+/e^-) substances of an ordinary atom,(p_2^-/e_2^+) antimatter core of the "stellar atom",(p_4^+/e_4^-) matter of the core of the galaxy, (p_6^-/e_6^+)antimatter of the core of the quasar and " (p_8^+/e_8^-)matter of the core of the "quasar galaxy". Further, we proceed from the fact that quantum(e_{*1}^-)
substances $(Y-=p_1^-/n_1^-=e_{*1}^-)$ planetary cores emits a quantum

$$(e_{*1}^+=2*\alpha*(p_1^-=1{,}532E7\ MeV))=223591MeV,\ \text{or:}\ \frac{223591}{p=938{,}28}=e_*^+=238{,}3*p$$

mass of the uranium nucleus, quantum of "antimatter" $M(e_*^+)=M(238{,}3*p)={}^{238}_{92}U$, uranium nuclei. There is such an "antimatter"$(e_*^+={}^{238}_{92}U=Y-)$ unstable, and decays exothermically into a spectrum of atoms in the core of planets.

At superluminal level $w_i(\alpha^{-N}(\gamma=c))$ physical vacuum, such stars do not manifest themselves. Next, we are talking about the substance of $(p_3^+\to p_1^-)$the nucleus$(Y-=p_3^+/n_3^0=e_{*3}^+)$ "black spheres" around which, in their gravitational field, globular clusters of stars form. Similarly, below, we are talking about radiation from antimatter matter and vice versa:

$(p_6^+ \to p_5^-)$, $(p_5^- \to p_3^+)$, $(p_3^+ \to p_1^-)$, $(p_1^- \to \nu_\mu^+)$. The general sequence looks like:

$$p_8^+, p_7^+, p_6^-, p_5^-, p_4^+, p_3^+, p_2^-, p_1^-, p^+, \nu_\mu^+, \nu_e^- \ldots$$

Further: $НОЛ = M(e_4 = 1{,}15\,E16)(k = 3.13)M(\gamma_2 = 2{,}78\,E-17) = 1$. These quanta (p_4/e_4) galactic nuclei are surrounded by individually emitted quanta(p_2/e_2) the cores of stars are the reason for their formation. Such galactic nuclei, in the equations of quantum gravity, have spiral arms of mass trajectories, already: $w_i(\gamma_2 = \alpha^{-1}c) = 137 * c$, in superluminal speed space. Below the energy of light photons $(w_i = 137 * c)$in a physical vacuum, galaxies do not manifest themselves. Outside galaxies, we are talking about quanta from the core of mega stars $(Y- = p_5^-/n_5^- = e_{*5}^-)$. They generate many quanta$(e_{*5}^- = 2 * \alpha * p_5^- = e_{*4}^+ = 290p_4^+)$ galactic nuclei. Likewise further.

$$НОЛ = M(e_6 = 6{,}48\,E23)(k = 3.83)M(\gamma_4 = 4{,}03\,E-25) = 1$$

We're talking about quanta$(Y- = p_6^-/n_6^- = e_{*6}^-)$ quasar nuclei, which also individually emit(p_4/e_4) quanta of the core of galaxies. In other words, the quasar core is surrounded by quanta from the galactic core. They say that the quasar is in the center of the galaxy. Such quasars plunge into the level of physical vacuum to superluminal speeds $w_i(\gamma_4 = \alpha^{-2}c) = 137^2 * c$. This is deeper than the level of the physical vacuum of the galaxy. These are completely different objects. In other words, quasars bend space-matter at the level(γ_4) quanta Next we talk about quanta of matter kernels $(Y- = p_7^+/n_7^0 = e_{*7}^+)$ “black spheres” around which, in their gravitational field, clusters of galaxies are formed, and further:

$$НОЛ = M(e_8 = 4{,}47\,E31)(k = 3.14)M(\gamma_6 = 7{,}13\,E-33) = 1$$

We're talking about quanta(p_8/e_8) the nuclei of quasar galaxies, which also individually emit quanta$(p_6^-/n_6^- = e_{*6}^-)$ quasar cores. Such quasar galaxies plunge into the level of physical vacuum to superluminal speeds $w_i(\gamma_6 = \alpha^{-3}c) = 137^3 * c$. Similarly further.

In the axioms $НОЛ = КЭ(m)КЭ(n) = 1$, or $M_j(X+) * M_i(Y-) = 1$, of dynamic space-matter, we are talking about the source of gravity gravitational$M_j(X+)$ mass in $ОЛ_j$ levels and inert $M_i(Y-)$ mass in $ОЛ_i$ levels of physical vacuum, with their Einstein equivalence principle in a single gravitational $(X+ = Y-)$ mass field. These masses: $M_j * M_i = (M = ПК)^2 = 1$, in the form of a quadratic form, are presented in the quantum fields of their interaction:

$$\hbar = Gm_0 \frac{\alpha}{c} Gm_0(1-2\alpha)^2 = GM_j \frac{\alpha}{c} GM_i(1-2\alpha)^2 = \frac{(6{,}674*10^{-8})^2*(1-2/(137.036))^2}{137.036*2.993*10^{10}} = 1.054508 * 10^{-27}$$

in quantum: $G(X+)\left[\frac{K}{T^2}\right] = \psi \frac{\hbar}{\Pi^2\lambda} G \frac{\partial}{\partial t} grad_n R g_{ik}(X+)\left[\frac{K}{T^2}\right]$, gravit $(X+ = Y-)$ mass fields . This equation of quantum gravity follows directly from the equation of Einstein's General Theory of Relativity. Thus, the maximum mass$M_j(X+)$ source of gravity is determined by $M_i(Y-)$the inertial mass of mass $(Y- = \gamma_i)$ fields in $ОЛ_i$ levels of physical vacuum, like an object$ОЛ_{ji}(n)$ convergence or: $НОЛ = ОЛ_{ji}(n) = M_j(X+) * M_i(Y- = \gamma_i) = 1$. Thus, we obtain the maximum masses in the Universe: for example, for a star$M_j(X+) = M_2(p_2^-/n_2^0) = 1/(\gamma)$ in conditions$(e_2^+(k)\gamma) = 1$. Likewise:

Limit mass of planets, for $1MeV = 1.78 * 10^{-27}g$:

$\frac{1}{\gamma_0} = \frac{1}{3.13*10^{-5}MeV*1.78*10^{-27}g} = M_1(p_1^-/n_1^-) \approx 1.8 * 10^{31}g \approx \frac{M_s}{100}$, where $(M_s = 2 * 10^{33}g)$ is the mass of the Sun. Next is the maximum mass of stars with a core of antimatter:

$\frac{1}{\gamma} = \frac{1}{9.07*10^{-9}MeV*1.78*10^{-27}g} = M_2(p_2^-/n_2^-) \approx 6.2 * 10^{34}g \approx 31M_s$, or ranging from $\frac{M_s}{100}$ before $31M_s$ масс.

Similarly, the maximum mass$(p_3^+/n_3^0 = e_{*3}^+)$ “black spheres”, with a core of matter:

$\frac{1}{\gamma_1} = \frac{1}{4.5*10^{-13}MeV*1.78*10^{-27}g} = M_3(p_3^+/n_3^0) \approx 1.25 * 10^{39}g \approx 625220M_s$

maximum mass of the galaxy,$(p_4^+/n_4^0 = e_{*4}^+)$ with a core of matter:

$\frac{1}{\gamma_2} = \frac{1}{2.78*10^{-17}MeV*1.78*10^{-27}g} = M_4(p_4^+/n_4^0) \approx 2 * 10^{43}g \approx 10^{10}M_s$

the maximum mass of an extragalactic megastar,$(p_5^-/n_5^- = e_{*5}^-)$ with an antimatter core:

$\frac{1}{\gamma_3} = \frac{1}{8.05*10^{-21}MeV*1.78*10^{-27}g} = M_5(p_5^-/n_5^-) \approx 7 * 10^{46}g \approx 3{,}5 * 10^{13}M_s$,

the maximum mass quasar, $(p_6^-/n_6^- = e_{*6}^-)$ with an antimatter core:

$\frac{1}{\gamma_4} = \frac{1}{4.03*10^{-25}MeV*1.78*10^{-27}g} = M_6(p_6^-/n_6^-) \approx 1{,}4 * 10^{51}g \approx 7 * 10^{17}M_s$,

……………………………………………………………………………………………

Each core of such objects$ОЛ_{ji}(n)$ convergence, generates a set of corresponding quanta $(2 * \alpha * p_j^{\pm} = e_{*j}^{\mp} = N\ p_{j-1}^{\mp})$indicated in the table, and emits $(p_j^{\pm} \to p_{j-2}^{\mp})$. This is a lot (N) quanta of the core of planets, stars, galaxies, quasars….

For example, the core of the Sun, like a star, emits hydrogen nuclei$(p_2^{-} \to p^{+} \to \nu_e^{-})$ and electron antineutrino, but generates$(2 * \alpha * p_2^{-} = e_{*2}^{+} = N\ p_1^{+})$ quanta of, let’s say, “stellar matter”(p_1^{+}/e_1^{-}) in the solid surface of the star. This is "star stuff"(p_1^{+}/e_1^{-}) cannot interact with hydrogen (p^{+}/e^{-}), but can emit muon antineutrino $(p_1^{+} \to \nu_{\mu}^{-})$, which in the Earth’s atmosphere forms muons, which in decays give: (e^{+}) positrons: $(Y\pm= \mu) = (X-= \nu_{\mu}^{-})(Y+= e^{+})(X-= \nu_e^{-})$. Or, quanta core of a mega star with$(p_5^{-}/n_5^{-} = e_{*5}^{-})$ emit quanta $(p_5^{-} \to p_3^{+})$of matter, but generate quanta from the nuclei of galaxies $(2 * \alpha * p_5^{-} = e_{*5}^{+} = N\ p_4^{+})$. We see, as it were, the “surface” of the galaxy, but the core of such an object$ОЛ_{ji}(n)$ convergence, has a mass ranging from$(10^{10} M_s)$ before$(3.5 * 10^{13} M_s)$ mass of the Sun.

We are talking about valid objects$ОЛ_{ji}(n)$ convergence, in the dynamic space-matter of the Universe. In this case, the calculated cause-and-effect relationships are indicated.

6.Trial experiments for the technology of theories.

1.Introduction.
2.Controlled thermonuclear reaction.
3. Ultra-high frequency gravitational waves.
4.Superluminal photons
5. New stable particles of matter

6.1. Introduction.

We considered the properties of dynamic space-matter with its own axiomatics (as facts that do not require proof) in which the Euclidean axiomatics, as well as its technology, is a special case. Let us recall briefly.

Isotropic properties of straight parallel (‖)lines-trajectories give Euclidean space with zero $(\varphi = 0)$angle of parallelism.

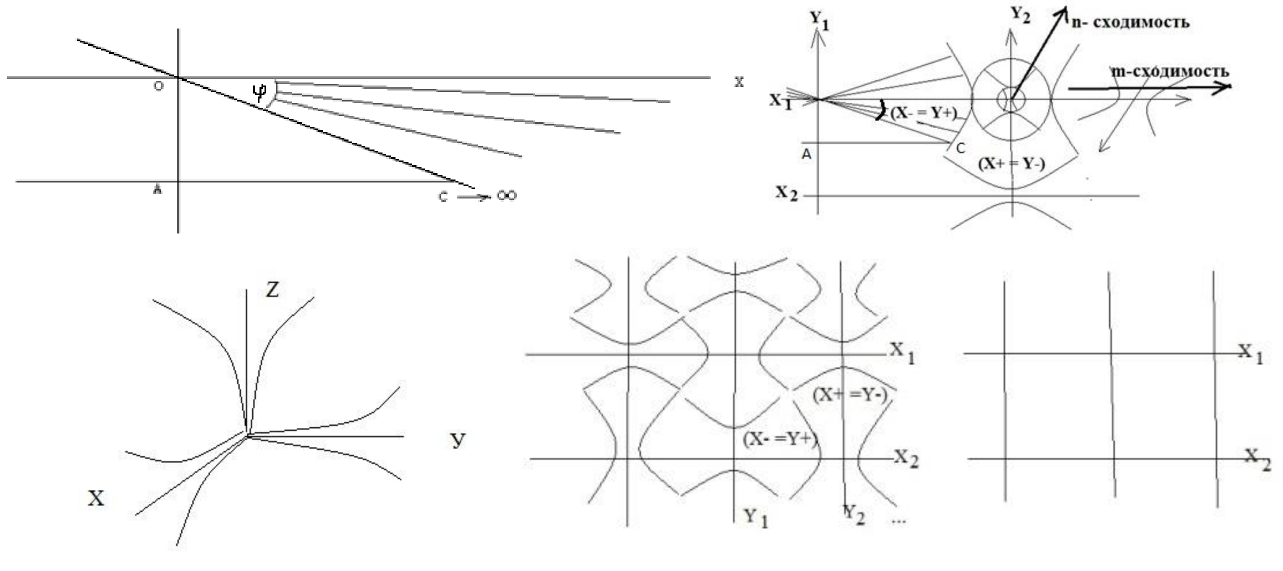


Fig. 1. Dynamic space-matter.

In this case, through the point O, outside the ray (AC → ∞), there passes only one straight line (OX)that does not intersect the original straight ray (AC → ∞). The fact of reality is that when moving along (AC → ∞)to infinity, within the dynamic $(\varphi \neq const)$angle of parallelism, there is always a dynamic bundle of straight lines in (X−)a dynamic field, with a non-zero $(\varphi \neq 0)$angle of parallelism, and not intersecting the ray (AC → ∞)at infinity. We are talking about a set of straight lines passing through the point O, outside the straight line (AC → ∞)and parallel to the original ray (AC → ∞). This is "length without width" in Euclidean axiomatics, with the uncertainty principle (X−)of the line- trajectory. In the

axes (XYZ), as we see, Euclidean space loses its meaning. It simply does not exist. Such mathematics of Riemannian space $\boldsymbol{g_{ik}}(x^s \neq const)$, with a variable geodesic, does not yet exist.
Therefore, there is no geometry of the Euclidean non-stationary sphere, there is no geometry of the space of the geometry of Lobachevsky, with variable asymptotes of hyperbolas. These orthogonal $(X-) \perp (Y-)$lines-trajectories have dynamic spheres inside, non-stationary Euclidean space $(\varphi \neq const)$. And these $(X-) \perp (Y-)$lines-trajectories have their own fields of a single and$(\varphi \neq const)$ dynamic $(X+ = Y-)$, $(Y+ = X-)$space-matter. In the Euclidean grid of axes $(X_i) \perp (Y_i)$, we do not see it, and cannot imagine it. And this is already another $(\varphi \neq const)$technology of mathematical and physical theories, in which the existing technology of Euclidean axiomatics $(\varphi = 0)$or $(\varphi = const)$Riemannian space is a limiting and special case, respectively.

Based on these ideas, theoretical models are constructed, the reality of which is tested in trial experiments.

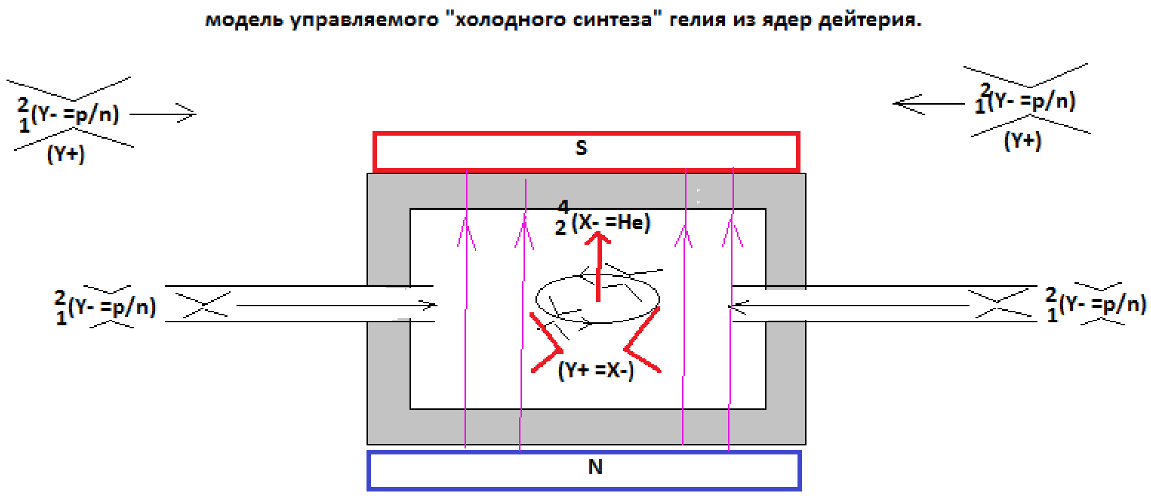
6.2. Controlled thermonuclear reaction

From the axioms of dynamic space-matter, considered in " Quantum Gravity " , the properties of a single space-matter follow $(X\pm = Y\mp)$: $(X+)(X+) = (Y-)$or $(Y+)(Y+) = (X-)$. Their symmetries give structural forms of matter of proton and electron. There are quantitative calculations of such structural forms, including proton and electron. In general, antimatter $(X\pm)$or $(Y\pm)$quanta of space-matter, is in the structural form of matter. There are such calculations.

These are geometric facts, we emphasize, of dynamic space-matter, with non-stationary Euclidean space, which correspond to the physical properties of matter. Therefore, the quantum of Strong Interaction $(Y\pm = p^+/n)$of the substance of the proton and neutron in the nucleus of an atom is represented as a structure having the properties of antimatter $(Y\pm = p^+/n = e^{**+})$, similar to the antimatter of the positron $(Y\pm = e^+)$. Therefore, such quanta are in a bound state of matter in the form of $({}_2^4\alpha)$a particle of the nucleus. A separate quantum of the deuterium nucleus is bound by the matter of the orbital electron, forming the external matter of $({}_1^2H)$the deuterium atom. At the same time, the quanta of Strong Interaction themselves $(Y\pm = p^+/n)$have a minimum binding energy in the nucleus, $\Delta E = 2 * \alpha * p = 2 * 6{,}9 = 13{,}8MeV$. Their maximum energy in metal nuclei, $\Delta E = 2 * 8{,}5 = 17\ MeV$, recorded in experiments. Thus, deuterium nuclei in the plasma state, unlike the substance of deuterium atoms, are a structure of quanta $(Y\pm = p^+/n = e^{**+})$of the Strong Interaction, with the properties of antimatter, similar to the positron $(Y\pm = e^+)$.

Today, controlled thermonuclear reaction: $({}_1^2H + {}_1^3H \rightarrow {}_2^4He + {}_0^1n + 17{,}6MeV)$is created in plasma. These are different nuclei. In space-matter $(Y- = X+)$, this $({}_1^2H + {}_1^3H)$is similar to the connection of mass trajectories of the "positron" $(Y- = p^+/n = e^{**+})$ or $(Y- = e^+)$, and "proton" $(X+ = {}_1^3H = p^{**+})$or $(X+ = p^+)$. Proton with positron, with mutually perpendicular$(Y-)\perp(X-)$ trajectories , this is hydrogen, in which <u>**everything goes to the rupture of the structure**</u> , in plasma in this case. And only with impacts in high-temperature plasma, in fields$(X+ = p^+)$ Strong Interaction , vortex mass trajectories are formed $(Y- = p^+/n)(Y- = p^+/n) = (X\pm = {}_2^4He)$, already of a new core, as a stable structure.

More effective conditions for controlled Thermonuclear Reaction are counter flows of deuterium plasma, with perpendicular injection of antiproton beams at the point of meeting of plasma flows. The flow of deuterium plasma itself is a controlled flow of ions, a more stable state of plasma. Or inelastic collisions of deuterium beams of low energies, in a chamber with perpendicular lines of force of a strong magnetic field, without primary plasma. This will already be controlled "cold fusion" of helium.



The resulting alpha particles heat the water jacket of the already controlled thermonuclear reactor. The energy yield of such a synthesis of structured plasma is calculated according to the standard scheme.

$$\Delta m(2[{}_1^2H]) = 2[(1{,}00866 + 1{,}00728) - (m_{core} = 2{,}01355)] = 0{,}00478\text{aem}$$

$$\Delta m([{}_2^4He]) = [(2 * 1{,}00866 + 2 * 1{,}00728) - (m_{core} = 4{,}0026)] = 0{,}02928\text{aem}.$$

$$\Delta E = \Delta m([{}_2^4He]) - \Delta m(2[{}_1^2H]) = (0{,}02928 - 0{,}00478) = (0{,}0245) * 931{,}5MeV = 22{,}82MeV$$

2 grams (one mole) of such deuterium plasma is equivalent to 25 tons of gasoline.

6.3. Ultra-high frequency gravitational waves.

From the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter, the equations of quantum gravity viXra :2010.0069 directly follow . And already in the direction of the source of gravity, we speak of quasi-potential quantum gravitational fields of acceleration of mass trajectories. Their superposition from a set of (quantum) protons in a massive sphere forms a common gravitational field of accelerations, of a massive sphere in this case.

If we talk about ultra-high-frequency gravitational waves, without going into "Black Holes" and galactic nuclei, "black spheres" wandering in galaxies, then we can check their presence in simple experiments on Earth. Within the framework of the properties of dynamic space-matter, we can check the presence of quantum gravitational acceleration fields (Fig. 4).

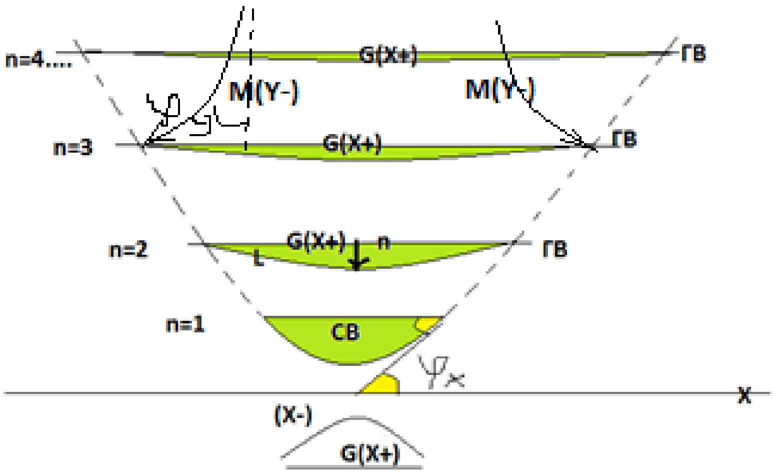


Fig . 4. Quantum gravity fields .

The essence of the experiment is to pass a photon through quasi potential quantum gravitational fields of accelerations, for example ${}_2^4\propto$- particles, nuclei of helium, or deuterium, or tritium of simple nuclear structures. These are the levels of mass G (X + = Y -) trajectories of electron (Y - = e $^-$) orbits of an atom. But these are precisely high-frequency (up to 10^{22} Hz) quantum gravitational fields, which correspond to the goals of the experiment.

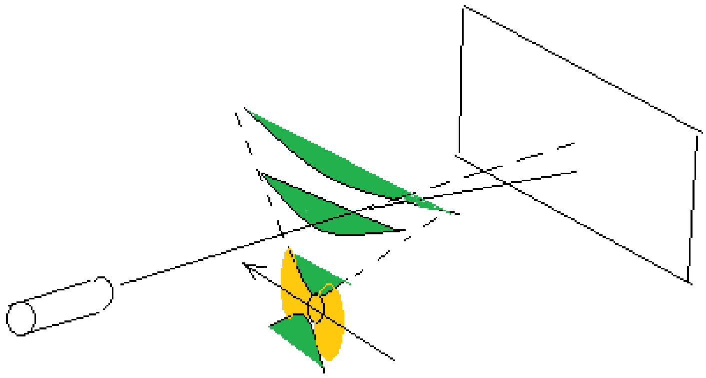


Fig . 4.1. Quantum gravity fields .

By passing nuclei $^4_2\propto$- particles through a beam of photons, on the screen we will see the curvature of the photon trajectories around the nucleus, similar to the curvature of light rays around the Sun. But here we can take the characteristics of the curvature of the trajectories of individual photons, in the parameters of the quantum gravitational field.

6.4.Superluminal photons

https://vixra.org/abs/2403.0015

From the axioms of such a dynamic $(\varphi \neq const)$space-matter, as geometric facts that do not require proof, $(m-n)$convergence, are formed by Indivisible Areas of Localization as indivisible $(X\pm)$and $(Y\pm)$quanta of dynamic space-matter. Indivisible quanta

$$(X\pm = p),\ (Y\pm= e),\ (X\pm = \nu_\mu),\ (Y\pm = \gamma_o),\ (X\pm = \nu_e),\ (Y\pm = \gamma),$$

form OL $_1$ – the first Region of their Localization. OL $_2$, OL $_3$ – Regions of Localization of indivisible quanta are formed in exactly the same way.

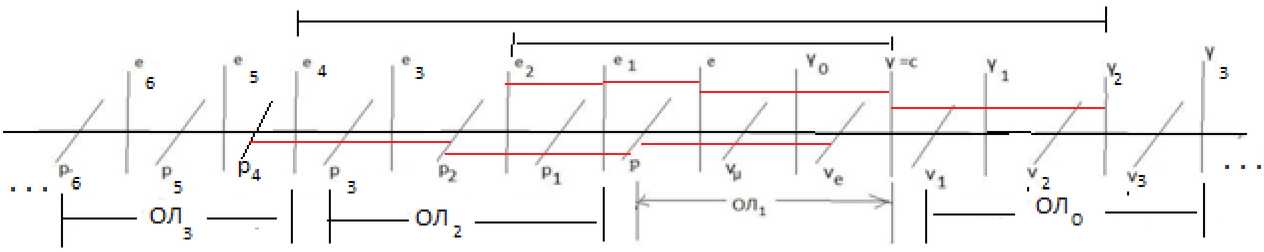


Fig.4 quantum coordinate system

In "Unified Theory 2" the calculated characteristics of such quanta are presented, which correspond to the recorded facts of reality. An electron emits and absorbs a photon: $(e \leftrightarrow \gamma\ )$. Their speeds are related by the relation: . The speeds of a photon $(v_e = \alpha * c)$and a superluminal photon $(v_\gamma \leftrightarrow \alpha * v_{\gamma_2})$are related in exactly the same way $(\gamma \leftrightarrow \gamma_2\ )$. They are connected by red lines in Fig. 4. In "Black Holes" http://viXra.org/abs/2312.0018 , we considered the sequences of emission and absorption of indivisible (stable) quanta, in such a quantum coordinate system, in the form: : $(p_8^+ \to p_6^-)$, $(p_6^- \to p_4^+)$, $(p_4^+ \to p_2^-)$, $(p_2^- \to p^+)$, with the corresponding atomic nucleus: (p^+/e^-)substances of an ordinary atom,(p_2^-/e_2^+) antimatter of the nucleus of the "star atom",(p_4^+/e_4^-) matter of the galaxy core, (p_6^-/e_6^+)antimatter of the quasar core and "," (p_8^+/e_8^-)matter of the core of the "quasar galaxy." Further, we proceed from the fact that the quantum(e_{*1}^-) substances$(Y- = p_1^-/n_1^- = e_{*1}^-)$ planet cores emits a quantum

$$(e_{*1}^+ = 2 * \alpha * (p_1^- = 1{,}532E7\ MeV)) = 223591MeV,\ \text{or:}\qquad \frac{223591}{p=938{,}28} = e_*^+ = 238{,}3 * p$$

mass of the uranium nucleus, the quantum of "antimatter" $M(e_*^+) = M(238{,}3 * p) = {}^{238}_{92}U$, the uranium nucleus. Such "antimatter" $(e_*^+ = {}^{238}_{92}U = Y-)$is unstable and disintegrates exothermically into a spectrum of atoms, in the core of the planets. Such calculations are consistent with the observed facts.

In the superluminal level$w_i(\alpha^{-N}(\gamma = c))$ physical vacuum, such stars do not manifest themselves. Further, we are talking about the substance $(p_3^+ \to p_1^-)$of the core$(Y- = p_3^+/n_3^0 = e_{*3}^+)$ "black spheres" around which, in their gravitational field, globular clusters of stars are formed. Similarly, further, we are talking about the radiation of matter from antimatter and vice versa: $(p_6^+ \to p_5^-)$, $(p_5^- \to p_3^+)$, $(p_3^+ \to p_1^-)$, $(p_1^- \to \nu_\mu^+)$. The general sequence is: $p_8^+ ,p_7^+ ,\ p_6^-,\ p_5^-,\ p_4^+,\ p_3^+ ,\ p_2^- ,\ p_1^- ,p^+,\nu_\mu^+ ,\nu_e^-$ ....

Next: НОЛ $= M(e_4 = 1{,}15\ \text{E}16\ )(k = 3.13)M\big(\gamma_2 = 2{,}78\ \text{E} - 17\ \big) = 1$. These quanta$(p_4/e_4)$ the nuclei of galaxies are surrounded by individually emitted quanta(p_2/e_2) cores of stars, and are the cause of their formation. Such cores of galaxies, in the equations of quantum gravity, have, spiral arms of mass trajectories, already: $v_i(\gamma_2 = \alpha^{-1}\text{c}) = 137 * \text{c}$, in superluminal space of velocities. Below the energy of light photons ($v_{\gamma_2} = 137 * \text{c}$)in a physical vacuum, galaxies do not manifest themselves. Outside galaxies, we are talking about the quanta of the core of megastars($Y- = p_5^- / n_5^- = e_{*5}^-$) . They generate a lot of quanta. ($e_{*5}^- = 2 * \alpha * p_5^- = e_{*4}^+ = 290 p_4^+$) galactic nuclei. And so on.

The important thing is that an ordinary photon ($Y\pm = \gamma$)can emit and absorb a superluminal photon ($Y \pm = \gamma_2$)in exactly the same way as an electron ($Y\pm = e$)emits an ordinary photon ($Y\pm = \gamma$). The source of ordinary photons are stars. And the source of superluminal photons are the "heavy" electrons of the galaxy's core.

$$\text{НОЛ} = M(e_2 = 3{,}524\ \text{E}7\ )(k = 3.13)M(\gamma = 9{,}07\ \text{E} - 9\ ) = 1$$
$$\text{НОЛ} = M(e_4 = 1{,}15\ \text{E}16\ )(k = 3.13)M(\gamma_2 = 2{,}78\ \text{E} - 17\ ) = 1$$

Moreover, for a photon ($Y\pm = \gamma$), the speed of a superluminal photon ($Y \pm = \gamma_2$)will have the same speed of light: $w = \frac{c+137*c}{1+\frac{137*c*c}{c^2}} = \frac{c(1+137)}{(1+137)} = c$. These connections are shown in Fig. 4. In essence, we are talking about "immersion" of quanta of the core of stars and galaxies, in the corresponding levels of physical vacuum. As we see, quanta of the core of galaxies are "immersed" in the superluminal space of velocities. And there is a fact of the presence of "supermassive compact objects" discovered in the core of galaxies. And there is another representation of the properties of such objects:

$$(R < R_0) = \frac{2GM}{(v_\text{i} > c)^2}$$

with the presence of superluminal space: ($v_\text{i} > c$), inside ($R < R_0$)such "black spheres" called "black holes". There are no "holes" and no singularities in "black holes". The mass of such "black spheres" ($M \neq 0$)is not zero, and this is a fact of our galaxy. The false idea of Einstein's General Theory of Relativity is that it is believed that the equation presents a non-zero mass as a source of curvature of space-time, as a source of gravity. There is no such mass in Einstein's equation. In the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter in its full form:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = \frac{8\pi G}{c^4}T_{ik}.$$

there is no mass: ($M = 0$), in its classical understanding. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which **is reduced to the Euclidean sphere** (these are the key words), in the external, non-stationary ($\lambda \neq 0$)Euclidean space-time. No one enters inside the sphere, just as in Newton's law. This is a repeatedly tested law: $F = \frac{Gm_1m_2}{K^2}$, where (K)is the distance between the centers of massive spheres of the Earth and the Moon, for example. And if a small ball is dropped into the diametrical hole of a large sphere, the gravitational force should tend to infinity at ($K = 0$). This is also a kind of singularity, which does not exist in Nature. Newton's law is valid only outside the massive sphere.

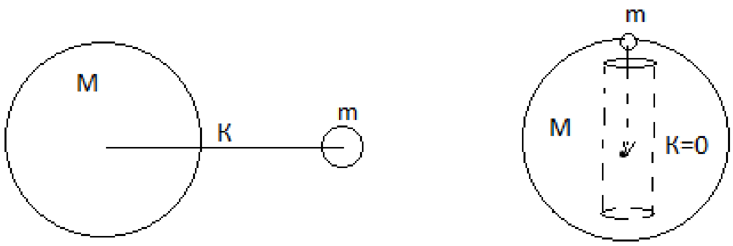


Fig.5. Newton's law

In the same way, the equation of Einstein's General Theory of Relativity is really outside the Euclidean massive sphere, in its gravitational field. In the physical truth, in the equation of Einstein's General Theory of Relativity, in the unified Criteria of Evolution, the formula (law) of Newton is "sewn up":

$$E = c^4K, P = c^4T, \left(c_i^2 - c_k^2 = \Delta c_{ik}^2\right) = \frac{E^2}{p^2} = \left(\frac{K^2}{T^2} = c^2\right), \quad \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y=m_1)(c^2K_Y=m_2)}{c^2(c^2T^2=K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2}, \quad \Delta c_{ik}^2c^2 = F$$

As we see in Einstein's General Theory of Relativity, the force of gravity acts in fields with zero mass. In relativistic dynamics $E^2 = \text{m}_0^{\ 2}c^4 + p^2c^2$, in fields with zero mass

($m_0{}^2 = 0$), Einstein took the tensor of only energy-momentum $\frac{E^2}{p^2} = c^2$, already as a gravitational potential. It is read: the difference in mass flows $\Delta c_{ik}^2(Y-)$in the external gravitational field $c^2(X+)$, with their Equivalence Principle, gives force. Let us pay attention - the gravitational field in both Newton's law and Einstein's General Theory of Relativity is reduced to the Euclidean sphere. In both cases, there is no entry into the Euclidean sphere with a non-zero mass, as a source of gravity.

Thus, from two sides: $(R < R_0) = \frac{2GM}{(v_i > c)^2}$, and $(v_{\gamma_2} = 137 * c)$, we came to the conclusion about the existence of a superluminal space of velocities inside the "black sphere" of the galactic core, to which the gravitational field of Einstein's General Theory of Relativity is reduced. Inside the "black sphere", all the laws of physics, space-time, as a special case of a fixed state of dynamic space-matter, work, but already in the space of superluminal velocities. That is why even photons cannot get inside the "black sphere" of the galactic core. Photons simply circle around such a "black sphere", which is called a "black hole".

The question is, how to catch a superluminal photon $(Y \pm = \gamma_2)$with an ordinary photon $(Y\pm = \gamma)$? This is a typical problem of absorption $(Y\pm = e)$of a photon by an electron $(Y\pm = \gamma)$. We are talking about the change in the energy of the photon $(Y\pm = \gamma)$when absorbing a superluminal photon $(Y \pm = \gamma_2)$. The energy of the photon has a momentum: $E = p * c$, with zero mass $m_0{}^2 = 0$. Such a photon can only absorb energy $E = p * \alpha * c$, already a superluminal photon $(Y \pm = \gamma_2)$. Thus, the energy of the photon $(Y\pm = \gamma)$that absorbed the superluminal photon $(Y \pm = \gamma_2)$is: $E = p * c * (1 + \alpha)$, where $(\alpha = 1/137)$, for any momentum of the primary photon $(Y\pm = \gamma)$. The problem is to find such photons in the direction of the galactic core, as a source of superluminal photons $(Y \pm = \gamma_2)$. For example, an orbital electron of hydrogen emits a photon when it passes from one orbit to another. Understood. So, the emitted photons, from the same orbits of hydrogen electrons in the direction of the galactic core, and in the direction perpendicular from the galactic core, can have the following: $E = p * c * (1 + \alpha)$, the difference in energies. And the decisive word here will be given by trial experiments.

6.5. New stable particles of matter.

http://viXra.org/abs/2210.0051

In uniform (X + = Y-) (Y + = X-) =1, space - matter, remove Maxwell's equations for electro (Y + = X-) magnetic field. In a space angle $\varphi_X(X-) \neq 0$ of parallelism there is isotropic tension of a stream A_n a component (Smirnov, b.2, page 359 -375). A full stream of a whirlwind through a secant a surface $S_1(X-)$ in a look:

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial(A_n / \cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1 .$$

A_n Component corresponds to a bunch $(X-)$ of parallel trajectories. It is a tangent along the closed curve L_2 in a surface S_2 where $S_2 \perp S_1$ and $L_2 \perp L_1$. Similarly, the ratio follows: $\int_{L_2} A_n dL_2 = \iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2$.

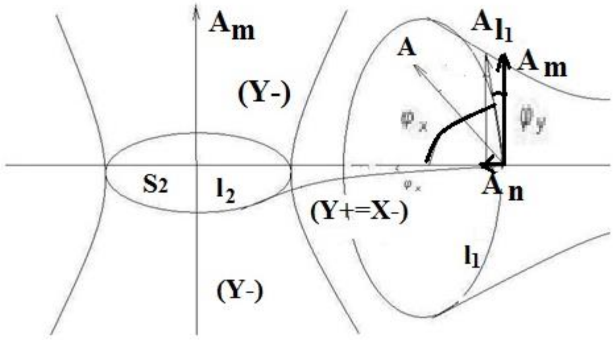


Fig.2. Electro (Y+ =X -) magnetic and gravity (X+=Y-) mass fields.

In a space angle $\varphi_X(X-) \neq 0$ of parallelism the condition is satisfied

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 + \iint \frac{\partial A_n}{\partial T} dL_2 dT = 0 = \iint_{S_2} A_m(X-) dS_2 . \qquad (2.1)$$

In general, there is a system of the equations of dynamics (X - = Y+) of the field.

$$\iint_{S_1} rot_n A dS_1 = \iint \frac{\partial(A_n / \cos\varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1 \quad (2.2)$$

$$\iint_{S_2} rot_m \frac{A_n}{\cos\varphi_X} dS_2 = -\iint \frac{\partial A_n}{\partial T} dL_2 dT, \quad \text{and} \quad \iint_{S_2} A_m dS_2 = 0. \quad (2.3)$$

In Euclidean $\varphi_Y = 0$ axiomatic, accepting tension of a stream vector a component as tension of electric field $A_n / \cos\varphi_X = E(Y+)$ and an inductive projection for a nonzero corner $\varphi_X \neq 0$ as induction of magnetic $B(X-)$ field, we have

$$\iint_{S_1} rot_X B(X-) dS_1 = \iint \frac{\partial E(Y+)}{\partial T} dL_1 dT + \iint_{S_1} E(Y+) dS_1 \quad (2.4)$$

$$\iint_{S_2} rot_Y E(Y+) dS_2 = -\iint \frac{\partial B(X-)}{\partial T} dL_2 dT, \quad \text{in conditions} \quad \iint_{S_2} A_m dS_2 = 0 = \oint_{L_2} B(X-) dL_2.$$

Maxwell's equations.

$$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+); \quad (2.5)$$

$$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T}; \quad (2.6)$$

Induction of vortex magnetic field $B(X-)$ arises in variation electric $E(Y+)$ field and vice versa.

For L_2 the ratio, which is not closed, there are ratios $\int_{L_2} A_n dL_2 = \iint_{S_2} A_m dS_2 \neq 0$ a component. In the conditions of orthogonally $A_n \perp A_m$ the vector component A, in nonzero, dynamic $(\varphi_X \neq const)$ and $(\varphi_Y \neq const)$ corners of parallelism $A\cos\varphi_Y \perp (A_n = A_m \cos\varphi_X)$, is dynamics $(A_m \cos\varphi_X = A_n)$ components along a contour L_2 in a surface S_2. Both ratios are presented in the full form.

$$\int_{L_2} A_m \cos\varphi_X dL_2 = \iint_{S_2} \frac{\partial(A_m(X+) * \cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2 \quad (2.7)$$

The zero streams through S_1 a whirlwind surface $(rot_n A_m)$ out of a space angle $(\varphi_Y \neq const)$ of parallelism corresponds to conditions

$$\iint_{S_1} rot_n A_m dS_1 + \iint \frac{\partial A_m}{\partial T} dL_1 dT = 0 = \iint_{S_1} A_n (Y-) dS_1. \quad (2.8)$$

In general, the system of the equations of dynamics $(Y- = X+)$ of the field is presented in the form:

$$\iint_{S_2} rot_m A_m (Y-) dS_2 = \iint_{S_2} \frac{\partial(A_m(X+) * \cos\varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2 \quad (2.9)$$

$$\iint_{S_1} rot_n A_m (X+) dS_1 = -\iint \frac{\partial A_m (Y-)}{\partial T} dL_1 dT, \quad \iint_{S_1} A_n (Y-) dS_1 = 0. \quad (2.10)$$

Entering tension $G(X+)$ of the field of Strong (Gravitational) Interaction and induction of the mass field by analogy $M(Y-)$, we will receive similarly:

$$\iint_{S_2} rot_m M(Y-) dS_2 = \iint \frac{\partial G(X+)}{\partial T} dL_2 dT + \iint_{S_2} G(X+) dS_2 \quad (2.11)$$

$$\iint_{S_1} rot_n G(X+) dS_1 = -\iint \frac{\partial M(Y-)}{\partial T} dL_1 dT, \quad \text{at} \quad \iint_{S_1} A_n (Y-) dS_1 = 0 = \oint_{L_1} M(Y-) dL_1. \quad 2.12)$$

Such equations correspond gravity $(X+ = Y-)$ to mass fields,

$$c * rot_X M(Y-) = rot_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+) \quad (2.13)$$

$$M(Y-) = \mu_2 * N(Y-); \qquad rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T}; \quad (2.14)$$

By analogy with Maxwell's equations for electro (Y+ =X -) magnetic fields. We are talking about the induction of a field of mass $M(Y-)$ in an alternating $G'(X+)$ gravitational field, similar to the induction of a magnetic field in an alternating electric field. There are no options here. This is a single mathematical truth of such fields in a single dynamic space-matter. We are talking about the induction of mass fields around moving masses (stars) as well as the induction of magnetic fields around moving charges.

Thus, the rotations $rot_y B(X-)$ and $rot_x M(Y-)$ of the trajectories, give the dynamics of $E'(Y+)$ and $G'(X+)$ of the electric $(Y+)$ and gravitational $(X+)$ fields, respectively. And the rotations $(Y+)$ of fields around $(X-)$ trajectories and $(X+)$ fields around $(Y-)$ trajectories give dynamics $rot_x E(Y+) \rightarrow B'(X-)$, and dynamics $rot_y G(X+) \rightarrow M'(Y-)$of mass trajectories.

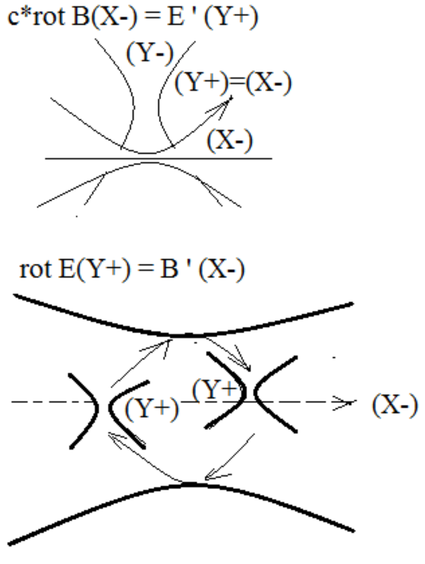


Fig. 2.2-2. Uniform fields of space matter

Similarly, the charge of unit masses is determined: $m_0 = 1$, in the form:

$$q = Gm_0\alpha(1-\alpha)^2 = 6{,}674 * 10^{-8}(1/137.036) * (1 - 1/137.036)^2 = 4.8 * 10^{-10}\ , \qquad (5.10)$$

And their relations: $\hbar\alpha c = q^2$. The model of products of an annihilation of proton and electron corresponds to such calculations. Mass fields (Y- = e) = (X+ = p) of an atom. In addition, the proton does not emit an exchange photon during an electromagnetic, charge interaction with an electron of an atom.

Having a standard, field-free speed of an electron $(W_e = \alpha * c)$ emitting a standard, field-free photon $V(\gamma) = c$, the constant $\alpha = W_e / c = \cos\varphi_Y = 1/137{,}036$ gives, by analogy, the calculation of the speeds $V(c) = \alpha * V_2(\gamma_2)$ for superluminal photons in the form: $V_2(\gamma_2) = \alpha^{-1}c$, $V_4(\gamma_4) = \alpha^{-2}c$ … $V_i(\gamma_i) = \alpha^{-N}c$, in standard, field-free conditions. An orbital electron with an angle of parallelism

$$\alpha = \frac{W_e}{c} = \frac{1}{137} = \cos\varphi_{MAX}(Y-)$$

of the trajectory does not emit a photon, as in rectilinear, acceleration-free motion. **This postulate of Bohr, as well as the principle of uncertainty of space-time and the principle of equivalence of Einstein, are axioms of dynamic space-matter.** The dynamics of mass fields within $\cos\varphi_Y = \alpha$, $\cos\varphi_x = \sqrt{G}$, interaction constants, gives the charge isopotential of their unit masses.

$m(p) = 938{,}28MeV$, $G = 6{,}67 * 10^{-8}$. $m_e = 0{,}511\ MeV$, ($m_{\nu_\mu} = 0{,}27\ MeV$),

$$\left(\frac{X=K_X}{K}\right)^2 (X-) = cos^2\varphi_X = \left(\sqrt{G}\right)^2 = G, \qquad \left(\frac{Y=K_Y}{K}\right)(Y-) = cos\ \varphi_Y = \alpha = \frac{1}{137{,}036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y = m_Y}{\left(\frac{Y^2}{K^2} = \frac{G}{2}\right)}, \qquad \text{where} \qquad 2m_Y = Gm_X\ ,$$

$$m = \frac{F = \Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X = m_X}{\left(\frac{X^2}{K^2} = \frac{\propto^2}{2}\right)}, \qquad \text{where} \qquad 2m_X = \propto^2 m_Y$$

$$(\alpha/\sqrt{2})*\Pi K*(\alpha/\sqrt{2}) = \alpha^2 m(e)/2 = m(\nu_e) = 1{,}36*10^{-5}\,MeV, \qquad \text{or: } m_X = \alpha^2 m_Y/2,$$

$$\sqrt{G/2}*\Pi K*\sqrt{G/2} = G*m(p)/2 = m(\gamma_0) = 3.13*10^{-5}\,MeV, \text{ or: } m_Y = Gm_X/2$$

$$m(\gamma) = \frac{Gm(\nu_\mu)}{2} = 9{,}1*10^{-9}MeV.$$

In a single $(Y\pm = X\mp)$or $(Y+ = X-)$, $(Y- = X+)$space-matter of indivisible structural forms of indivisible quanta $(Y\pm)$and $(X\pm)$:

$(Y\pm = e^-) = (\boldsymbol{X}+ = \nu_e^-)(Y- = \gamma^+)(\boldsymbol{X}+ = \nu_e^-)$ electron, where NOL $(Y\pm)$= KE(Y +)KE(Y -), and

$(X\pm = p^+) = (\boldsymbol{Y}- = \gamma_0^+)(\boldsymbol{X}+ = \nu_e^-)(\boldsymbol{Y}- = \gamma_0^+)$proton, where NOL $(X\pm)$=KE(X +)KE(X -),

We separate electromagnetic $(Y+ = X-)$fields from mass fields $(Y- = X+)$in the form:

$(X+)(X+) = (Y-)$And $\frac{(X+)(X+)}{(Y-)} = 1 = (Y+)(Y-)$; $(Y+ = X-) = \frac{(X+)(X+)}{(Y-)}$, or: $\frac{(\boldsymbol{X}+=\nu_e^-/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(\boldsymbol{X}+=\nu_e^-/2)}{(Y-=\gamma^+)} = q_e(Y+)$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36*10^{-5})^2*\sqrt{2}*6{,}67*10^{-8}}{4*9{,}07*10^{-9}} = 4{,}8*10^{-10}\text{СГСЕ}$$

$(Y+)(Y+) = (X-)$And $\frac{(Y+)(Y+)}{(X-)} = 1 = (X+)(X-)$; $(Y+ = X-) = \frac{(Y-)(Y-)}{(X+)}$, or: $\frac{(\boldsymbol{Y}-=\gamma_0^+)(\boldsymbol{\alpha^2})(\boldsymbol{Y}-=\gamma_0^+)}{(\boldsymbol{X}+=\nu_e^-)} = q_p(Y+ = X-)$,

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3{,}13*10^{-5}/2)^2}{2*137{,}036^2*1.36*10^{-5}} = 4{,}8*10^{-10}\text{СГСЕ}$$

Such coincidences cannot be accidental. For a proton's wavelength $\lambda_p = 2{,}1*10^{-14}$см, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286*10^{24}$Гцis formed by the frequency(γ_0^+) quanta, with mass $2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+})$.

$$1\text{г} = 5{,}62*10^{26}MeV, \text{ or}(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58*10^{-32}\text{г} = 3{,}13*10^{-5}MeV$$

Similarly, for an electron $\lambda_e = 3{,}86*10^{-11}$см, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77*10^{20}$Гцis formed by the frequency(ν_e^-) quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-})$, where$\alpha(Y-) = \frac{1}{137{,}036}$ constant, we get:

$$(m_{\nu_e^-}) = \frac{\alpha^2\hbar(\nu_{(\nu_e^-)})}{2c^2} = \frac{1*1{,}0545*10^{-27}*7{,}77*10^{20}}{(137{,}036^2)*2*9*10^{20}} = 2{,}424*10^{-32}\text{г} = 1{,}36*10^{-5}MeV, \text{ for the neutrino mass.}$$

A physical fact is the charge isopotential of a proton $p(X-= Y+)e$and an electron in a hydrogen atom with a mass ratio of $(p/e \approx 1836)$. By analogy, we speak of the charge isopotential $\nu_\mu(X-= Y+)\gamma_0$, and $\nu_e(X-= Y+)\gamma$, subatomic , with the ratio of masses $(\nu_\mu/\gamma_0 \approx 8642)and(\nu_e/\gamma \approx 1500)$ respectively. In this case, sub atoms (ν_μ/γ_0) are held by the gravitational field of the planets, and sub atoms (ν_e/γ) are held by the gravitational field of the stars. This follows from calculations of the atomic structures (p/e), sub atomics of planets $(p_1/e_1)(p/e)(\nu_\mu/\gamma_0)$and stars $(p_2/e_2)(p_1/e_1)(p/e)(\nu_\mu/\gamma_0)(\nu_e/\gamma)$, for: $e_1 = 2\nu_\mu/\alpha^2 = 10{,}2GeV)$, $e_2 = 2p/\alpha^2 = 35{,}2TeV)$, НОЛ $= e_1*3{,}13*\gamma_0 = 1$, and НОЛ $= e_2*3{,}13*\gamma = 1$.

And also for $p_1 = \frac{2e}{G} = 15{,}3TeV$, and $p_1(X-= Y+)e_1$"heavy atoms" inside the stars themselves. If quanta $(m_X = p_1^-) = \frac{2(m_Y=e^-)}{G} = (15{,}3\,TeV)$and exist $(m_Y = e_2^-) = \frac{2(m_X=m_p)}{\alpha^2} = (35{,}24\ TeV)$, then similar to the generation by quanta(p_1/n_1) cores of the earth cores$(2\alpha p_1^- = 238p^+ = {}^{238}_{92}U)$ uranium, $p^+ \approx n$, with subsequent decay into a spectrum of atoms, quanta $p_2^- = \frac{2e_1^-}{G} = 3{,}06*10^5TeV$, and (p_2/n_2), $(p_2 \approx n_2)$the Sun's (star's) nuclei generate "stellar uranium" nuclei, $(2\alpha p_2^- = 290p_1^+ = {}^{290}U^*)$, with their exothermic decay into a spectrum of "stellar" atoms (p_1^+/e_1^-)in the solid surface of the star (Sun) without interactions with ordinary atoms(p^+/e^-) hydrogen and the spectrum of atoms. The emission of $(p_1^+ \to \nu_\mu^-)$muon antineutrinos by the Sun, like the emission $(e \to \gamma)$of photons, means the presence of such stellar matter on the Sun(p_1^+/e_1^-) without interaction with proton- (p^+/e^-)electron atomic structures of ordinary matter (hydrogen, helium...). These are the calculations and physically admissible possibilities. On colliding beams of muon antineutrinos (ν_μ^-) in magnetic fields:

$$НОЛ(Y = e_1^-) = (X- = \nu_\mu^-)(Y+ = \gamma_O^-)(X- = \nu_\mu^-) = \frac{2\nu_\mu}{\alpha^2} = 10.216GeV,$$

in unstable form these are known levels of upsilonium.

On the counter beams of positrons (e^+), which are accelerated in the flow of quanta $(Y-=\gamma)$, photons of **the “white” laser** in the form of:

$$НОЛ(X = p_1^+) = (Y-=e^+)(X+=\nu_\mu)(Y-=e^+) = \frac{2m_e}{G} = 15{,}3TeV$$,

In colliding beams of antiprotons (p^-), the following occurs:

$$НОЛ(Y \pm = e_2^-) = (\boldsymbol{X}-= p^-)(Y+= e^+)(\boldsymbol{X}-= p^-) = \frac{2m_p}{\alpha^2} = 35{,}24\ TeV.$$

For oncoming ones $НОЛ(Y -) = (X+= p^\pm)(X+= p^\pm)$, the mass of the quantum is calculated

$$M(Y -) = (X+= p^\pm)(X+= p^\pm) = \left(\frac{m_0}{\alpha} = \overline{m_1}\right)(1-2\alpha)$$

or $$M(Y -) = \left(\frac{2m_p}{2\alpha} = \frac{m_p}{\alpha} = \overline{m_1}\right)(1-2\alpha) = \frac{0{,}93828\ GeV}{(1/137{,}036)}\left(1 - \frac{2}{137{,}036}\right) = 126{,}7\ GeV$$

This is the elementary particle that was rediscovered at the CERN collider .Thus, new particles, such as indivisible quanta $(m_X = p_1^-) = \frac{2(m_Y = e^-)}{G} = (15{,}3\ TeV)$ and $(m_Y = e_2^-) = \frac{2(m_X = m_p)}{\alpha^2} = (35{,}24\ TeV)$, are not yet available in modern experimental technology. But in the Earth's atmosphere, it is possible to detect particles with energy $p_2 =$ 305 E15 eV or, e $_2$ = 3.524 E 13 eV, at least.

6. Quanta of "dark matter".

In modern experimental technologies, it is quite possible to detect quanta of "bremsstrahlung" by a deuterium nucleus. Models of nuclei of the mass spectrum (Mendeleev's table) were considered in the "Unified Theory2" http://viXra.org/abs/2210.0051. Atomic nuclei are formed by levels and shells of quanta of the Strong Interaction $(Y- = p/n)$ and $(Y- = 2n)$.

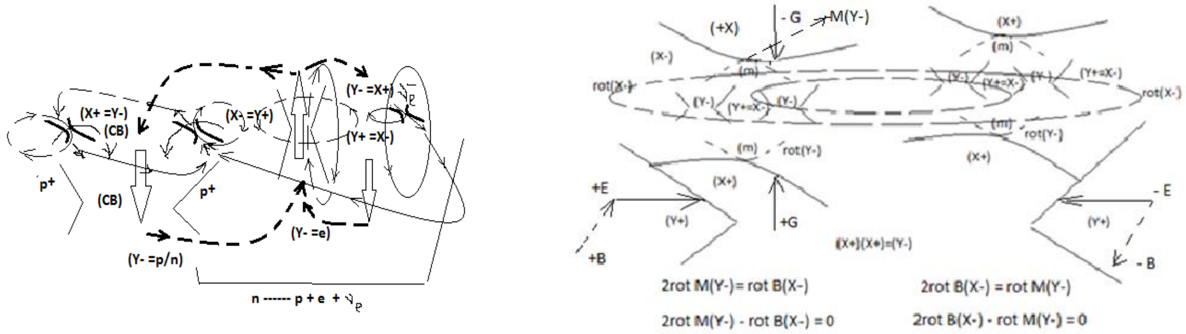


Fig.6.1. Quantum $(Y- = p/n)$and similar$(Y- = 2n)$ Strong Interaction

At the same time, in the core there is indeed a general state of the equations of the dynamics of a single$(X\pm = Y\mp)$ space-matter. Let us sum up these equations for closed vortex $rot(Y-)$ And$rot(X-)$ fields in the "standing waves" of the core, without their densities $\lambda_1 E(Y+)$ and $\lambda_2 G(X+)$ in the form: $c * rot_Y B(X -) + c * rot_X M(Y -) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \varepsilon_2 * \frac{\partial G(X+)}{\partial T}$, and we will reduce these fields to $(X\pm)$and$(Y\pm)$ quanta of the nucleus of one frequency $\frac{\partial}{\partial T} = \omega$, oscillations of all quanta in the structure of the nucleus. $c * rot_X M(Y -) - \varepsilon_1 \omega\, E(Y +) = \varepsilon_2 \omega G(X+) - c * rot_Y B(X -) = 0$, with zero densities outside the vortices. The fact is that the "+" substance of the mass $(Y- = \mathrm{X}+)$fields corresponds to the "-" charge of the electric $(Y+)$ fields$(Y\pm)$ quanta, and vice versa for antimatter. A single frequency of oscillations of all quanta in the structure of the nucleus in a single$(X\pm = Y\mp)$ space-matter has the form:

$$\omega = \frac{c*rot_X M(Y-)}{\varepsilon_1\, E(Y+)} = \frac{c*rot_Y B(X-)}{\varepsilon_2 G(X+)} \text{ or } \varepsilon_2 G(X+) * c * rot_X M(Y -) = \varepsilon_1\, E(Y +) * c * rot_Y B(X -),$$

for gravity$(\mathrm{X}+ = \mathrm{Y}-)$ mass and electromagnetic $(Y+ = \mathrm{X}-)$fields of nuclear quanta.

Such levels and shells of quanta $(Y- = p/n)$and similarly$(Y- = 2n)$ Strong Interaction of the nucleus of an atom, forms levels and shells of orbital electrons of an atom, as a cause and effect. In the same way the unified $(X\pm = Y\mp)$fields for orbital electrons external to the nucleus are summed up.

$rot_X E(Y +) + rot_Y G(X+) = \omega B(X -) + \omega M(Y -), rot_Y G(X+) - \omega B(X -) = \omega M(Y -) - rot_X E(Y +) = 0,$

$\omega = \frac{rot_Y G(X+)}{B(X-)} = \frac{rot_X E(Y+)}{M(Y-)}$, or$rot_Y G(X+) * M(Y -) = rot_X E(Y +) * B(X -)$ in united$(X\pm = Y\mp)$ fields.

The essence of the experiment is to accelerate the deuterium nucleus like a quantum$(Y- = p/n)$ Strong Interaction with the binding energy E $\left(Y- = 2 * \alpha * p = 2 * \frac{938.28}{137} = 2 * 6.85MeV \approx 14\ MeV\right)$and specific binding energy of the nucleons of the nucleus $\alpha * p = 6.85MeV$. And for the limiting specific binding energy of the nucleons of the nucleus, this may be the energy of $\mathrm{E}(Y-) \approx 17\ (MeV)$the quanta, which should be detected in the test experiment. These are the quanta of $\mathrm{E}(Y- = e_-^*) \approx (14 - 17)\ (MeV)$"dark matter" in the form of matter, which must decay with the obligatory presence of quanta $(Y\pm = e)$of the electron matter.

7.Controlled thermonuclear reaction

In general models of the atomic spectrum, the quantum model (X± =^4_2He) of the helium nucleus has the form

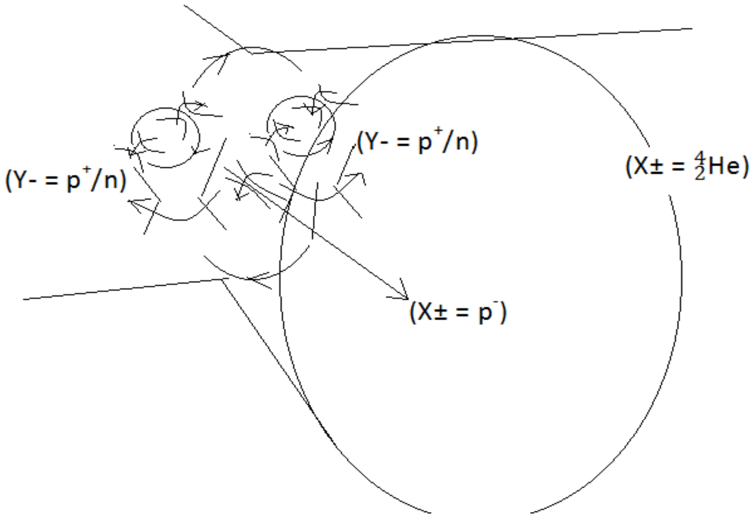


Figure1. Synthesis Model

the structural form of quanta (Y- = p^+/n) of strong interaction, structured by the (X-) field, in this case either an antineutrino $(X\pm = \nu_e^-)$ or an antiproton $(X\pm = p^-)$. In accordance with the equations of the dynamics of mass fields: $c * rot_Y M(Y-) = rot_Y N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$, we are talking about a controlled $(v_Y * rot_X 2M(Y- = p^+/n) = \varepsilon_2 * \frac{\partial G(X+=^4_2He)}{\partial T})$ Thermonuclear reaction:

1) Or in inelastic collisions $(X\pm = {}^4_2\alpha) = (Y- = p^+/n = \mathrm{e}^{***})(X+ = \nu_e^-)(Y- = p^+/n = \mathrm{e}^{**+})$ in the collider, colliding beams of low-energy deuterium nuclei, without primary plasma,

2). Or structuring of deuterium plasma by low-energy antiprotons in reactions

$(X\pm = {}^4_2\alpha) = (Y- = p^+/n = \mathrm{e}^{***})(X+ = p^-)(Y- = p^+/n = \mathrm{e}^{**+})$, $\quad {}^2_1H + p^- + {}^2_1H \rightarrow {}^4_2He + p^-$

More efficient conditions for a controlled thermonuclear reaction are counter flows of deuterium plasma with perpendicular injection of antiproton beams at the point of meeting of plasma flows. The flow of deuterium plasma itself is represented by a controlled flow of ions, as a more stable state of plasma in TOKAMAK.

3) or in inelastic collisions of tritium ${}^3_1H + p^+ \rightarrow {}^4_2He$, in colliders with high-energy proton beams, without primary plasma.

Two grams of such plasma of synthesized helium is equivalent to 25 tons of gasoline. In all cases, trial experiments are needed on the finished collider.

In all cases, the heat is taken away by the reactor water jacket. Such reactors are safe and environmentally friendly.

There are fundamental reasons and there are inevitable consequences of such physically permissible possibilities.

These are not calculations of energy conditions and technological solutions of a controlled thermonuclear reactor. But this is a theoretical development of the causes and consequences of the state of deuterium plasma and the conditions for its structuring in a controlled thermonuclear reaction. In contrast to the deuterium – tritium $({}^2_1H + {}^3_1H)$ plasma of nuclei of equal charges, which give a certain instability, we are talking about a deuterium $({}^2_1H)$ plasma structured by beams of antiprotons (p^-). There are causes and there are inevitable consequences, which we will consider qualitatively, without quantitative calculations.

From the axioms of dynamic space-matter, considered in “Quantum gravity” , the properties of a single $(X\pm = Y\mp)$ space-matter follow :

$$(X+)(X+) = (Y-) \quad \text{or} \qquad (Y+)(Y+) = (X-) .$$

Their symmetries give the structural forms of the proton and electron matter. There are quantitative calculations of such structural forms, including the proton and electron. In general, antimatter$(X\pm)$, or $(Y\pm)$ quanta of space-matter, is in the structural form of matter. There are such calculations.

These are geometric facts, we emphasize, of dynamic space-matter, with non-stationary Euclidean space , which correspond to the physical properties of matter. Therefore, the quantum of the Strong Interaction $(Y\pm= p^+/n)$ of the substance of the proton and the neutron in the nucleus of the atom is presented as a structure that has the properties of $(Y\pm= p^+/n = e^{**+})$ antimatter, similar to the antimatter $(Y\pm = e^+)$ of a positron. Therefore, such quanta are in a bound state of matter in the form of a nucleus particle $(^4_2\alpha)$. A separate quantum of the deuterium nucleus is bound by the substance of the orbital electron, forming the outer substance of the atom $(^2_1H)$of deuterium.

In this case, $(Y\pm= p^+/n)$ the strong interaction cables themselves have the minimum binding energy in the nucleus $\Delta E = 2 * \alpha * p = 2 * 6{,}9 = 13{,}8 MeV$. Their maximum energy in metal nuclei $\Delta E = 2 * 8{,}5 = 17\ MeV$, recorded in experiments. Thus, the nuclei of deuterium in the state of a plasma, in contrast to the matter of atoms of deuterium, are the structure of quanta $(Y\pm= p^+/n = e^{**+})$ of Strong Interaction, with the properties of antimatter similar to positron $(Y\pm = e^+)$. Structuring such plasma by a magnetic field $(X- = p^-)$ of low-energy antiprotons, we have electro $(Y+$=X-) magnetic charge interaction at relatively long distances.

$$(Y+= p^+/n)(X-= p^-)(Y+= p^+/n)$$

This is the first reason for the formation of a structure in deuterium plasma. In this case, we are not talking about the calculated densities of the generated electromagnetic symmetrical $(Y+)(X-)(Y+)$field in the plasma in accordance with Maxwell's equations,

$$rot_x E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T}$$

Already in such a structure in the plasma, $\left(Y+= \frac{p^+}{n}\right)(X-= p^-)\left(Y+= \frac{p^+}{n}\right) = НОЛ$, as the Indivisible Region of Localization of dynamic space-matter. And already the mass trajectories of the $(Y-= p^+/n = e^{**+})$quanta of the Strong Interaction are in the vortex flow of mass trajectories

$$(c * rot_Y M(Y- = p^+/n) = \varepsilon_2 * \frac{\partial G(X+=p^-)}{\partial T})$$

of exactly such equations, with the subsequent transition into closed $\left(c * rot_Y M(Y-)\right)$ vortex flows of their mass $(Y-= p^+/n)$ trajectories already in the field of the Strong Interaction of the antiproton , that is, the primary structure:

$$(X\pm= {}^4_2\alpha) = (Y-= p^+/n = e^{**+})(X+= p^-)(Y-= p^+/n = e^{**+})...$$

And this is the second reason for the formation of such a structural form in deuterium plasma. From the properties of dynamic space-matter, the antiproton simply flies out, "is generated", that is, it is "ejected" from such a structural form of the substance already of the helium nucleus in its final form:

$$(X\pm= {}^4_2\alpha) = (Y-= p^+/n = e^{**+})(Y-= p^+/n = e^{**+}),$$

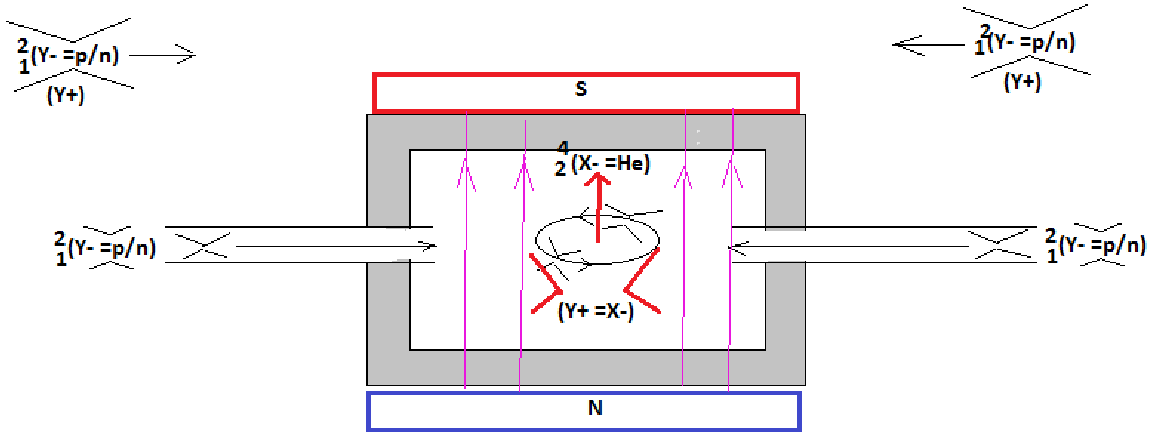
already without the antiproton. A low-energy antiproton “ejected” from such a structure structures the next and next quanta of deuterium plasma, thus forming a series of controlled thermonuclear reactions.

$$^2_1H + p^- + {}^2_1H \rightarrow {}^4_2He + p^-$$

Today, a controlled thermonuclear reaction is created in plasma: $(^2_1H + {}^3_1H \rightarrow {}^4_2He + {}^1_0n + 17{,}6MeV)$. They are different cores. In the space-matter $(Y-= X+)$ it is $(^2_1H + {}^3_1H)$ similar to the connection of mass trajectories of the "positron" $(Y-= p^+/n = e^{**+})$ or $(Y-= e^+)$ and "proton" $(X+= {}^3_1H = p^{***+})$ or $(X+= p^+)$. A proton with a positron, with mutually perpendicular $(Y-)\perp(X-)$ trajectories, is hydrogen, in which everything goes to break the structure, in this case, in the plasma. And only during impacts in high-temperature plasma in the fields $(X+= p^+)$ of Strong Interaction, fields of vortex mass trajectories $(Y-= p^+/n)(Y-= p^+/n) = (X\pm= {}^4_2He)$, already a new core, as a stable structure.

More effective conditions for a controlled thermonuclear reaction appear to be counter flows of deuterium plasma with perpendicular injection of antiproton beams at the point of intersection of plasma flows. The flow of deuterium plasma itself turns out to be a controlled flow of ions, a more stable state of the plasma. Or inelastic collisions of low-energy deuterium beams, in a chamber with perpendicular lines of force of a strong magnetic field, without primary plasma. This will be already controlled “cold fusion” of helium.

модель управляемого "холодного синтеза" гелия из ядер дейтерия.



The resulting alpha particles heat the water jacket of an already controlled thermonuclear reactor. The energy yield of such structured plasma synthesis is calculated according to the standard scheme.

$$\Delta m(2[^2_1H]) = 2[(1{,}00866 + 1{,}00728) - (m_{core} = 2{,}01355)] = 0{,}00478 \text{ aem}$$

$$\Delta m([^4_2He]) = [(2 * 1{,}00866 + 2 * 1{,}00728) - (m_{core} = 4{,}0026)] = 0{,}02928 \text{ aem.}$$

$$\Delta E = \Delta m([^4_2He]) - \Delta m(2[^2_1H]) = (0{,}02928 - 0{,}00478) = (0{,}0245) * 931{,}5MeV = 22{,}82MeV$$

2 grams (one mole) of such deuterium plasma is equivalent to 25 tons of gasoline.

Plasma is not needed for tritium thermonuclear reactions. Enough inelastic collisions of high-energy protons at a ready-made collider, with tritium nuclei $^3_1H + p^+ \rightarrow {}^4_2He$.

Theoretically, tritium without a plasma state ignites in a thermonuclear reaction due to inelastic collisions of high-energy collider protons. And already this thermonuclear reaction heats up much larger external volumes of deuterium plasma along a circular trajectory of charged deuterium ions with a further procedure for structuring counter streams of deuterium plasma with vertical streams of antiproton beams.

The second method of thermonuclear reactions without primary plasma is carried out on colliding beams of the nucleus (^2_1H) of low-energy deuterium, in inelastic collisions: $(^2_1H) + (^2_1H) = (^4_2He)$. In accordance with the equations of dynamics: $(v_Y * rot_X 2M(Y- = p^+/n) = \varepsilon_2 * \frac{\partial G(X+={}^4_2He)}{\partial T})$, there must be thermonuclear fusion helium nuclei. In all cases, trial experiments are needed on the finished collider.

All the heat of the heated plasma, and this is either deuterium (^2_1H) with helium (^4_2He), or tritium (^3_1H) with helium (^4_2He), in in both cases, it is discharged into the "water jacket", with the reuse of plasma products with the removal of helium. Such a "water jacket" can be arranged together with magnets in the circuits. These plasma products are safe, environmentally friendly, and do not require any cleaning.

It is possible to use low energy antiprotons hadrons' collider, for a trial experiment, followed by the creation of controlled nuclear reactor. There are still no calculations of the primary density of deuterium plasma and antiprotons of opposite charges, which form the primary structure in the plasma. And so far there are no calculations of the necessary density of the deuterium plasma itself, which contributes to the formation of closed mass trajectories of the quanta of the Strong Interaction in the field of the Strong interaction of the antiproton, already as a helium nucleus.

Summary.

The reasons, conditions and inevitable consequences in the creation of a controlled thermonuclear reaction are indicated here. And here only a qualitative analysis of such necessary conditions is given.

8.Quantum Entanglement

Content

There are many interpretations of the passage of a photon and an electron, as quanta, through two slits. In one case, a diffraction pattern is observed on the screen. In another case, when recording the passage of quanta through a slit, there are two spots on the screen opposite each slit. There are also facts of the birth of entangled particles with amazing properties, on the basis of which the most incredible properties and prospects are built.

There are the indicated facts, there is a mathematical description of them, but there are no answers to the questions: WHY is this so? We will present these experimental facts, with answers to the questions WHY, within the framework of the axioms of dynamic space-matter.

8.1.Double-slit quantum passage

Let us consider the experiment of a quantum passing through two slits.$\text{НОЛ}(Y\pm=e)$ electron , similar to the quantum $\text{НОЛ}(Y\pm=\gamma)$of a photon. We descend from the properties, the quantum of dynamic space-matter. Recall that we are talking about space-matter within the dynamic angle of parallelism of straight lines. Moving along the beam, AC, we do not see dynamic space inside the dynamic angle of parallelism OX. We are talking about another technology of the theories themselves. Euclidean space in the axes XYZ no longer works.

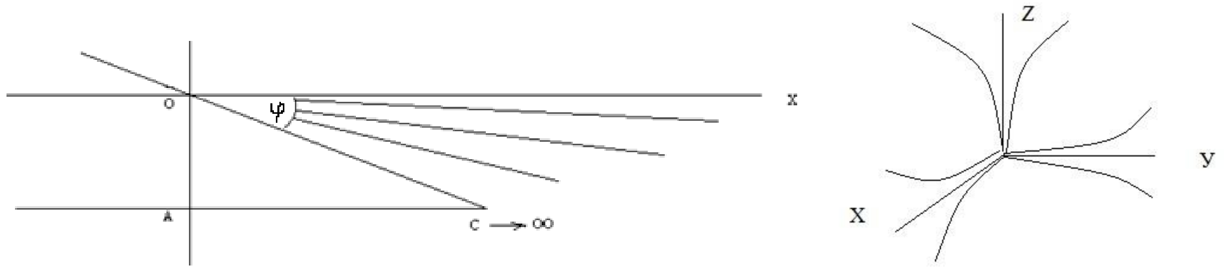


Fig.1 dynamic space of a bundle of parallel straight lines

We have already considered the properties of such space-matter. Space-time is a special case of a fixed or zero angle of parallelism. Then: $(Y\pm=\mathrm{e}^-)=(\boldsymbol{X}+=\nu_e^-)(Y-=\gamma^+)(\boldsymbol{X}+=\nu_e^-)$**,** for an electron we will obtain a model of such a quantum, with a virtual photon $(\gamma)$and with certain parameters. Exactly the same model of a photon $(Y\pm=\gamma^+)=(\boldsymbol{X}+=\nu_2^+)(Y-=\gamma_2^-)(\boldsymbol{X}+=\nu_2^+)$in a physical vacuum.

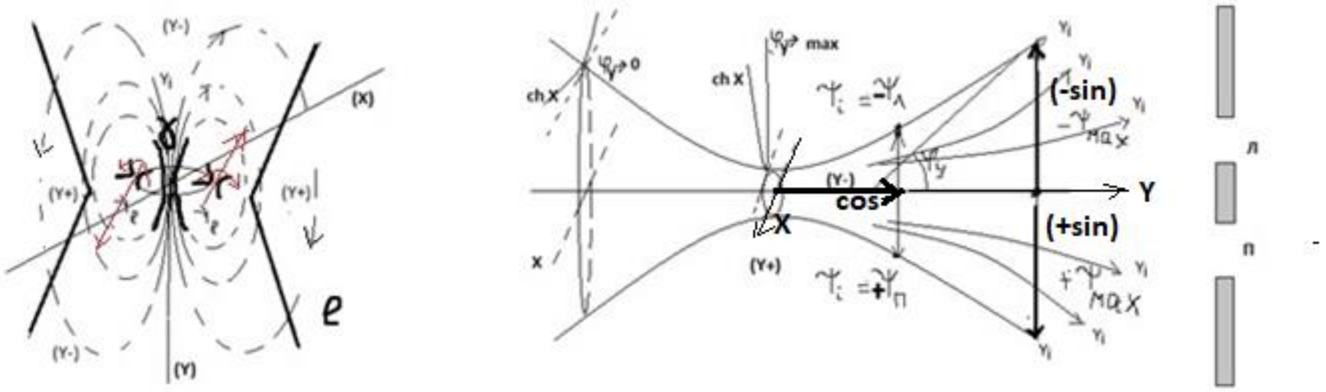


Fig.2 model of an electron (photon) quantum

Here: $(Y-)$a field of parallels, with a limit $cos\ \varphi_{\mathrm{Y}\ max}=\frac{\mathrm{w_e}}{\mathrm{c}}=\frac{1}{137.036}=\alpha$, an angle of parallelism, and in each fixed wave function (ψ_i), the $(-\psi_{л})$"left" or $(+\psi_{п})$"right" wave function is determined, with respect to the motion to the left and right slits. When fixing $(-\psi_{л})$the "left" wave function, we speak of its collapse, and at the same time we know exactly the state of $(+\psi_{п})$the "right" wave function without fixing it. For (±ψ) wave ($\psi=YY_0$) function, $i\psi=\sqrt{(+\psi)(-\psi)}$we obtain $i\psi e^{ax}e^{i\omega t}=i\psi e^{ax+i\omega t}$, the Dirac equation function and its $\{e^{a(x)}\equiv \mathrm{ch}\left(\frac{\mathrm{X}}{\mathrm{Y_0}}\right)\}$, parameters with constant extremals $(a'(x)=0)$of the dynamic function $(a(x)\neq const)$, without scalar bosons of gauge fields. The ratio of the $(p=\frac{\pi\psi_i^2}{\pi\psi_{\max}^2})$cross-sectional areas $(Y-)$of the electron (or photon) trajectory is the probability of the quantum state at a fixed point, during the collapse of $(\psi_i)$the wave function. In essence, we are talking about the probability of finding the area of a circle: $(s=\pi\psi_i^2)$, with the limiting angle of parallelism, $cos\ \varphi_{\mathrm{Y}\ max}=\frac{1}{137.036}=\alpha$, in the admissible maximum section $(s=\pi\psi_{\max}^2)$of the trajectory $(Y-)$. In the dynamic section $(Y-)$of the trajectory, that is, in the plane of the circle of dynamic radius $(\psi_{max}\to\psi_0\to\psi_{max})=(\mathrm{K}_Y)$in quantum relativistic dynamics of dynamic $(\frac{\partial a(X)}{\partial x_\mu}\equiv f'(x)=0)$functions $a(X)\neq const$, the wave function $i\psi e^{i\omega t}\equiv i(cos\ \omega t+i\ sin\ \omega t)$also performs rotations. In this case: $(i\ sin\ \omega t)=\sqrt{(+\ sin\ \omega t)\ (-\ sin\ \omega t)}$). We speak of spin in quantum relativistic dynamics. And in the dynamics$(\psi_{max}\to\psi_0\to\psi_{max})$ wave function, we speak about the dynamics of the angle of parallelism $(cos\ \varphi_{\mathrm{Y}\ max})$on $(Y-)$the trajectory of $(Y\pm=\mathrm{e}^-)$an electron or photon quantum, as a probability cloud on its wavelength. At near-zero angles of parallelism, in quantum relativistic dynamics, the electric field $cos\ (\varphi_{\mathrm{Y}}\ \to 0)\to 1$of the electron on its mass trajectory $(Y-=e)$disappears $(Y+=e)$. In this case, the quantum of space-matter $i\psi e^{ax}e^{i\omega t}=i\psi e^{ax+i\omega t}$, in the form: $e^{ax}\equiv ch\frac{X}{Y_0}$, and $e^{i\omega t}\equiv cos\ (\varphi_{\mathrm{Y}})$, the Indivisible Region of Localization of the probability cloud, remains unchanged in the quantum

$НОЛ = \left(ch\frac{X}{Y_0\uparrow} \to 1\right)(cos\ (\varphi_Y \to 0) \to 1)$, relativistic dynamics. And in such, near zero $(Y+) \to 0$, in a charged state, the electron can pass through any potential barriers. In Euclidean axiomatics, with a zero $(cos\ (\varphi_Y = 0) = 1)$ angle of parallelism, $(Y+)$there is no dynamics of such charge fields and such a representation is impossible.

Now, in such Criteria of Evolution of the $(Y\pm = e)$electron quantum, we will consider its properties when passing one or two slits. Note that the wave function characterizes the dynamics of all parameters, including energy and momentum. And it gives the probability of manifestation of certain (with the uncertainty principle) Evolution Criteria. So, the wave function of the electron, from the Dirac equation goes first to one slit. It (ψ_i) collapses in any criteria and then goes as$i\psi = \sqrt{((-\psi_л)(+\psi_п)}$ particle-wave, in a "paired" state of "entangled" $(-\psi_л)(+\psi_п)$wave functions. Further quantum$(Y\pm)$ electron (photon) hits the screen along the projection axis of the slit, at the width of the maximum wave function, with probability $\left(p = \frac{\pi\psi_i^2}{\pi\psi_{max}^2} \neq 0\right)$. Now $(Y\pm = e)$a quantum, for example, of an electron, approaches two slits with its "left" $(-\psi_л)$and "right" $(+\psi_п)$parts $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$, in any $(\psi_0 \to \psi_i \to \psi_{max})$ state, with probability $(p = \frac{\pi\psi_i^2}{\pi\psi_{max}^2} \neq 0)$. The question is, in which slit and how will the electron pass, on $(Y- = e)$the trajectory. The trajectory $(Y- = e)$of the electron (as well as the photon) itself has uncertainty in space within $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$the wave function, which is in superposition $(-\psi_л)(+\psi_п)$of the left and right parts in the direction of the quantum's motion on the trajectory $(Y-)$in front of the left and right slits. At the same time, there is no straight Euclidean $(\varphi = 0)$line on $(Y-)$the trajectory and this is the decisive factor. There is any other (Y_l)line with a non-zero $(\varphi \neq 0)$angle of parallelism, within $(Y-)$the trajectory. Therefore, the electron (photon) will always pass either into the left or into the right slit, with the collapse of $(\psi_i)$the wave function. If there is a collapse of the "left" $(-\psi_л)$wave function, the electron (photon) quantum $(Y\pm)$goes into the left slit, and the electron goes into the right slit, with the collapse of the "right" $(+\psi_п)$wave function. There is no division $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$ wave function, an indivisible and stable quantum of an electron (photon). In both cases, the left and right slits will pass $(\psi_i)$the wave function in the form of a probability wave, with a deviation of one or another $(\varphi \neq 0)$angle of parallelism, forming a point on the screen. A set of points on the screen gives a graph of the probability density distribution. The angle of parallelism $(\varphi \neq 0)$corresponds to the probability of $(\psi_i)$the wave function. Different (φ_i)angles of parallelism are different probabilities $(\psi_i)$of the wave function. And in both cases, a wave with the effect of interference of mechanical waves will emerge from each slit. And this is not a physical wave with oscillations of fields. This is a mathematical wave of collapse of the wave function. In fact, the interference effect here is caused not by the addition of the extremals of the wave crest, as in the case of water, but by the angle of parallelism of $(\varphi \neq 0)$the quantum $(Y-)$trajectory, which in turn determines the probability of $(\psi_i)$the wave function. There are no superpositions of the maxima or minima of the wave itself, similar to the superposition of the crests of waves on water. There are hits on the screen point of single quanta with one or another probability during the collapse of $(\psi_i)$the wave function. A multitude of electrons (photons) pass a slit with different (ψ_i)wave functions along the wavelength of a quantum of space-matter. And on the screen, this is the interference of probability waves, as a collapse (fixation) $(\psi_i)$of the wave function. In this case, the probability of getting to the central axis of the screen from the left and right slits is as if doubled, when passing through the left or right slit of the wave function in an entangled state $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$. At the maximum probability $(\psi_{max})$of the wave function, if the left $(-\psi_л)$part takes $(Y-)$the trajectory of the indivisible energy, the quantum momentum to the left slit, then the right part $(+\psi_п)$, of the same energy, momentum, appears on the central axis of the screen, and vice versa with the right part, in the right slit. Here we answer not the question HOW, in mathematical models, but the question WHY, that is, what is the physical meaning, content, cause and effect. Therefore, the central axis is always brighter than the left or right part of the whole picture, with the effect of interference of the "probability wave". The displacement $(Y-)$of the trajectories to the left or right of the central axis on the screen is determined by the angle of parallelism $(\varphi \neq 0)$of the quantum $(Y-)$trajectory, the collapse of only the "left" $(-\psi_л)$or only the "right" $(+\psi_п)$wave function, in the "entangled" $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$, (simultaneous) their state.

If we record the passage of a quantum of space-matter, $(Y\pm = e^-)$an electron or a real (not virtual) $(Y\pm = \gamma)$photon of a light beam, in the left or right slit, a collapse (fixation) of the indivisible energy, momentum, the entire $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$wave function occurs. That is, the electron (photon) is already defined as an indivisible particle, with a subsequent trajectory already as a particle. The subtleties of the issue are that the wave function is fixed (in collapse) simultaneously by both $(-\psi_л)$its left $i\psi = \sqrt{(-\psi_л)(+\psi_п)}$and right $(+\psi_п)$parts. In this case, $(Y-)$the trajectory is built along the axis of the corresponding slit, and then the quantum of space-matter gets to the screen as a left or right point on the screen. There are no other options here, and this does not contradict the symmetries of interactions, as arguments. The most interesting thing is that after fixation in the left or right slit with the subsequent movement of particles to the left or right point on the screen, the electron or photon retains its

$i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$wave function as a probability wave of subsequent interactions. And it is not about whether we looked at the particle or not. If "Schrödinger's cat is dead, then it is dead", no options. Such properties do not depend on whether we "look" at the situation or not, and do not depend on the consciousness of the observer. This is a property of the quantum of space-matter itself, and with a certain probability of "entangled" states $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$ wave function. The recorded data that this is a particle recorded in a slit, or a wave on a screen, are saved or erased. That is, the conditions of the collapse of the wave function change, but the unchangeable properties of the wave function itself remain, as "probability clouds" of its properties. We are talking about the unchangeable and indestructible properties of the quantum of space-matter itself. They cannot be "erased", and if some properties are recorded, others do not disappear. Matter cannot disappear. And here the given analogies are impossible, such as: properties or a phenomenon "exists only when we look", or "virtual reality" and other unfounded fantasies. The properties of a quantum of space-matter always exist. This is matter, and it does not disappear. The question of where, when, how, and with what probability are other questions.

8.2. Quantum entanglement

Wave function $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$in an entangled state, or $i\psi e^{ax+i\omega t}$in the Dirac equation

$$\left[i\gamma_{\mu}\frac{\partial\overline{\psi}(X)}{\partial x_{\mu}} - m\overline{\psi}(X)\right] + i\gamma_{\mu}\frac{\partial a(X)}{\partial x_{\mu}}\overline{\psi}(X) = 0$$

satisfies the wave function $(-\psi_{л} = e^{-})$of the electron and $(+\psi_{п} = e^{+})$positron simultaneously, in the "Dirac sea" $\psi = Ae^{i\omega t} = Ae^{-\frac{i}{\hbar}(Wt+pr)}$. And Dirac was sure of the existence of the positron, as his equation says. Moreover, if the wave function $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$describes the proton, then the antiproton also exists, and so on. Moreover, in the "Dirac sea", the electron-positron pair exists, or is born, as they say today, in an "entangled", simultaneous state. It is important to understand here that entangled particles are born in one quantum field, according to the conditions of admissible symmetries.

A) hidden parameters.

We will talk about the properties of the electron and proton as indivisible quanta of space-matter in their models. Electron: $(Y\pm = e^{-}) = (\boldsymbol{X}\pm = \nu_e^{-})(Y\mp = \gamma^{+})(\boldsymbol{X}\pm = \nu_e^{-})$, and proton:$(X\pm = p^{+}) = (\boldsymbol{Y}\pm = \gamma_0^{+})(\boldsymbol{X}\mp = \nu_e^{-})(\boldsymbol{Y}\pm = \gamma_0^{+})$ and photon $(Y\pm = \gamma^{+}) = (\boldsymbol{X}+ = \nu_2^{+})(Y- = \gamma_2^{-})(\boldsymbol{X}+ = \nu_2^{+})$. Their wave functions are 2 $(\boldsymbol{X}\pm = \nu_e^{-})$neutrinos for the electron and 2 $(\boldsymbol{Y}\pm = \gamma_0^{+})$" dark photons" for the proton, rotating $rot_Y G(X+ = \nu_e^{-})$around $rot_X E(Y+ = \gamma_0^{+})$the axis $(Y-)$and$(X-)$ trajectories of the quantum, respectively. This is like the spin of the entire quantum of an electron or proton in this case. The important thing is that two quanta 2$(\boldsymbol{X}\pm = \nu_e^{-})$ neutrino for an electron or 2 $(\boldsymbol{Y}\pm = \gamma_0^{+})$" dark photons" for a proton, these are the "two sides" $(-\psi_{л})(+\psi_{п})$of the "entangled" wave functions, in the form of $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$the full wave function of an electron or proton. Each of the entangled wave functions $(-\psi_{л})(+\psi_{п})$has its own probability of manifesting properties on$(Y-)$ or $(X-)$ trajectories of the quantum, respectively, as if with opposite spins relative to the Euclidean line, as the trajectory of the quantum. This also applies$(Y\pm = e^{-})$ electron, and $(Y\pm = \gamma^{+})$ photon. In the circle of the cross-section $i\psi(e^{i\omega t} \equiv \cos i\omega t + i\sin i\omega t)$of these trajectories, in Bell's experiments, manifestations of the properties of the general $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$wave function of an electron or proton are recorded or not. And these properties are recorded with the probability of "entangled" $(-\psi_{л})(+\psi_{п})$wave functions. And this probability will be different at different angles of rotation of the sensors in the experiment. These are like "hidden parameters" about which we know nothing in advance. These are entangled wave functions. We cannot say that at the point of fixation, or collapse of entangled wave functions, the quantum of $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$the Dirac equation will come $(-\psi_{л}))$or $(+\psi_{п})$the wave function, in a previously known state. We do not know this, and cannot know in principle. These parameters are hidden, but not because they do not exist. They are always there (Einstein is right, "The Moon is always there"). These are the properties of the quantum of space-matter. They do not disappear. But we cannot say for sure that these parameters are predetermined at the moment of collapse of the general $(i\psi)$wave function. And we know nothing for sure, the position $(-\psi_{л})$or $(+\psi_{п})$in space-time, on$(Y-)$ or $(X-)$ trajectories of a quantum, electron and proton respectively, in this case. It could also be any other quantum of space-matter, with $i\psi = \sqrt{(-\psi_{л})(+\psi_{п})}$a wave function $\psi = Ae^{i\omega t} = Ae^{-\frac{i}{\hbar}(Wt+pr)}$.

B) entangled particles.

Much has been said and written about HOW it “works”. We will answer the question WHY it “works” this way. We talked about “entangled” $(-\psi_{л})(+\psi_{п})$wave functions. If we say that each of them corresponds to a particle, then we are talking about entangled particles. And here there are key conditions for the birth and evolution of entangled particles. The first condition is that entangled particles are born in one, single quantum field. The second is the criteria for their dynamics, which are opposite in admissible symmetries. This is the main thing. Let us consider, for example, an analogue of the quantum (X−) field of a proton, with entangled (Y±) dark photons or electrons in a single (X− = Y+) space-matter. For example, we will talk about two (Y±) quanta born in one (X−)quantum field at points 1 and 2, in a sphere.

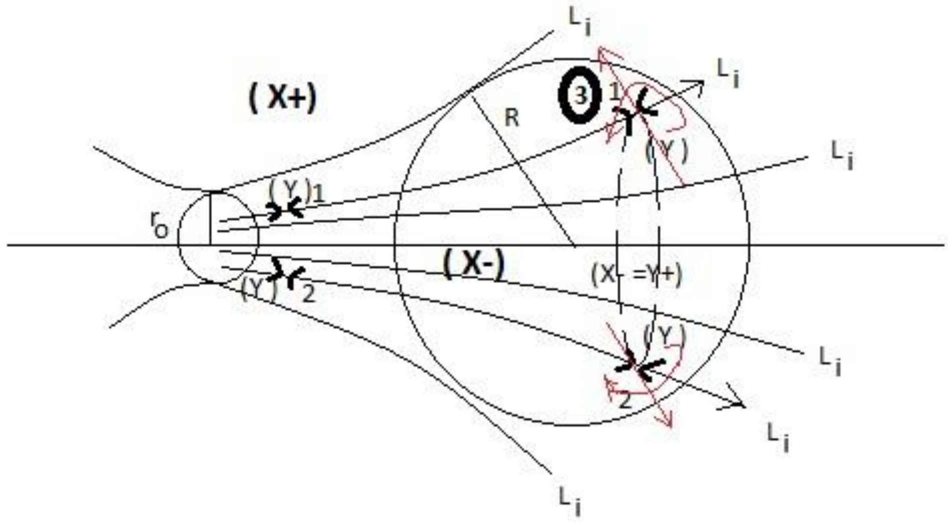


Fig. 3. Model of entangled particles.

Let (Y±) the quanta of space-matter be born in one quantum (X−)field with Euclidean isotropy of parallel (L_i)straight lines in the sphere of $(r_0 \leftrightarrow R)$non-stationary Euclidean space-matter, with a dynamic $(\varphi \neq const)$ angle of parallelism. These (Y±) quanta, in (X−)the field, for example, of a photon or an electron in this case, are born in some admissible symmetry of the general state. Knowing the state (for example, the spin) of one quantum, knowing their admissible symmetry, we know exactly and speak about the state of another quantum. They say that when one $(-\psi_1)$wave function collapses, "information is instantly transmitted" to another entangled quantum, which learns that it needs to collapse into the state of $(+\psi_2)$the wave function, both in the modulus of probability and "in the direction" in the admissible symmetry. Moreover, it “recognizes” instantly at “monstrous $(R \to \infty)$ distances” in a dynamic sphere with Euclidean isotropy. This is what is observed and recorded in experiments. The key point is that entangled particles do not transmit any information to each other. This is embedded in their properties, whether we see or record them in space-time or not. It must be said that in Euclidean space we do not see anything from the properties of dynamic space-matter, except for the “probability cloud”.

And here we answer the question WHY it “works” like this. The classical scheme says that if we, with a certain particle (3), influence a particle (1), which changes its properties, then “this information is instantly transmitted” to the entangled particle (2), which synchronously, that is, instantly, also changes its properties to the opposite. Let’s say right away that these are facts of reality and properties of dynamic space-matter. They exist. Moreover, if each entangled particle has its own trajectory (L_i), then there will be many such entangled particles in the quantum (X−)field. But there is no transfer of information between entangled particles. This really works if particle (3) changes the properties of particle (1) by changing the general and unified (X−)field in which entangled particles (1) and (2) are born, then the properties of particle (2) change to the opposite (in symmetries). Roughly speaking, it is as if we pull a tablecloth on a table with some object (3), moving a cup (1) towards us, let's say: we change the state of cup (1). In this case, cup (2) on the same table will also change its state. Cup (1) does not transfer any information to cup (2), and there is no effect of object (3) on cup (2). In other words, by influencing particle (3) through a quantum (X−)field on particle (1), changing its properties, for example, changing its potential (acceleration on a length). Then the quantum (X−)field itself changes the properties of particle (2). It is impossible to change the properties of a quantum (X−)field, only in the location of the particle (1). This is a quantum field, it is not divided. In the axioms of dynamic space-matter, we talk about the Indivisible Region of Localization of a quantum of space-matter. This is a non-local change of properties for particles (1) and (2), by means of the entire (X−)field. That is WHY "it works this way". Any interpretations in the "Euclidean" space-time about teleportations, transmission of superluminal information, contacts, and so on, to put it mildly, are incorrect and have no arguments. We considered the properties of the space-matter of the Universe. We considered the properties of a multi-level physical vacuum, and according to the formulas of Einstein's theory and quantum relativistic dynamics (it is fashionable to talk about the quantum theory of relativity), so in these theories superluminal speeds are allowed in a multi-level physical vacuum. And these are the realities that we do not yet see. But there are consistent theories, and there are calculation formulas.

8.3 Quantum computing

Let us consider what can be done with entangled particles at the speed of light transmission of information or influence. What conditions are needed to create such entangled particles and influence entangled particles. These are codes, ciphers, quantum computers, how it works and how realistic it all is. As already noted, entangled particles must be born in one quantum of space-matter. In addition to stable photons, electrons, protons, the nucleus of a stable atom, like the atom itself, are also quanta of space-matter. The second point is the background of the state and influence on entangled particles. For example, orbital electrons of identical atoms, on identical orbits, have identical energy levels. This is a set of wave functions. By irradiating a group of atoms with coherent photons (laser) and achieving some emergent properties of one orbital electron, we know exactly the states of the entire set of wave functions of orbital electrons of the entire group of atoms. Such a state of orbital electrons of a group of atoms can be programmed by the energy of laser irradiation. We can do this in this or that space, now or later in time. Many other groups of atoms, these are many other programs of their irradiation. We can record with a laser and remove such emergent properties as information, and we are already talking about quantum computers, in physically permissible properties.

Topic artificial intelligence of a quantum computer is very interesting. The key point is a quantum state with the uncertainty principle (wave function) $\psi = Ae^{i\omega t} = Ae^{-\frac{i}{\hbar}(Wt+pr)}$ and an entangled state, as properties of a quantum field. In addition to the physical principles of creating entangled probabilities of quantum states in a set of initial parameters, with the choice of the correct solution for the input information, we also need a mathematical formalism of such dynamics ("thinking"), giving a clear and unambiguous result in a macrosystem. The idea is that such a wave function should be "grown" in a set of wave functions of a set of initial parameters. This can be done by creating a wave function always less than one, as the ratio of the permissible range of energy distributed in any algorithms to the maximum, introducing them, for example, as the coefficients of the "basis vectors" of the state matrix. We kind of form “consciousness” (being close to Knowledge). You can choose anything for the basic multidimensional "unit vectors". For example, a set of currencies, a set of people. If we talk about physics or information of a quantum computer, then this is, say, the state of a set of entangled (in identical atoms, on identical orbits) orbital electrons (their wave functions) or "removable" of their acquired emergent properties, after the impact of information input by a laser. But the input wave function, as information, "resonates" with the "correct" element of such, for example, a set of matrix minors or other state calculation algorithms, even with a low probability. Although in a set of wave functions it is possible to choose the maximum (by energy) and work with such an extremum. In resonance, their ratio gives "1", which is translated into a conventional binary system as a control signal in a set of combinations of an ordinary computer's macrosystem, with a clear and unambiguous result. The energy distribution itself by the elements of the system state set is input by sensors or calculated by distribution algorithms or state conditions. Well, this is like an idea, which of course still needs to be worked out for specific cases.

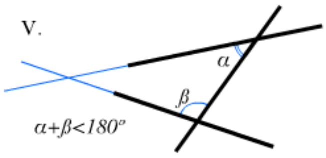
9.Ultra-high frequency gravitational waves

9.1 gravitational waves.

Einstein's equations describe fixed gravitational potentials at a given point in space-time, which correlates well with the fixation of the facts of gravity in experiment. But there is no answer why the gravitational potential arises. From the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter, the equations of quantum gravity directly follow. And already in the direction of the source of gravity, we are talking about quasi- potential quantum gravitational fields of acceleration of mass trajectories. Their superposition from many (quantum) protons in a massive sphere forms the general gravitational field of accelerations, of the massive sphere in this case. The attentive reader has already noticed the words gravitational field of acceleration and mass trajectories in these fields. It is by the mass trajectories of the detector elements that we determine gravitational fields.

This is what can be done, and is being done, within the framework of the Euclidean axiomatics of space-time.

1. “A point is something of which nothing is a part”) (“Principles” by Euclid) . and is a Point something that has no parts,
2. Line - length without width.
3. And the 5th postulate about parallel straight lines that do not intersect. If a straight line intersecting two straight lines forms interior one-sided angles less than two right angles, then, extended indefinitely, these two straight lines will meet on the side where the angles are less than two right angles.



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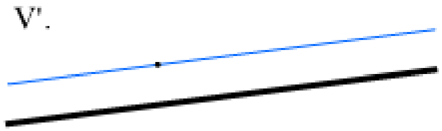


rice. 1 Euclidean axiomatics

That is, through a point outside a line, only one straight, parallel line can be drawn.

In the axioms of dynamic space-matter, we talk about a set of straight lines parallel to the original straight line within the always dynamic angle of parallelism.

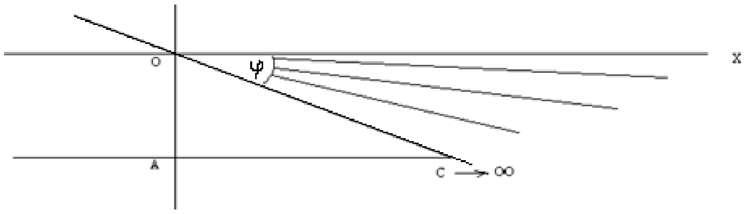


Fig.2 dynamic space of a bunch of parallel straight lines.

Parallel , which means isotropic, with the same properties in relation to the outside world (AC→ ∞). Within the dynamic angle of parallelism, we are talking about dynamic space as a form of matter, the main property of which is movement. There is no matter outside space and vice versa, there is no space without matter. From these facts = axioms, space-matter is one and the same . And a special case of a fixed state of dynamic space-matter is the space-time of all theories. The main property of dynamic space-matter is dynamic ($\varphi \neq const$) angle of parallelism. In this case, Euclidean space in the XYZ axes loses its meaning.

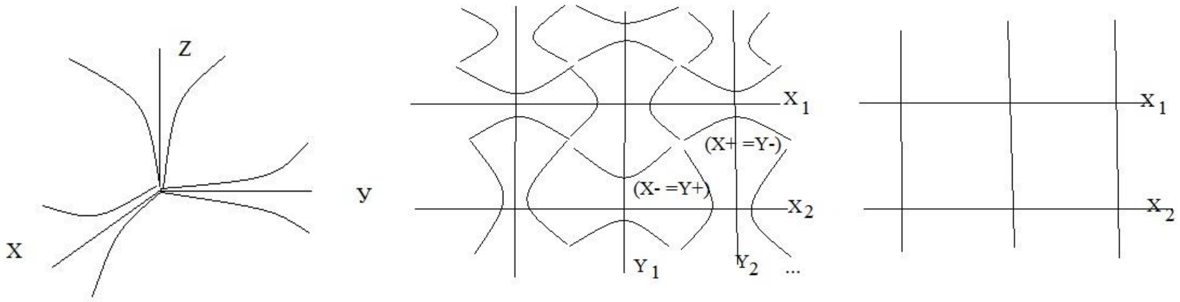


Fig.3 dynamic space-matter

Within the framework of the grid of Euclidean ($\varphi = 0$)axes, we do not see dynamic $(X+= Y-)$space $(X-= Y+)$-matter, and we will not be able to imagine it. Therefore, the axioms of dynamic space-matter are introduced as facts that do not require proof. The equations of Einstein's General Theory of Relativity describe fixed gravitational potentials. In quantum fields, such fixation is accompanied by one or another probability of manifestation of any Criteria for the Evolution of a quantum field, within the framework of the wave function of the quantum field. In classical ideas we talk about electro (Y + = X -) magnetic fields in Maxwell's equations, with corresponding electromagnetic waves, within the framework of space-time, a special case of space-matter. Within the framework of the axioms of dynamic space-matter, the equations of electric dynamics are derived in a single mathematical truth o (Y + = X -) magnetic and gravitational (X + = Y -) mass fields.

$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+)$	$c * rot_Y M(Y-) = rot_Y N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$
$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T};$	M(Y-) = $\mu_2 * N(Y-); rot_y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$

Therefore, based on the properties of dynamic space-matter, like the fixation of electromagnetic waves in the field of the Universe, we must talk about the fixation of gravitational mass waves, in any form, depending on their source. The fact that gravitational waves have already been recorded in experiments is, figuratively speaking, "waves on water" in space-matter. There are no properties of "water", and there are no properties of "water molecules". There is no answer to the question of why any classical or quantum gravitational fields arise. And by answering these questions, we can answer the questions of what we are looking for and how we will look.

Judging by the focus of the search for high-frequency gravitational waves on astrophysical objects as sources of such waves, we can talk about the dynamics of rapidly rotating objects, which is logical. Model such objects, their dynamics, calculate the properties of high-frequency gravitational waves, detector elements, and the principles of recording such waves. This is like a new source of information about the Universe. And it is doubly interesting to test this or that theory, with access to such realities. And this is like the moment of truth of this or that theory, say, how it works in dynamic space-matter.

The source of the gravitational field, in all cases, is its potential, that is, acceleration along the length. And the carrier of such gravitational potentials is energy-momentum in Einstein's equation. This interpretation allows for zero mass ($m^2c^4 = E^2 - p^2c^2$) at the center of the “Black Hole”, in the presence of its energy and momentum equivalent to the mass of the “Black Hole”, like the zero mass of a photon quantum. These are very confusing concepts of the Euclidean axiomatics of space-time, and they do not answer the question of why this is so. There is inertial mass, gravitational mass, mass of particles from vacuum energy, rest mass... multivariate mass. And the question of gravitational, and also high-frequency waves from such masses, is very uncertain.

Within the framework of dynamic space-matter, instead of the “Black Hole”, in which Einstein's theory simply does not work, we are talking about “Black Spheres”, into whose space-matter we cannot get. Such “Black Holes” attract and stretch masses, but do not absorb matter, even photons. Photons circle around such “Black Holes” without penetrating inside, just as a photon flying in the Universe does not penetrate deep into the physical vacuum, with non-zero energy.

If we are talking about ultra-high-frequency gravitational waves, without delving into “Black Holes” and into the nuclei of galaxies, into the “black spheres” wandering in galaxies, then we can check their presence in simple experiments on Earth . Within the framework of the properties of dynamic space-matter, it is possible to check the presence of quantum gravitational acceleration fields (Fig. 4).

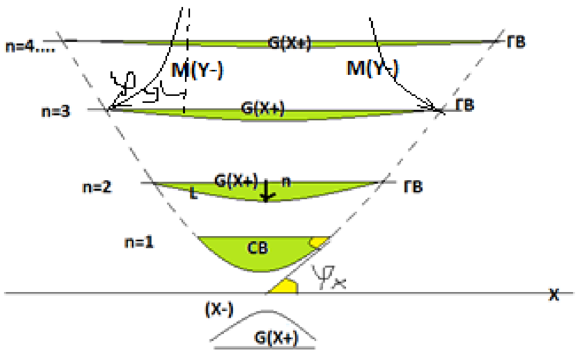


Fig. 4 . Quantum gravitational fields.

The essence of the experiment is to pass a photon through quasi -potential quantum gravitational fields of acceleration, for example $^{4}_{2}\propto$- particles, helium nuclei, or deuterium, or tritium simple nuclear structures. These are the levels of mass G (X + = Y -) trajectories of electronic (Y - = e^-) orbits of the atom . But these are precisely high-frequency (up to 10^{22} Hz) quantum gravitational fields, which correspond to the goals of the experiment.

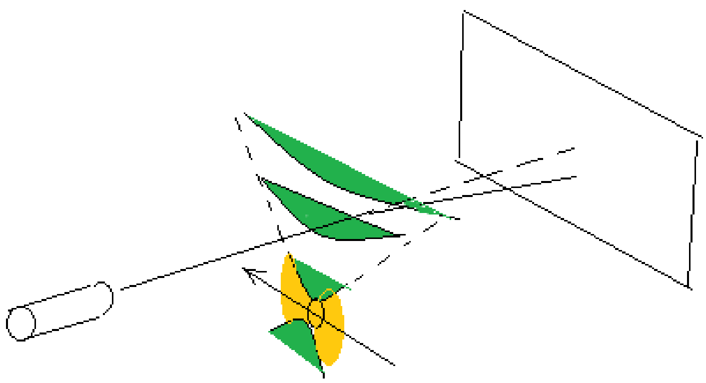


Fig. 4.1 Quantum gravitational fields.

By passing $^{4}_{2}\propto$particle nuclei through a beam of photons, on the screen we will see the curvature of photon trajectories around the nucleus, similar to the curvature of light rays around the Sun. But here we can take the characteristics of the curvature of the trajectories of individual photons, in the parameters of the quantum gravitational field.

10.Symmetry groups in quantum relativistic dynamics.

Chapters

1. Introduction.
2. General ideas.
3. Symmetries in classical and quantum relativistic dynamics.

10.1. Introduction

The transformations of relativistic dynamics in the Special Theory of Relativity and quantum relativistic dynamics (it's fashionable to say Quantum Theory of Relativity) are presented in "Unified Theory 2" in one mathematical truth. We are talking about dynamic space-matter, a special case of a zero or fixed angle of parallelism, there is the Euclidean axiomatics of space-time. The Special Theory of Relativity cannot describe space-time in quantum fields with their uncertainty principle. It is impossible to fix both the time and the coordinate at the same time. And there is no quantum relativistic dynamics in the gauge fields that follow from the Dirac equation. Relativistic dynamics is represented by the Lorentz group, and the Dirac equation invariance condition ($A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$) is represented by the condition ($\frac{\partial a(X)}{\partial x_\mu} \equiv f'(x) = 0$). But this is a constant extremal of a dynamic function $a(X) = f(x) \neq const$. In the Yang-Mills theory, the derivative of the scalar function is added to the potential, which does not change the potential itself, in the symmetry group:

$$A_\mu = \Omega(x)A_\mu(\Omega)^{-1}(x) + i\Omega(x)\partial_\mu(\Omega)^{-1}(x), \text{ where} \Omega(x) = e^{i\omega},$$

and ω- an element of any group A and (SU (N), SO (N), Sp (N), E_6, E_7, E_8, F_4, G_2), and $A_\mu \to A_\mu + \partial_\mu\omega$. In this case $U(1)$- describes the electromagnetic interaction, $SU(2)$- Weak Interactions and $SU(3)$- describes Strong Interactions, and so on. We will consider the conditions: $a(X) = f(x) \neq const$, and substantiation of symmetries in quantum relativistic dynamics (in the Quantum Theory of Relativity).

2. General representations.

Let's start the mathematical representation of symmetries with the simplest geometric figures. Regular figures on a plane retain their symmetry during rotations, inversions. For example:

2.1. the rectangle is symmetrical when rotated by 180 ^{0}, and when rotated by 0 ^{0} does not change.

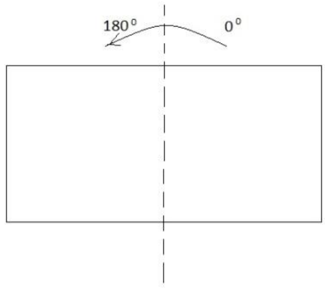


Figure 2.1.

We have two operations. Rotate 0 ^{0} as $R_0 = I$, and rotate 180 ^{0} as R_{180}. They can be multiplied by first $R_0 * R_{180}$turning by 0 ^{0}, then by 180 ^{0}, or vice versa: $R_{180} * R_0$, in the Cayley table.

C2	I	R_{180}
I	I	R_{180}
R_{180}	R_{180}	I

$R_0 * R_0 = R_0 = I$, $R_0 * R_{180} = R_{180}$. $R_{180} * R_0 = R_{180}$. $R_{180} * R_{180} = R_{360} = R_0 = I$

The operation $R_0 = I$, does not change anything, is called the identity element of the given group. The group is defined by properties.

1). A group operation is defined, here is a turn.

2). The presence of a single element, $R_0 = I$,

3). closedness, when an operation in a group gives an element that does not leave the group,

4). the presence of an inverse element $I^{-1} = I$, or $R_{180}^{-1} = R_{180}$. This is the element that undoes the previous operation of each group element.

5).associativity property: A(BC)=(AB)C. This group is called C2.

2.2. an example of an equilateral triangle, with rotations of 0^0, 120^0, and 240^0.

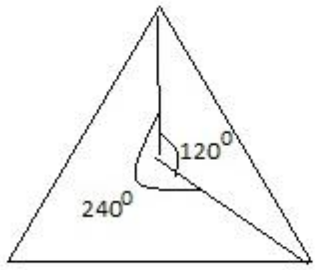


Figure 2.2

The multiplication table of a given group of rotations is compiled in exactly the same way.

C3	I	R_{120}	R_{240}
I	I	R_{120}	R_{240}
R_{120}	R_{120}	R_{240}	I
R_{240}	R_{240}	I	R_{120}

All possible elements of a group, when multiplied, give the elements of the same group. The group is closed. For each element there is an inverse element and also in the group. $R_{120}^{-1} = R_{240}$, $R_{240}^{-1} = R_{120}$.

Not only turns of figures give a group. The numbers (+1) and (-1) also form group .

	1	-1
1	1	-1
-1	-1	1

The group operation is multiplication. The identity element is 1. Inverse element: $-1^{-1} = -1$. All conditions for the group are met. This group is identical to the C 2 group . They are called isomorphic. There are also other isomorphic groups. For example, during the operation of reflection $\sigma$of the considered rectangle.

S2 _	I	σ
I	I	σ
σ	σ	I

If we reflect the rectangle twice around the axis, we get the original object, a group with all the properties. Such a group is called S 2 and is isomorphic to the group C 2 . Multiplying the coordinates of the vector (2,1) by (-1), leads to the reflection of the coordinates relative to the origin. Therefore, the group of numbers (1) and (-1) is also isomorphic.

2.3 Abelian and non-Abelian groups and subgroups. The considered groups of rotations C3 and reflections S 3

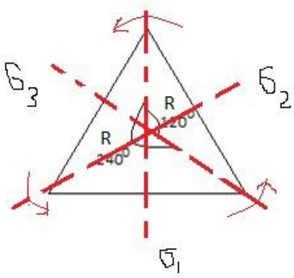


Figure 2.3.

Such rotations and reflections also do not change the triangle, and form a group. Let's write a table for it.

D3	I	R_{120}	R_{240}	σ_1	σ_2	σ_3
I	I	R_{120}	R_{240}	σ_1	σ_2	σ_3
R_{120}	R_{120}	R_{240}	I	σ_2	σ_3	σ_1
R_{240}	R_{240}	I	R_{120}	σ_3	σ_1	σ_2
σ_1	σ_1	σ_3	σ_2	I	R_{240}	R_{120}
σ_2	σ_2	σ_1	σ_3	R_{120}	I	R_{240}
σ_3	σ_3	σ_2	σ_1	R_{240}	R_{120}	I

Group C3 has subgroups D 3. Turn on $R_{120}$with reflection $\sigma_1$equals reflection σ_2. But if we first reflect $\sigma_2$and then rotate R_{120}, we get a reflection σ_3. That is: $R_{120} * \sigma_1 \neq \sigma_1 * R_{120}$. But the law of commutativity is not a property of the group, and it does not have to be observed. The group D 3 is not abelian, the subgroup C3 is abelian. But if we choose the specified triangle, its symmetry under reflections is already broken.

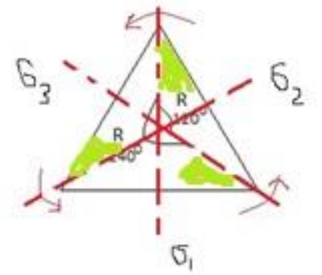


Figure 2.4

Such symmetry breaking is called spontaneous.

2.4 Representation of groups. As stated, the group operation can be any action, multiplication, rotation, inversion, whatever. Group elements can also be any abstract objects that can be replaced in isomorphic groups by prime numbers (1) and (-1) if the group is commutative. But there are also mathematical objects for which the commutativity of multiplication is not observed, for example, matrices . In other words, matrices can also be abstract elements of groups. In the considered D 3 matrix, the elements of the group can be represented by matrices, in the form:

$$I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \qquad R_{120} = \frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix}. R_{240} = \frac{1}{2}\begin{pmatrix} -1 & \sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix}.$$

$$\sigma_1 = \frac{1}{2}\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}, \ \sigma_2 = \frac{1}{2}\begin{pmatrix} 1 & \sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix}, \ \sigma_3 = \frac{1}{2}\begin{pmatrix} 1 & -\sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix}.$$

Now the operation of the group D 3 is matrix multiplication. In this case, the structure of the group is preserved:

$R_{120} * R_{120} = R_{240}$, or $\frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} * \frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} = \frac{1}{2}\begin{pmatrix} -1 & \sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix}$, or

$R_{120} * \sigma_1 = \sigma_3$, as: $\frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} * \frac{1}{2}\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} = \frac{1}{2}\begin{pmatrix} 1 & -\sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix}$

$\sigma_1 * R_{120} = \sigma_2$, in the form: $\frac{1}{2}\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix} * \frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} = \frac{1}{2}\begin{pmatrix} 1 & \sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix}$.

Rotation matrices do not commute with reflection matrices along the specified axes. But the rotation matrices commute with each other. The product $R_{120} * R_{240} = I$, or $\frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} * \frac{1}{2}\begin{pmatrix} -1 & \sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = I$, gives

The single element of the group. All matrices are invertible. $R_{120}^{-1} = R_{240}$, $\frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix}^{-1} = \frac{1}{2}\begin{pmatrix} -1 & \sqrt{3} \\ -\sqrt{3} & -1 \end{pmatrix}$. The inverse element of the matrix group is represented by the inverse matrix: ${\sigma_1}^{-1} = \sigma_1$, or $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}^{-1} = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$.

The analysis of the abstract operations of a group can thus be replaced by the study of the properties of matrices. But matrices can also be considered as operators acting on vectors. For example, when rotating a vector $\begin{pmatrix} 0 \\ 1 \end{pmatrix}byR_{120}$, we get:$\frac{1}{2}\begin{pmatrix} -1 & -\sqrt{3} \\ \sqrt{3} & -1 \end{pmatrix} * \begin{pmatrix} 0 \\ 1 \end{pmatrix} = \begin{pmatrix} -\sqrt{3}/2 \\ -1/2 \end{pmatrix}$ rotated vector, or:

$\begin{pmatrix}0\\1\end{pmatrix}$on R_{240}, we get $\frac{1}{2}\begin{pmatrix}-1 & \sqrt{3}\\-\sqrt{3} & -1\end{pmatrix} * \begin{pmatrix}0\\1\end{pmatrix} = \begin{pmatrix}\sqrt{3}/2\\-1/2\end{pmatrix}$.

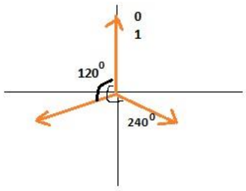


Figure 2.5

Multiplying the remaining matrices by any of these three vectors will translate the vector into one of these three. We get the same symmetrical triangle. That is, matrices are representations of operations.

2.5. In group theory there are many theorems: discrete groups, normal subgroups, classes, factor - groups ... . Let us consider the groups A and, in physical theories. In the previous group, for example D 3, we considered the symmetries of a triangle under rotations and reflections. Similarly, one can consider the symmetries of a square in the group D4 for 4 turns, in a regular pentagon D 5 for 5 turns, a hexagon D 6 for 6 turns ... . A regular (N → ∞) square turns into a circle, with the radius rotated by the angle (α). The circle is invariant under rotations through any angle (α). But here there are no elements of the groups considered earlier (R) and (σ).

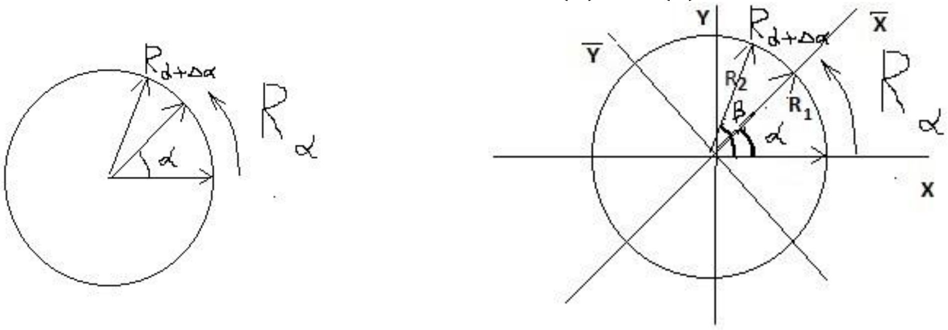


Figure 2.6

In such a symmetry group of a circle, a group parameter is introduced, by the angle of rotation R_α. In this group, we obtain a continuous transition from one element of the group (R_α)to another ($R_{\alpha+\Delta\alpha}$). These are the groups L and. Here there is ($R_0 = I$)an identity element, the inverse element of the group ($R_\alpha^{-1} = R_{2\pi-\alpha}$). The elements of the group are also represented by matrices. If we consider rotations of the coordinate system $XY \to \bar{X}\bar{Y}$, we obtain for

$$R_1(R_{X1}R_{Y1})\text{and } R_2(R_{X2}R_{Y2}): \quad R_1 * R_2 = |R_1||R_2|\cos(\beta-\alpha) = (R_{X1}R_{X2} + R_{Y1}R_{Y2}),$$
$$|R_1||R_2|\cos(\beta-\alpha) = |R_1|\cos(\alpha)\,|R_2|\cos(\beta) + |R_1|sin(\alpha)|R_2|sin(\beta),$$
$$\cos(\beta-\alpha) = \cos(\alpha)\cos(\beta) + sin(\alpha)sin(\beta),$$
$$\cos(\beta+\alpha) = \cos(\beta-(-\alpha)) = \cos(-\alpha)\cos(\beta) + sin(-\alpha)sin(\beta),$$
$$\cos(\beta+\alpha) = \cos(\alpha)\cos(\beta) - sin(\alpha)sin(\beta)$$
$$|R_1| * \ (|R_2|\cos(\beta+\alpha) = \bar{X}) = |R_1|\cos(\alpha) * (|R_2|\cos(\beta) = X) - |R_1|\,sin(\alpha) * (|R_2|si\,n(\beta) = \mathrm{Y})$$

$$\bar{X} = X\cos(\alpha) - Ysi\,n(\alpha).$$ Similarly, next:

$$|R_1||R_2|\ \sin(\beta+\alpha) = |R_1||R_2|\cos\big(90-(\beta+\alpha)\big) = \ |R_1||R_2|\cos((90-\alpha)-\beta)$$
$$|R_1||R_2|\sin(\beta+\alpha) = |R_1||R_2|\cos(90-\alpha)\cos(\beta) + \ |R_1||R_2|\,sin(90-\alpha)\,sin(\beta)$$
$$|R_1| * (|R_2|\sin(\beta+\alpha) = \bar{Y}) = |R_1|\sin(\alpha) * (|R_2|\cos(\beta) = \mathrm{X}) + \ |R_1|\cos(\alpha) * (|R_2|sin(\beta = Y)$$
$$\bar{Y} = X\sin(\alpha) + Ycos(\alpha).$$

Finally, we get the transformations:

$$\left|\begin{matrix}\bar{X} = X\cos(\alpha) - Ysi\,n(\alpha)\\ \bar{Y} = X\sin(\alpha) + Ycos(\alpha)\end{matrix}\right| \text{or} \quad \begin{pmatrix}\bar{X}\\\bar{Y}\end{pmatrix} = \begin{pmatrix}X\\Y\end{pmatrix}\begin{pmatrix}\cos(\alpha) & -\sin(\alpha)\\ \sin(\alpha) & \cos(\alpha)\end{pmatrix}$$

$\begin{pmatrix}\bar{X}\\\bar{Y}\end{pmatrix} = \begin{pmatrix}X\\Y\end{pmatrix} * R_\alpha$ where is $R_\alpha = \begin{pmatrix}\cos(\alpha) & -\sin(\alpha)\\ \sin(\alpha) & \cos(\alpha)\end{pmatrix}$the matrix of the group A and.

The previously considered cases of rotation by 120 ⁰and 240 ⁰are special cases of rotations R_α.

$$R_{120} = \begin{pmatrix}\cos(120) & -\sin(120)\\ \sin(120) & \cos(120)\end{pmatrix} = \frac{1}{2}\begin{pmatrix}-1 & -\sqrt{3}\\ \sqrt{3} & -1\end{pmatrix}$$

This is a (R_α) SO (2) matrix , i.e. a Special (det (R_α)=1) Orthogonal ($R_\alpha(R_\alpha)^{\mathrm{T}} = I$) matrix where the transposed matrix $(R_\alpha)^{\mathrm{T}} = (R_\alpha)^{-1}$is equal to the inverse. This is (R_α) the rotation matrix, abelian.

The matrix of the scaling operation $\begin{pmatrix}M & 0\\0 & M\end{pmatrix}$with the parameter (M=2), performs $\begin{pmatrix}2 & 0\\0 & 2\end{pmatrix}\begin{pmatrix}1\\1\end{pmatrix} = \begin{pmatrix}2\\2\end{pmatrix}$an increase ($M > 1$) or decrease ($0 < M < 1$) of the original vector. The parameter (M) can be taken out of brackets, then we will get M $\begin{pmatrix}1 & 0\\0 & 1\end{pmatrix}$a group generator in brackets, not attached to the elements of the group.

Angle (α) the group parameter $R_\alpha = \begin{pmatrix} \cos(\alpha) & -\sin(\alpha) \\ \sin(\alpha) & \cos(\alpha) \end{pmatrix}$is also taken out $R_0 = I$, the rotation by 0 ^{0} does nothing, it gives the identity matrix. Turning an angle ($\triangle\, \alpha \to 0$)gives ($R_{\Delta\alpha} = I + \triangle\, \alpha L$) transformation where($L$) rotation generator. Then ($R_{\alpha+\Delta\alpha} = R_{\Delta\alpha} R_\alpha$)to rotate by an angle ($\alpha + \triangle\, \alpha$), you must first rotate by an angle (α), then by an angle ($\triangle\, \alpha$). Substituting the values, we get: ($R_{\alpha+\Delta\alpha} = (I + \triangle\, \alpha L)R_\alpha = R_\alpha + \triangle\, \alpha L R_\alpha$). Further, in the usual order, we obtain: ($R_{\alpha+\Delta\alpha} - R_\alpha = \triangle\, \alpha L R_\alpha$), $lim \frac{R_{\alpha+\Delta\alpha} - R_\alpha}{\Delta\alpha \to 0} = LR_\alpha, \frac{dR_\alpha}{d\alpha} = LR_\alpha, \frac{dR_\alpha}{R_\alpha} = Ld\alpha, R_\alpha = e^{\alpha L}$, solution of the differential equation, with the group generator $(\frac{dR_\alpha}{d\alpha})_0 = L$. These equations are similar to the Schrödinger equation: $\frac{dU}{dt} = -iHU$, with solutions: $U = e^{-itH}$. Here the group generator is represented by the Hamilton operator, and instead of turning by an angle, time is considered. In our case of rotations, the group generator is equal to the derivative of the group elements at zero rotation angle. We take the derivatives, substitute the value of the angle and get the group generator.

$\frac{dR_\alpha}{d\alpha} = \begin{pmatrix} -sin(0) & -\cos(0) \\ \cos(0) & -\sin(0) \end{pmatrix} = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} = L$. Or $\frac{dR_\alpha}{d\alpha} = LR_\alpha$, in the form: $\frac{dR_\alpha}{d\alpha} = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} \cos\ (\alpha) & -\sin(\alpha) \\ \sin(\alpha) & \cos(\alpha) \end{pmatrix}$.

Here: $\cos^2(\alpha) + \sin^2(\alpha) = 1$, as expected. Then the rotated and original vector is represented as: $\bar{V} = e^{\alpha \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}} V$,

where: $e^{\alpha \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}}$is the matrix of the group element. Now we rotate the vector by an angle (α) without using trigonometric functions. The generators themselves say a lot about the band itself. For example, the scale generator $e^{m \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}} = e^{\begin{pmatrix} \mathrm{m} & 0 \\ 0 & \mathrm{m} \end{pmatrix}}$is represented as a group element. The scale factor is: $M = e^m$the exponent of the group parameter (m).

10.2. The elements of the groups L and are found by matrix exponentiation of the generators of the Lie groups. The elements themselves are considered as generators acting on the vector. These operators change the vector. But the invariant always remains unchanged in the group. Group generator L and: $L = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$changes the element of the Lie group $R_\alpha = e^{\pm\alpha \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}}$, as the scaling operator. Acting $R_\alpha$on the column of point coordinates, we obtain radially diverging (converging) points with a constant angle (α). The group generator $L = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ gives the group element $R_\alpha = e^{\pm\alpha \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}}$, as a point moving in a circle. The length of the vector is constant.). The group generator $L = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ gives the group element $R_\alpha = e^{\pm\alpha \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}}$as a point moving along a hyperbola. Exponentiating such a generator gives $\Lambda = \begin{pmatrix} \mathrm{ch}(\alpha) & \mathrm{sh}(\alpha) \\ \mathrm{sh}(\alpha) & \mathrm{ch}(\alpha) \end{pmatrix}$, the Lorentz group. This takes place: $\mathrm{ch}^2(\alpha) - \mathrm{sh}^2(\alpha) = 1$, as expected. Recall the graphs of these functions $Y = Y_0 \mathrm{ch}\left(\alpha = \frac{X=Z}{Y_0}\right)$in the form:

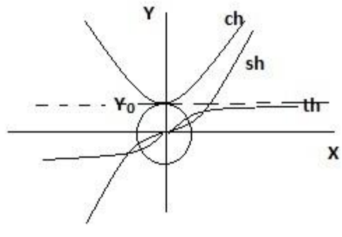


Figure 2.7

Here the Lorentz group $\Lambda = \begin{pmatrix} \mathrm{ch}(\alpha) & \mathrm{sh}(\alpha) \\ \mathrm{sh}(\alpha) & \mathrm{ch}(\alpha) \end{pmatrix}$, together with $\mathrm{ch}^2(\alpha) - \mathrm{sh}^2(\alpha) = 1$and elements of the group in the form $R_\alpha = e^{\pm\alpha \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}}$represented in hyperbolic functions $e^z = ch(z) + sh(z)$. At the same time, we derived transformations of the relativistic dynamics $R_\alpha = \begin{pmatrix} \cos(\alpha) & -\sin(\alpha) \\ \sin(\alpha) & \cos(\alpha) \end{pmatrix}$of the Lie group matrix, with the generator already in the trigonometric $e^{iz} = cos(z) + isin(z)$functions $R_\alpha = e^{i\alpha \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}}$of the group elements. There is a problem in the relativistic solutions of the invariant Dirac equation. The action of a quantum cannot $\hbar = \Delta p \Delta\lambda = F\Delta t\Delta\lambda$ be fixed in space $\Delta\lambda$ or time Δt. This is due to the non-zero $(\varphi \neq const)$ angle of parallelism $(X-)$ or $(Y-)$ trajectory $(X\pm)$ or $(Y\pm)$ space-matter quantum. There is only a certain probability of action. Transformations of the relativistic dynamics of the wave ψ - function of the quantum field with the probability density ($|\psi|^2$) of interaction in $(X+)$ the field (Fig. 3) correspond to the Globally Invariant $\psi(X) = e^{-i\alpha}\overline{\psi}(X)$,

$a = const$ Lorentz group. These transformations correspond to rotations in the plane of the circle S, and relativistically - to the invariant Dirac equation.

$$i\gamma_\mu \frac{\partial \psi(X)}{\partial x_\mu} - m\psi(X) = 0 \quad , \quad \text{and} \quad \left[i\gamma_\mu \frac{\partial \overline{\psi}(X)}{\partial x_\mu} - m\overline{\psi}(X) \right] = 0 .$$

Such invariance gives the conservation laws in the equations of motion. For transformations of relativistic dynamics in hyperbolic motion,

$$\psi(X) = e^{a(X)}\overline{\psi}(X) . \qquad ch(aX) = \frac{1}{2}(e^{aX} + e^{-aX}) \cong e^{aX} . \qquad a(X) \neq const .$$

$$\left[i\gamma_\mu \frac{\partial \overline{\psi}(X)}{\partial x_\mu} - m\overline{\psi}(X) \right] + i\gamma_\mu \frac{\partial a(X)}{\partial x_\mu}\overline{\psi}(X) = 0 .$$

The invariance of conservation laws is violated. To save them, calibration fields are introduced. They compensate for the extra term in the equation.

$$A_\mu(X) = \overline{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu} \quad , \quad \text{and} \quad i\gamma_\mu \left[\frac{\partial}{\partial x_\mu} + iA_\mu(X) \right]\psi(X) - m\psi(X) = 0 .$$

Now, substituting the value $\psi(X) = e^{a(X)}\overline{\psi}(X)$ of $a(X) \neq const$ the wave function into such an equation, we obtain an invariant equation of relativistic dynamics.

$$i\gamma_\mu \frac{\partial \psi}{\partial x_\mu} - \gamma_\mu A_\mu(X)\psi - m\psi = i\gamma_\mu \frac{\partial \overline{\psi}}{\partial x_\mu} + i\gamma_\mu \frac{\partial a(X)}{\partial x_\mu}\overline{\psi} - \gamma_\mu \overline{A}_\mu(X)\overline{\psi} - i\gamma_\mu \frac{\partial a(X)}{\partial x_\mu}\overline{\psi} - m\overline{\psi} = 0$$

$$i\gamma_\mu \frac{\partial \overline{\psi}}{\partial x_\mu} - \gamma_\mu \overline{A}_\mu(X)\overline{\psi} - m\overline{\psi} = 0 \quad , \quad \text{or} \quad i\gamma_\mu \left[\frac{\partial}{\partial x_\mu} + i\overline{A}_\mu(X) \right]\overline{\psi} - m\overline{\psi} = 0 .$$

This equation is invariant to the original equation

$$i\gamma_\mu \left[\frac{\partial}{\partial x_\mu} + iA_\mu(X) \right]\psi(X) - m\psi(X) = 0$$

in conditions $A_\mu(X) = \overline{A}_\mu(X)$, and $A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$,

the presence of a scalar boson $(\sqrt{(+a)(-a)} = ia(\Delta X) \neq 0) = const$, within the gauge $(\Delta X) \neq 0)$ field (Fig. 3). These conditions ($\frac{\partial a(X)}{\partial x_\mu} \equiv f'(x) = 0$)give constant extremals (f_{max}) dynamic $a(X) = f(x) \neq const$ space-matter in global invariance. And there are no scalar bosons here. These are: $A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$, known gauge transformations. $a(X)$– 4-vector (A_0, A_1, A_2, A_3)electromagnetic scalar ($\varphi = A_0$)and vector ($\vec{A} = A_1, A_2, A_3$) potential in Maxwell electrodynamics: $\vec{E} = -\nabla\varphi - \frac{\partial \vec{A}}{\partial t}$, and $\vec{B} = -\nabla \mathrm{x} \vec{A}$, gradient and curl, or $F_{\mu\nu} = \partial_\mu A_\nu - \partial_\nu A_\mu$, with tensor ($F_{\mu\nu}$), $(E_X, E_Y, E_Z, E_X, E_Y, E_Z)$components and Lorentz transformations. The derivative of the scalar function is added to such a potential, which does not change the potential itself. This is the key point. In the Yang-Mills theory, it is represented by a symmetry group, $A_\mu = \Omega(x)A_\mu(\Omega)^{-1}(x) + i\Omega(x)\partial_\mu(\Omega)^{-1}(x)$, where $\Omega(x) = e^{i\omega}$, and $\omega$is an element of any (SU (N), SO (N), Sp (N), E $_6$, E $_7$, E $_8$, F $_4$, G $_2$) of the group L and, $A_\mu \to A_\mu + \partial_\mu\omega$. In reality, this is a fixed state of a dynamic function: $K_Y = \psi + Y_0$, in quantum relativistic dynamics. Relatively speaking, at each fixed point: $a\left(\frac{X\equiv Z}{Y_0}\right) = const$, there is its own (angle of inclination of the branches) hyperbolic cosine, $K_Y = Y_0 ch(\frac{X\equiv Z}{Y_0}) \equiv e^{a\left(\frac{X\equiv Z}{Y_0}\right)}$, already in the orthogonal ($YZ \perp X$)) plane, and, moreover, outside the dynamic in quantum relativistic dynamics (Y_0). Thus, scalar bosons in gauge fields are created artificially to eliminate the shortcomings of the Theory of Relativity in quantum fields.

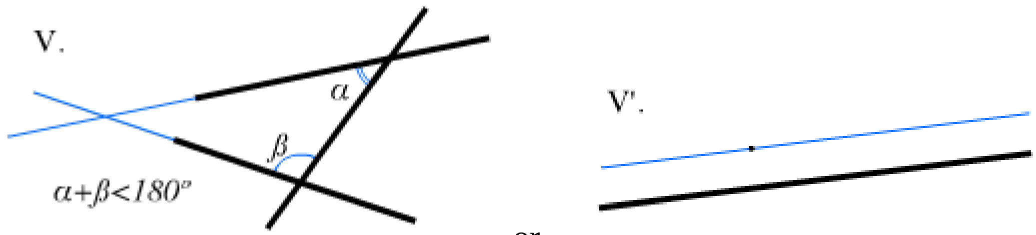
10.3. symmetries in classical and quantum relativistic dynamics

3.1. Lorentz transformations in physics are considered as: $\bar{x} = \frac{x+wt}{\sqrt{1-w^2}}$, $\bar{t} = \frac{t+wx}{\sqrt{1-w^2}}$, $c = 1$. These two formulas are represented as a single matrix expression.

$$\frac{1}{\sqrt{1-w^2}}\begin{pmatrix}1 & w\\ w & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \frac{1}{\sqrt{1-w^2}}\begin{pmatrix}t+wx\\ wt+x\end{pmatrix} = \begin{pmatrix}\bar{t}\\ \bar{x}\end{pmatrix}. \qquad \Lambda = \begin{pmatrix}\mathrm{ch}(\alpha) & \mathrm{sh}(\alpha)\\ \mathrm{sh}(\alpha) & \mathrm{ch}(\alpha)\end{pmatrix}$$

The matrix action converts non-primed vector coordinates to primed ones. The angle of rotation in hyperbolic transformations is related to the hyperbolic arc tangent .$\alpha = arc\ th(w)$ and find this angle from the speed, which approaches unity: $w \to (c = 1)$. The mathematical apparatus of group theory is thus quite universal **in the Euclidean axiomatics** of space-time. They are known:

1. “A point is that, part of which is nothing”) (“Beginnings” of Euclid) . and whether the Point is that which has no parts,
2. Line - length without width.
3. And the 5th postulate about parallel straight lines that do not intersect. If a line intersecting two lines forms interior one-sided angles less than two lines, then, extended indefinitely, these two lines will meet on the side where the angles are less than two lines.



or

drawing. 3.1 Euclidean axiomatics

That is, through a point outside the line, you can draw only one straight line, parallel to the line.

3.2. in fact, in the "Unified Theory 2", undecidable in the Euclidean axiomatic are noted contradictions. That is, many lines in one line (length without width), again a line. Is it a line or many lines? Similarly, the set of points in one point is again a point. Is it a point or a set of them? The Euclidean Elements do not provide answers to such questions. well-known problems 5th postulate, the solution of which opened Lobachevski geometry and Riemannian space.

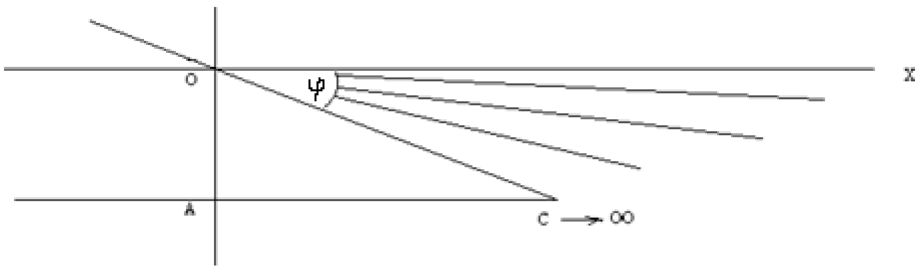


Figure 3.2 dynamic space of a pencil of parallel lines

There are real facts of the dynamic space of a bunch of straight lines that do not intersect, that is, parallel to the original line AC at infinity, presented in the "Unified Theory 2". And moving along the line (AC), there will be a dynamic space nearby, **which we will not be able to get into in principle.**

Infinity cannot be stopped, so this already dynamic space always exists. And already the properties of this dynamic $(\varphi \neq const)$ spaces are presented as properties of matter, the main property of which is movement. There is no matter outside such space, and there is no space without matter. Space-matter is one and the same.

In such a dynamic space-matter, the Euclidean axiomatic is presented as a special case zero $(\varphi = 0)$ angle of parallelism. At the same time solving the set problem exactly straight lines in one straight parallel lines as " length without breadth " .

The main property of a dynamic space-matter is a dynamic $(\varphi \neq const)$ angle of parallelism. In this case, the Euclidean space in the XYZ axes loses its meaning.

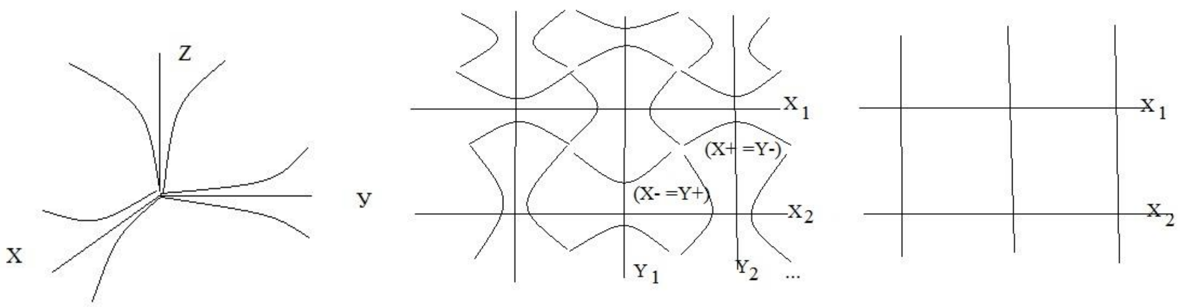


figure 3.3 dynamic space-matter

In "Unified Theory 2 " (), Transformations of relativistic dynamics in the Special Theory of Relativity and quantum relativistic dynamics (it is fashionable to say Quantum Relativity Theory), are presented in one mathematical truth, form. We are talking about the relativistic dynamics of the radius-vector of a dynamic sphere with a non-stationary Euclidean space-time , on the trajectory (X-) or (Y -) of the quantum (X ±) (Y ±), respectively, of the dynamic space-matter. Consider, for example, a quantum (X ±) of a dynamic space-matter.

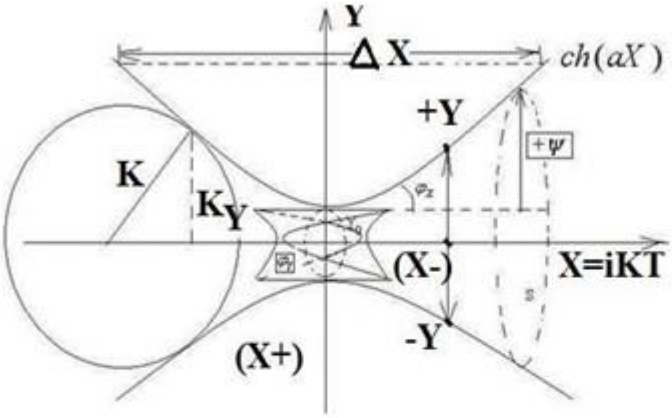


Figure 3.4 quantum of dynamic space-matter

We see that the dynamic radius-vector (K) in the sphere with non-stationary Euclidean space-time has projections (K $_Y$) in the plane of the circle of the dynamic sphere, and projections (K $_X$) on the (X-) trajectories. On (n) convergence, as we already know and see, there are two trajectories of (Y ±) quantum closed on (Y -) . As already noted, at each point fixed in the experiment with ($i\psi = \sqrt{(+\psi)(-\psi)}$) wave function, there is a hyperbolic cosine with different slope angles of the graph branches. In the section of the circle, the point fixed in the experiment with ($i\psi = \sqrt{(+\psi)(-\psi)}$) wave function, we have trigonometric functions, with different radii of the circle in different fixed points (X-) of the trajectory of the space-matter quantum. As we see at fixed points, fixed experimental facts, both representations of the Lorentz group are valid and correspond to the truth. Terms of $A_\mu(X) = \bar{A}_\mu(X) + i\frac{\partial a(X)}{\partial x_\mu}$ the Dirac equation and conditions $A_\mu = \Omega(x)A_\mu(\Omega)^{-1}(x) + i\Omega(x)\partial_\mu(\Omega)^{-1}(x)$, where: $\Omega(x) = e^{i\omega}$, in the Yang-Mills theory are not violated. Here:

$e^{i\omega} = \cos\omega + i\sin\omega)$, and ($i\sin\omega \equiv K_Y = \sqrt{(+\sin\ \omega)(-\sin\ \omega)} = i\psi = \sqrt{(+\psi)(-\psi)}$.

The identity matrices of (R_α)group elements, $\cos^2(\alpha) + \sin^2(\alpha) = 1$for any rotations and (Λ) groups: $\mathrm{ch}^2(\alpha) - \mathrm{sh}^2(\alpha) = 1$, and their derivatives in the form of group generators (reducible to zero initial conditions) are unchanged. But the very dynamics of such conditions, that is, the quantum relativistic dynamics of the dynamic sphere radius vector with non-stationary Euclidean space-time, we have lost it $a(X) \neq const$. represented by a matrix with a dynamic wave function: $i\psi = i\sin\omega \equiv \pm K_Y$in an experiment, as an argument, as a fixed fact of reality. But there is no theory, or models, equations of such "hidden processes", as we see. It must be said that in the dynamic space-matter, there is a space-matter, which we cannot get into in principle. We can't get in, by definition.

Let us present a tabular (comparative) analysis of the representations of the Lorentz groups of the relativistic dynamics of the Special Theory of Relativity and quantum relativistic dynamics, in full, without the condition (c=1) of the speed of light.

$R_\alpha = \begin{pmatrix}\cos(\alpha) & -\sin(\alpha)\\ \sin(\alpha) & \cos(\alpha)\end{pmatrix}$,$\cos^2(\alpha) + \sin^2(\alpha) = 1$	$\Lambda = \begin{pmatrix}\mathrm{ch}\left(\frac{X\equiv Z}{Y_0}\right) & \mathrm{sh}\left(\frac{X\equiv Z}{Y_0}\right)\\ \mathrm{sh}\left(\frac{X\equiv Z}{Y_0}\right) & \mathrm{ch}\left(\frac{X\equiv Z}{Y_0}\right)\end{pmatrix}$,$\mathrm{ch}^2\left(\frac{X\equiv Z}{Y_0}\right) - \mathrm{sh}^2\left(\frac{X\equiv Z}{Y_0}\right) = 1$ $\Lambda_0\left(\frac{X=0}{Y_0}\right) = I$, $(\Lambda_{\Delta X} = I + \Delta\left(\frac{X}{Y_0}\right) * L)$
$R_{\alpha=0} = I$,$(R_{\Delta\alpha} = I + \Delta\ \alpha L)$ $(R_{\alpha+\Delta\alpha} = (I + \Delta\ \alpha L)R_\alpha = R_\alpha + \Delta\ \alpha L R_\alpha)$.	$\Lambda_{\frac{X+\Delta X}{Y_0}} = (I + \Delta * L)\ \Lambda_{\frac{X+\Delta X}{Y_0}},(x/y_0)$ $\Lambda_{x+\Delta x/y_0} - \Lambda_{(x/y_0)} = \Delta\ (x/y_0) * L\ \Lambda_{(x/y_0)}$,
$(R_{\alpha+\Delta\alpha} - R_\alpha = \Delta\ \alpha L R_\alpha)$, $lim\frac{R_{\alpha+\Delta\alpha} - R_\alpha}{\Delta\alpha\to 0} = LR_\alpha$, $\frac{dR_\alpha}{d\alpha} = LR_\alpha$, $R_\alpha = e^{\alpha L}$, solution of the differential equation, with group generator $(\frac{dR_\alpha}{d\alpha})_0 = L$.	$\frac{d\,\Lambda_{(x/y_0)}}{d(x/y_0)} = L\ \Lambda_{(x/y_0)}$, $x \neq const$, $y_0 \neq const$, dynamic sphere, $\Lambda_{(x/y_0)} = e^{(x/y_0)L}$, $(\frac{d\,\Lambda_{(x/y_0)}}{d(x/y_0)})_{(x/y_0)=0} = L$.
$(\frac{dR_\alpha}{d\alpha})_{\alpha=0} = \begin{pmatrix}-sin(0) & -\cos(0)\\ \cos(0) & -\sin(0)\end{pmatrix} = \begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix} = L$	$(\frac{d\,\Lambda_{(x/y_0)}}{d(x/y_0)})_{(x/y_0)=0} = \begin{pmatrix}sh(0) & \mathrm{ch}(0)\\ \mathrm{ch}(0) & sh(0)\end{pmatrix} = \begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix} = L$

$\begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix} = L$, group generator $R_\alpha = e^{\alpha L} = e^{\alpha * \begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix}}$, α- group parameter	$\begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix} = L$, group generator $\Lambda_{(x/y_0)} = e^{(x/y_0) * \begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}}$, (x/y_0)- group parameter
$R_\alpha * \Lambda_{(x/y_0)} = e^{\alpha * \begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix}} * e^{(x/y_0) * \begin{pmatrix}0 & 1\\ 1 & 0\end{pmatrix}}$, simultaneous dynamics of circular and hyperbolic motion Radius vector (its vertices) of dynamic($y_0 \neq const$) spheres.	
Special theory of relativity $\bar{x} = \frac{x-wt}{\sqrt{1-(w/c)^2}}, \bar{t} = \frac{t-wx/c^2}{\sqrt{1-(w/c)^2}}$ $\bar{w} = \frac{x-wt}{t-wx/c^2}$,	Lorentz group $\Lambda = \frac{1}{\sqrt{1-(w/c)^2}}\begin{pmatrix}1 & w/c^2\\ w & 1\end{pmatrix}, \Lambda * \begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}\bar{t}\\ \bar{x}\end{pmatrix}$ $\frac{1}{\sqrt{1-(w/c)^2}}\begin{pmatrix}1 & w/c^2\\ w & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \frac{1}{\sqrt{1-(w/c)^2}}\begin{pmatrix}t - wx/c^2\\ -wt + x\end{pmatrix} = \begin{pmatrix}\bar{t}\\ \bar{x}\end{pmatrix}$, $\bar{t} = \frac{t-wx/c^2}{\sqrt{1-(w/c)^2}}$. $\bar{x} = \frac{-wt+x}{\sqrt{1-(w/c)^2}}$. exactly the same dynamics
quantum relativistic dynamics $\overline{K_Y} = \frac{a_{11}K_Y - cT}{\sqrt{1-(a_{22})^2}}$. $\bar{T} = \frac{a_{22}T - K_Y/c}{\sqrt{1-(a_{22})^2}}$. $a_{11} = \cos(\varphi_Y) \neq const$, $a_{22} = \cos(\varphi_X) \neq const$, $\bar{w} = \frac{a_{11}K_Y - cT}{a_{22}T - K_Y/c} = \frac{a_{11}W_Y - c}{a_{22} - W_Y/c}$,	(Quantum Theory of Relativity) $Q = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix}a_{22} & 1/c\\ c & a_{11}\end{pmatrix}, Q * \begin{pmatrix}T\\ K_Y\end{pmatrix} = \begin{pmatrix}\bar{T}\\ \bar{K}\end{pmatrix}$ $\frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix}a_{22} & 1/c\\ c & a_{11}\end{pmatrix}\begin{pmatrix}T\\ K_Y\end{pmatrix} = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix}a_{22}T - K_Y/c\\ a_{11}K_Y - cT\end{pmatrix} = \begin{pmatrix}\bar{T}\\ \bar{K}\end{pmatrix}$ $(a_{11} \neq a_{22}) \neq const$, $\begin{pmatrix}a_{22} & 1/c\\ c & a_{11}\end{pmatrix} = a_{11} * a_{22} - c * \frac{1}{c} = 0. a_{11} * a_{22} = c * \frac{1}{c} = 1$. from where follows: $a_{11} * a_{22} = \cos(\varphi_Y) * \cos(\varphi_X) = 1$,

In the case of quantum relativistic dynamics, as we see, the symmetry condition follows: under the conditions $(a_{11} \neq a_{22}) \neq const$, we get: $a_{11} * a_{22} = \cos(\uparrow \varphi_Y) * \cos(\downarrow \varphi_X) = 1$, in nonzero values angles of parallelism $(\varphi_Y \neq 0)$, $(\varphi_X \neq 0)$, for the conditions of the denominator $\sqrt{1-(a_{22})^2} \neq 0$, $(X\pm)$quantum. Exactly the same transformations $(Y\pm)$ quantum, with the terms of the denominator $\sqrt{1-(a_{11})^2} \neq 0$. But the angles of parallelism cannot be 90^0. This means $(\varphi \neq 90^0)$that there are limit angles of parallelism, which correspond to the constants of interactions, in the form: $\cos(\varphi_Y)_{max} = \alpha(Y\pm) = 1/137.036$, and: $\cos^2(\varphi_X)_{max} = G(X\pm) = 6.67 * 10^{-8}$. As you can see, the quantum oscillations themselves (the answer to the question WHY) are determined by the limiting angles of parallelism, in quantum relativistic dynamics. In numerical terms, $(T = (K_Y/c) \approx (3 * 10^{-14} sm)/3 * 10^{10} \approx 10^{-24})s$, period fluctuations and the frequency $(\nu = \frac{1}{T})^2 = \rho$, in the unified Criteria of Evolution, are connected with the limiting densities (as a cause) of quantum fields of space-matter.

In the "Unified Theory 2 ", we considered the unified Criteria for the Evolution of dynamic space-matter in multidimensional space-time. In particular, charge: q = ПК (Y+ =X -) in electro (Y+ =X -) magnetic fields, and mass: m = ПК (X+=Y-) in gravity (X+=Y-) mass fields . We have also considered models of proton quantum fields:

$(X\pm = p^+) = (\boldsymbol{Y} -= \gamma_0^+)(\boldsymbol{X} += \nu_e^-)(\boldsymbol{Y} -= \gamma_0^+)$, and: $(Y\pm = e^-) = (\boldsymbol{X} += \nu_e^-)(\boldsymbol{Y} -= \gamma^+)(\boldsymbol{X} += \nu_e^-)$ electron.

Then the conditions: $a_{22}{}^2 * a_{11} = \cos^2(\varphi_X)\cos(\varphi_Y) = 1$, quantum relativistic dynamics $(X\pm)$ quantum take the form:

$(X \pm) = (X += Y -)^2 * (Y + = X -)$, or: $ПК * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * ПК$.

$(ПК(X += Y -) = m_0 = 1) * cos^2(\varphi_X)_{max} cos(\varphi_Y)_{max} = 1 * (ПК(Y + = X -) = q_0 = 1)$,

Scale (a_{22}), in quantum state:$a_{22}{}^2 * a_{11} = \cos^2(\varphi_X)\cos(\varphi_Y) = 1$ matrix $\begin{pmatrix}1 & \alpha\\ 1 & 1\end{pmatrix}^2 = (1-\alpha)^2$. Then:

$(m_0 = 1) * (1-\alpha)^2 (cos^2(\varphi_X)_{max} = G)(cos(\varphi_Y)_{max} = \alpha) = 1 * q$,

$q(Y + = X -) = (1-\alpha)^2 * G * \alpha = (1 - 1/137.036)^2 * 6.67 * 10^8 * (1/137.036) = 4.8 * 10^{-10}$.

We have obtained an electric charge in the symmetry group of its quantum relativistic dynamics, in known relations:

$\alpha = q^2/\hbar c$, $w = \alpha c$, $\alpha = cos(\varphi_Y)_{max} = a_{11}$, $\cos(\varphi_Y) = \cos(\varphi_X)$, already as symmetries $(X\pm = Y \mp)$ fields of a single $(X+ = Y -)$, $(X- = Y +)$ dynamic space-matter.

In the same way, by scaling the symmetry group $Q = e^{(X,Y)*L}$ of quantum relativistic dynamics (it is fashionable to say in the Quantum Relativity Theory), but already of mass fields, one can search for the mass spectrum of elementary particles. This is different from the symmetries of Lorentz groups in gauge fields.

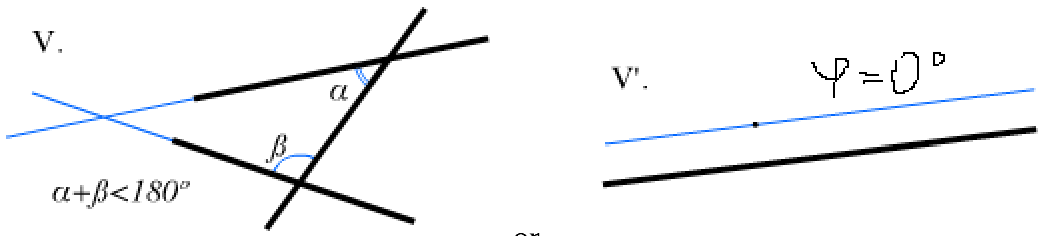
Super symmetries in quantum relativistic dynamics.

Chapters

1. Introduction

Super symmetries in quantum relativistic dynamics are considered in the same mathematical models as symmetries. Symmetries in quantum relativistic dynamics (it's fashionable to say Quantum Relativity Theory) were considered in the same mathematical truth with Lorentz group symmetries in gauge fields. There is a difference in the representation of symmetry groups in the relativistic dynamics of the Special Theory of Relativity, as Lorentz groups and symmetry groups in quantum relativistic dynamics (Quantum Theory of Relativity). In the first case, the symmetry of the Lorentz group was considered in space-time with the Euclidean axiomatics. These are the well-known axioms of Euclid.

1. "A point is that, part of which is nothing") ("Beginnings" of Euclid). or a point is that which has no parts,
2. Line - length without width.
3. And the 5th postulate about parallel straight lines that do not intersect. If a line intersecting two lines forms interior one-sided angles less than two lines, then, extended indefinitely, these two lines will meet on the side where the angles are less than two lines.



Picture 1

In this case, the angle of parallelism $(\varphi = 0)$is zero, and the set of straight lines in one "... length without width " is also a straight line. This is the problem of the Euclidean axiomatics. It does not exist in the dynamic space-matter:

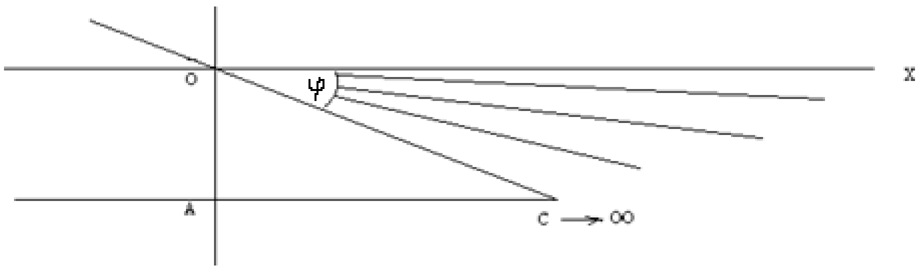


Figure 2

with non-zero $(\varphi \neq 0) \neq const$, and dynamic angle of parallelism. Infinity $(AC \to \infty)$cannot be stopped, so dynamic space-matter always exists. In a grid of Euclidean straight lines

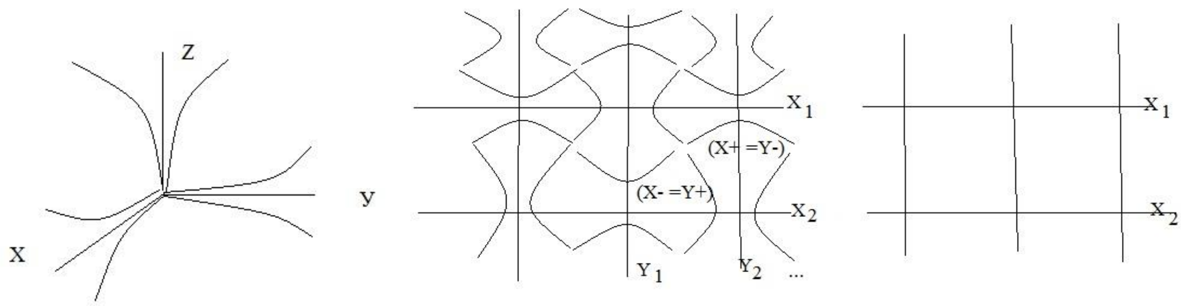


Figure 3

we do not see a dynamic space-matter, and the Euclidean space itself loses its meaning. Rather, we are talking about non-stationary Euclidean space within the dynamic angle of parallelism. Such a dynamic space-matter has its own axioms as facts that do not require proof. In the case of fixing the angle of parallelism, which is especially important in fixed experimental data, we get the Euclidean axiomatics of space-time, or variants of the Riemannian space (including Lobachevsky geometry), in modern theories , with the uncertainty principle, the wave function and the technology of quantum theories. And it is in such a dynamic space-matter that we have already considered the symmetries of quantum relativistic dynamics.

2. Representation of symmetry groups in quantum relativistic dynamics.

In the symmetry of quantum relativistic dynamics, we have obtained transformations of quantum relativistic dynamics (Quantum Theory of Relativity), by analogy with the classical relativistic dynamics of Einstein's Special Theory of Relativity represented by the Lorentz group. Let's present their tabular (comparative) analysis in the form:

Table 1

Special theory of relativity$(c = 1)$ $\bar{x} = \frac{x-wt}{\sqrt{1-(w)^2}}$, $\bar{t} = \frac{t-wx}{\sqrt{1-(w)^2}}$ $\overline{w} = \frac{x-wt}{t-wx}$,	Lorentz group $\Lambda = \frac{1}{\sqrt{1-(w)^2}}\begin{pmatrix} 1 & w \\ w & 1 \end{pmatrix}, \Lambda * \begin{pmatrix} t \\ x \end{pmatrix} = \begin{pmatrix} \bar{t} \\ \bar{x} \end{pmatrix}$ $\frac{1}{\sqrt{1-(w)^2}}\begin{pmatrix} 1 & w \\ w & 1 \end{pmatrix}\begin{pmatrix} t \\ x \end{pmatrix} = \frac{1}{\sqrt{1-(w)^2}}\begin{pmatrix} t-wx \\ -wt+x \end{pmatrix} = \begin{pmatrix} \bar{t} \\ \bar{x} \end{pmatrix}$, $\bar{t} = \frac{t-wx}{\sqrt{1-(w)^2}}$. $\bar{x} = \frac{-wt+x}{\sqrt{1-(w)^2}}$. exactly the same dynamics
quantum relativistic dynamics$(c \neq 1)$ $\overline{K_Y} = \frac{a_{11}K_Y - cT_X}{\sqrt{1-(a_{22})^2}}$. $\overline{T_X} = \frac{a_{22}T_X - K_Y/c}{\sqrt{1-(a_{22})^2}}$. $a_{11} = \cos(\varphi_Y) \neq const$, $a_{22} = \cos(\varphi_X) \neq const$, $\overline{w} = \frac{a_{11}K_Y - cT_X}{a_{22}T_X - K_Y/c} = \frac{a_{11}W_Y - c}{a_{22} - W_Y/c}$,	(Quantum Theory of Relativity) $Q = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix} a_{22} & 1/c \\ c & a_{11} \end{pmatrix}, Q * \begin{pmatrix} T \\ K_Y \end{pmatrix} = \begin{pmatrix} \bar{T} \\ \bar{K} \end{pmatrix}$ $\frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix} a_{22} & 1/c \\ c & a_{11} \end{pmatrix}\begin{pmatrix} T \\ K_Y \end{pmatrix} = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix} a_{22}T - K_Y/c \\ a_{11}K_Y - cT \end{pmatrix} = \begin{pmatrix} \bar{T} \\ \bar{K} \end{pmatrix}$ $(a_{11} \neq a_{22}) \neq const$, $\begin{pmatrix} a_{22} & 1/c \\ c & a_{11} \end{pmatrix} = a_{11} * a_{22} - c * \frac{1}{c} = 0$. $a_{11} * a_{22} = c * \frac{1}{c} = 1$. from where follows: $a_{11} * a_{22} = \cos(\varphi_Y) * \cos(\varphi_X) = 1$,

A remarkable point in the symmetry of quantum relativistic dynamics is the condition$(a_{22} = 1)$ Euclidean axiomatics, in which: $\cos(\varphi_X = 0) = (a_{22}) = 1$, in the denominator $Q = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix} a_{22} & 1/c \\ c & a_{11} \end{pmatrix}$ we get zero. Therefore, keeping **the mathematical truth**, we consider the space of the quantum itself under the conditions (c=1) , and obtain the following relations:

$$Q = \frac{1}{\sqrt{1-(a_{22})^2}}\begin{pmatrix} a_{22} & 1 \\ 1 & a_{11} \end{pmatrix} = \frac{0}{0} = 0 \,, \qquad \text{or} \qquad \begin{pmatrix} a_{22} & 1 \\ 1 & a_{11} \end{pmatrix} = 0 \,.$$

$$a_{22} * a_{11} - 1 = 0 \,. \qquad a_{22} * a_{11} = 1.$$

This is a very interesting condition: $[\ (\cos(\varphi_Y = 0) = 1) * (\cos(\varphi_X = 0) = 1) = 1] - [1 * 1] = 0$, it is valid in the Euclidean axiomatics. The determinant of such a matrix is zero if two columns or two rows are equal. Formally, in Euclidean space, in this representation:

$[\![(\cos(\varphi_Y = 0) = 1) * (\cos(\varphi_X = 0) = 1)$, these conditions are: $a_{22} * a_{11} = 1$,

are respected. But the same conditions are observed in the non-stationary Euclidean space, with the same mathematical truth: $a_{22} * a_{11} = 1$, but in the form: $\cos(\varphi_Y \neq 0) * \cos(\varphi_X \neq 0) = 1$. Here, in the Euclidean space, we do not see the dynamics inside the space-matter quantum, but this does not mean that there is no such dynamics inside the quantum. This is quantum relativistic dynamics, which is not in the Euclidean axiomatics $(\varphi = 0)$ of space-time. And these are the conditions of quantum relativistic dynamics.

The second moment in the symmetry of a single $(X+= Y-)$, $(X-= Y+)$ space-matter in models

proton: $(X\pm = p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$, or $(X\pm = p^+) = (Y\pm)^2(X\pm)$:

and electron: $(Y\pm = e^-) = (\boldsymbol{X}-= \nu_e^-)(Y+= \gamma^+)(\boldsymbol{X}-= \nu_e^-)$, or $(Y\pm = e^-) = (X\pm)^2(Y\pm)$

in dynamic space-matter ("Unified Theory 2"). The conditions for such a symmetry are represented as: $a_{22}{}^2 * a_{11} = \cos^2(\varphi_X)\cos(\varphi_Y) = 1$, quantum relativistic dynamics $(a_{11} \neq a_{22}) \neq const$for $(X\pm)$a quantum.

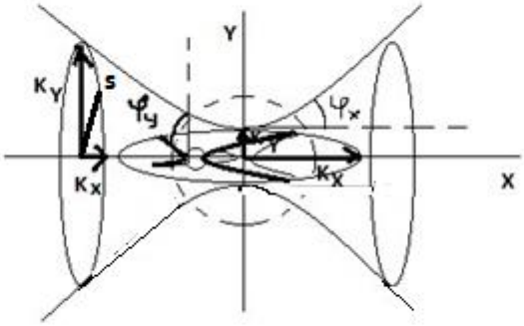


Figure 4

Thus, we have a group generator $\begin{pmatrix} (a_{22})^2 & 1/c \\ c & a_{11} \end{pmatrix} = 0$, or: $a_{22}{}^2 * a_{11} = \cos^2(\varphi_X)\cos(\varphi_Y) = 1$. In this case,

$\cos^2(\varphi_X) = \sqrt{1-\sin^2(\varphi_X)}$, $\sin(\varphi_X) = \frac{w_Y}{c}$, $w_Y = \frac{K_Y}{T_Y}$, and $\cos^2(\varphi_X) = \sqrt{1-(\frac{w_Y}{c})^2}$, we obtain the same relativistic correction as in the Lorentz group, but for quantum relativistic dynamics $\cos(\varphi_Y)$.

$$(X \pm) = (\text{X}+=\text{Y}-)^2 * (\text{Y}+=\text{X}\ -),\quad \text{or:}\quad \text{ПК} * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * \text{ПК}.$$

$$(\text{ПК}(\text{X}+=\text{Y}\ -) = \text{m}_0 = 1) * cos^2(\varphi_X)_{max} cos(\varphi_Y)_{max} = 1 * (\text{ПК}(\text{Y}+=\text{X}\ -) = \text{q}_0 = 1),$$

in the uniform Criteria for the Evolution of charge (Y+ = X −), and mass(X+= Y −) fields of the proton and electron.

This is the key point when the symmetry is: $\cos^2(\varphi_X)\cos(\varphi_Y) = 1$ scaled,

$$\text{ПК} * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * \text{ПК},$$

charge and mass fields of a single $(X \pm) = (Y \mp)$ space-matter, in this case. In this case, the limiting angles of parallelism of quantum fields correspond to the interaction constants in local basis vectors in the already Riemannian space:

$$a_{11} = 1 * 1 * cos(\varphi_Y)_{max} = cos(\varphi_Y)_{max} = \alpha = \frac{1}{137.036},$$

$$a_{22} = 1 * 1 * cos(\varphi_X)_{max} = cos(\varphi_X)_{max} = \sqrt{G = 6.67 * 10^{-8}}, \text{ or } \quad a_{22}{}^2 = \cos^2(\varphi_X) = G.$$

The transformations of already quantum relativistic dynamics ($\varphi_X \neq const$), and ($\varphi_Y \neq const$), are scaled by a matrix, with the limiting parameters of a quantum of space-matter (Figure 4) in such dynamics in the form:

$$\begin{pmatrix} \cos(\varphi_X = 0) = 1 & cos(\varphi_Y)_{max} = \alpha \\ \text{ch}\left(\frac{X=0}{Y_0}\right) = 1 & \text{ch}\left(\frac{Y=0}{X_0}\right) = 1 \end{pmatrix}^2 = \begin{pmatrix} 1 & \alpha \\ 1 & 1 \end{pmatrix}^2 = (1-\alpha)^2, \quad \text{and}$$

We get:, $(1-\alpha)^2 * G * \alpha(\text{ПК} = m_0 = 1) = 1 * (\text{ПК} = q = 1)$or ultimately an electric charge,

$$q(\text{Y}+=\text{X}\ -) = (1-\alpha)^2 * G * \alpha = (1-1/137.036)^2 * 6.67 * 10^8 * (1/137.036) = 4.8 * 10^{-10},$$

in its quantum relativistic dynamics. The charge in this representation corresponds to the relations:

$$\alpha = \frac{q^2}{\hbar c} = \frac{1}{137.036}.$$

In strict mathematical truths. What is remarkable about quantum relativistic dynamics is that the isotropy of the space-time of the Euclidean sphere is exactly the same as the isotropy along each axis of the dynamic ellipsoid: $(K_Y \downarrow)^2 + (K_X = cT_X \uparrow)^2 = (s)^2$ the non-stationary Euclidean space-time. The dynamics of the period (T_X) corresponds to the deceleration or acceleration of time along the axis (X). In this case of quantum relativistic dynamics, we are talking about the dynamics of the space-time itself of the space-matter quantum, under the conditions of the group generator ($Q = 0$), when events do not exit the dynamic ellipsoid. The space of an ellipsoid is a hidden space (Fig. 3), which we cannot get into from the Euclidean space-time. It is correct to say that it does not exist in Euclidean space.

$$(+K_Y)(-K_Y) + (K_X = cT_X \uparrow)^2 = (s=0)^2, \quad \text{or:} \quad (cT_X)^2 = (K_Y)^2, \text{ or:} \quad cT_X = K_Y.$$

And this means that the surface of a dynamic ellipsoid, the light reaches simultaneously along each axis. Or, any point of a photon has the speed of light. We are talking, at the same time, about the Euclidean isotropy of the non-stationary Euclidean space in quantum relativistic dynamics. There is no such space in the axes (XYZ) of the stationary Euclidean space. But the opposite would be better. In real space-matter, with Euclidean isotropy in non-zero angles of parallelism with non-stationary Euclidean space, there is no stationary Euclidean space with zero angle of parallelism in (XYZ) axes. This is the reason not for the locality of simultaneous events, as already the facts of experiments.

3. Supersymmetries in quantum relativistic dynamics.

In the quantum coordinate system of dynamic space-matter, we talked about the first (ОЛ_1)level, the Area of Localization of indivisible quanta of space-matter $(p)(e)(\nu_\mu)(\gamma_0)(\nu_e)(\gamma)$, ("Unified Theory 2").

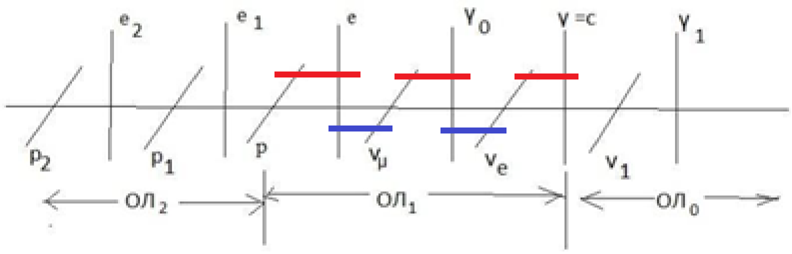


Figure 5

In this Area of Localization of indivisible ($ОЛ_1$) level quanta, there are $(Y+= e^-) = (X- = p^+)$charge $(Y+= \gamma_0^-) = \left(X- = \nu_\mu^+\right)$, $(Y+= \gamma^+) = (X- = \nu_e^-)$, and mass: $(Y-= e^-) = \left(X+ = \nu_\mu^+\right)$ isopotentials $(Y-= \gamma_0^-) = (X+ = \nu_e^+)$, substances in this case, in their structuring. There is a spectrum of masses of these indivisible quanta of space-matter. $m(p) = 938{,}28 MeV, G = 6{,}67 * 10^{-8}$. $m_e = 0{,}511\ MeV, (\ m_{\nu_\mu} = 0{,}27\ MeV)$,

$$\left(\frac{X=K_X}{K}\right)^2 (X -) = cos^2\varphi_X = \left(\sqrt{G}\right)^2 = G, \qquad \left(\frac{Y=K_Y}{K}\right)(Y -) = cos\ \varphi_Y = \alpha = \frac{1}{137{,}036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y = m_Y}{\left(\frac{Y^2}{K^2} = \frac{G}{2}\right)}, \text{ from where: } \qquad 2m_Y = Gm_X \text{ , or:}$$

$2(\text{ПК} = m_Y) = \text{ПК} * (\cos^2(\varphi_X) = G) * (\cos(\varphi_Y) = 1) * (\text{ПК} = m_X)$, in quantum relativistic dynamics

$$m = \frac{F=\Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X = m_X}{\left(\frac{X^2}{K^2} = \frac{\alpha^2}{2}\right)}, \text{ whence } \qquad 2m_X = \alpha^2\ m_Y, \text{ or:}$$

$2(\text{ПК} = m_X) = \text{ПК} * (\cos^2(\varphi_Y) = \alpha^2) * (\cos(\varphi_x) = 1) * (\text{ПК} = m_Y)$, in quantum relativistic dynamics

From such quantum relativistic dynamics , calculations of the spectrum in the quantum coordinate system follow.

$$m_X = \alpha^2\ m_Y/2\ , \qquad \text{or:} \qquad (\alpha/\sqrt{2}) * \text{ПК} * (\alpha/\sqrt{2}) = \frac{\alpha^2 m(e)}{2} = m(\nu_e^{\pm}) = 1.36 * 10^{-5} MeV\ ,$$

$$m_Y = Gm_X/2, \text{ or:}\left(\sqrt{G/2}\right) * \text{ПК} * \left(\sqrt{G/2}\right) = \frac{Gm(p)}{2} = m(\gamma_0^{\pm}) = 3.13 * 10^{-5} MeV$$

$$\text{similarly:} \qquad m(\gamma) = \frac{Gm(\nu_\mu)}{2} = 9{,}1 * 10^{-9} MeV.$$

In a single $(Y\pm = X\mp)$or $(Y+ = X-)$, $(Y- = X+)$space-matter of indivisible structural forms of indivisible quanta $(Y\pm)$ and $(X\pm)$. The reality of such representations follows from the calculations.

$(Y\pm= e^-) = (X+= \nu_e^-)(Y-= \gamma^+)(X+= \nu_e^-)$ electron, where: НОЛ($Y\ \pm$)=КЭ(Y+)КЭ(Y-), and

$(X\pm= p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$ proton, where: НОЛ($X\ \pm$)=КЭ(X+)КЭ(X-),

we separate electromagnetic $(Y+ = X-)$fields from mass fields $(Y- = X+)$in the form:

$$(X +)(X +) = (Y-)\text{and } \frac{(X+)(X+)}{(Y-)} = 1 = (Y +)(Y -); (Y+= X -) = \frac{(X+)(X+)}{(Y-)}, \text{ or:} \frac{(\boldsymbol{X}+=\nu_e^-/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(\boldsymbol{X}+=\nu_e^-/2)}{(Y-=\gamma^+)} = q_e(Y+)$$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\boldsymbol{2}} * \boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36 * 10^{-5})^2 * \sqrt{2} * 6{,}67 * 10^{-8}}{4 * 9{,}07 * 10^{-9}} = 4{,}8 * 10^{-10}\text{СГСЕ}$$

$$(Y +)(Y +) = (X-)\text{and } \frac{(Y+)(Y+)}{(X-)} = 1 = (X +)(X -); (Y+= X -) = \frac{(Y-)(Y-)}{(X+)}, \text{ or: } \frac{(\boldsymbol{Y}-=\gamma_0^+)(\alpha^2)(\boldsymbol{Y}-=\gamma_0^+)}{(\boldsymbol{X}+=\nu_e^-)} = q_p(Y+= X -),$$

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3{,}13 * 10^{-5}/2)^2}{2 * 137{,}036^2 * 1.36 * 10^{-5}} = 4{,}8 * 10^{-10}\text{СГСЕ}$$

Such coincidences cannot be accidental. Here we fix the fact that quantum relativistic dynamics is real and its calculations give results. A control check of the reality of such facts follows already from the experimental facts. For a proton wavelength $\lambda_p = 2{,}1 * 10^{-14}$*см*, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286 * 10^{24}$*Гц*is formed by the frequency $(\gamma_0^+)$of quanta, with mass $2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+})$.

$$1г = 5{,}62 * 10^{26} MeV, \text{ or}(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58 * 10^{-32}г = 3{,}13 * 10^{-5} MeV$$

Similarly for an electron $\lambda_e = 3{,}86 * 10^{-11}$*см*, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77 * 10^{20}$*Гц*, is formed by the frequency $(\nu_e^-)$of quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-)})$, where $\alpha(Y -) = \frac{1}{137{,}036}$is a constant, we obtain for the neutrino mass:

$$(m_{\nu_e^-}) = \frac{\alpha^2\hbar(\nu_{(\nu_e^-)})}{2c^2} = \frac{1*1{,}0545*10^{-27}*7{,}77*10^{20}}{(137{,}036^2)*2*9*10^{20}} = 2{,}424 * 10^{-32}г = 1{,}36 * 10^{-5} MeV, \text{ or:}$$

stable particles with annihilation products in a single $(Y\mp= X\pm)$space-matter:

$$(X\pm= p) = (Y-= \gamma_o)(X+= \nu_e)(Y-= \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{\nu_e}{\alpha^2}\right) = 938{,}275\ MeV\ ; \text{ proton and:}$$

$$(Y\pm= e) = (X-= \nu_e)(Y+= \gamma)(X-= \nu_e) = \left(\frac{2\nu_e}{\alpha^2} + \frac{\gamma*\alpha}{2G}\right) = 0{,}511\ MeV; \text{ electron.}$$

Such coincidences are also not accidental and they already follow from the experimental data. If in the symmetries of quantum relativistic dynamics we used the symmetry:

$$ПК * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * ПК,$$

from which the quantum relativistic dynamics of the electric charges of the proton and electron follows, now we consider the same $(\cos^2(\varphi_X)\cos(\varphi_Y) = 1)$symmetry of quantum relativistic dynamics:

$$(ПК)^2 * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * (ПК)^2,$$

but already for a quadratic form. This symmetry follows from the calculations of the interaction constant of two charges, which we represent in the unified Evolution Criteria as:

$\hbar c *\propto= q^2$, or: $((ПК)^2 = \hbar c) * (\cos^2(\varphi_X = 0) = 1) * (\cos(\varphi_Y)_{max} =\propto) = 1 * (ПК = q)^2$.

In this case, we single out the relativistic invariant $(\hbar c = \text{const})$, but already in quantum relativistic dynamics $\cos^2(\varphi_X)\cos(\varphi_Y) = 1$ or: $\begin{pmatrix} \cos^2(\varphi_X) & 0 \\ 0 & \cos(\varphi_Y) \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ this invariant, in the form:

$$((ПК)^2 = \hbar c) * (\cos^2(\varphi_X) = 1)(\cos(\varphi_Y) =\propto) = 1 * (ПК = q)^2.$$

$$\frac{(ПК=q)^2}{(\cos^2(\varphi_X)=1)*(\cos(\varphi_Y)_{max}=\propto)} = \hbar c, \quad \text{or:} \quad \frac{(4{,}8*10^{-10})^2)}{(1/137.036)} = 3.157 * 10^{-17} \cong (\hbar c = 3.1647 * 10^{-17}).$$

Similarly, in the same mathematical model of quantum relativistic dynamics, the following takes place:

$$((ПК = m_0)^2) * (\cos^2(\varphi_X) = G)(\cos(\varphi_Y = 0) = 1) = 1 * ((ПК)^2 = \hbar c), \quad \text{or:}$$

$(m_0)^2 * G * 1 = 1 * (\hbar c)$, whence: $\sqrt{G} * m_0\sqrt{G} * m_0 = \hbar c$, relativistic invariant for masses:

$(m_0)^2 = \frac{\hbar c}{G} = \frac{3.1647*10^{-17}}{6.67*10^{-8}} \cong 1 * 4.8 * 10^{-10}$, gives charge , or: $(m_0)^2 = \frac{\hbar c}{G}$

Its matrix representation with the interaction constant in the form:

$$\begin{pmatrix} \sqrt{G} * m_0 & 0 \\ 0 & \sqrt{G} * m_0 \end{pmatrix} = \hbar c\,,$$

This invariant, we scale with real quanta,$\sqrt{G} * (m_0 = \gamma_0^{\pm})\sqrt{G} * (m_{0=}\nu_e^{\pm})$, mass isopotential, and act by the group generator: $Q = \begin{pmatrix} (a_{22})^2 & 1 \\ 1 & a_{11} \end{pmatrix} = 0$, from which the quantum relativistic dynamics follows: $(a_{22})^2 a_{11} = 1$, taking into account the classical relations : $\pi = \frac{l}{d} = \frac{2(X-)}{2Y_0}$:

$$\begin{pmatrix} \mathrm{ch}\left(\frac{X=0}{Y_0}\right) = 1 & -\pi * \mathrm{ch}(1) \\ \pi * (cos(\varphi_Y)_{max} =\propto) & \cos(\varphi = 0) = 1 \end{pmatrix} = (1+\propto * \mathrm{ch}(1) * \pi^2).$$

Ultimately, the relations of quantum relativistic dynamics follow: $(a_{22})^2 a_{11} = 1$:

$$\begin{pmatrix} \sqrt{G} * \gamma_0^{\pm} & 0 \\ 0 & \sqrt{G} * \nu_e^{\pm} \end{pmatrix} * (1+\propto * \mathrm{ch}(1) * \pi^2) = \hbar c = (\gamma_0^{\pm})G(\nu_e^{\pm}) * (1+\propto * \mathrm{ch}(1) * \pi^2)\text{, or:}$$

$$(\hbar c = 3.1647 * 10^{-17}) = (3{,}13 * 10^{-5}) * 6.67 * 10^{-8} * (1.36 * 10^{-5}) * \left(1 + \frac{1.543*(3.14)^2}{137.036}\right) = 3.155 * 10^{-17}.$$

In physical terminology, we say that the specified bosons and fermions form a relativistic invariant $(\hbar c)$, in the specified matrix representation. Here we talked about the mass isopotential: $(Y-= \gamma_0^-) = (X+ = \nu_e^+)$, in the quantum coordinate system. Similarly, by scaling the quantum relativistic dynamics of something else: $(Y-= e^-) = (X+ = \nu_\mu^+)$the mass isopotential, we get the same result.

$$\frac{1}{2} * \begin{pmatrix} G * e/\pi & 0 \\ 0 & G * \nu_\mu/\pi \end{pmatrix}(1+\propto * \pi) = \hbar c, \text{ or: } (e)(G/\pi)^2(\nu_\mu) * (1+\propto * \pi) = \hbar c,$$

$$(0.5) * (0.511) * (6.67 * 10^{-8}/3.14)^2 * (0.27) * (1 + 3.14/137.036) = 3.18 * 10^{-17} = (\hbar c = 3.1647 * 10^{-17}).$$

Thus, we have obtained the same relativistic invariant $(\hbar c)$, in the indicated matrix representation of the symmetry of bosons and fermions in quantum relativistic dynamics. Other In other words, we are talking about the supersymmetry $(ПК)^2 * \cos^2(\varphi_X)\cos(\varphi_Y) = 1 * (ПК)^2$of these bosons and fermions, in the quantum relativistic dynamics of the isopotentials of the quantum coordinate system.

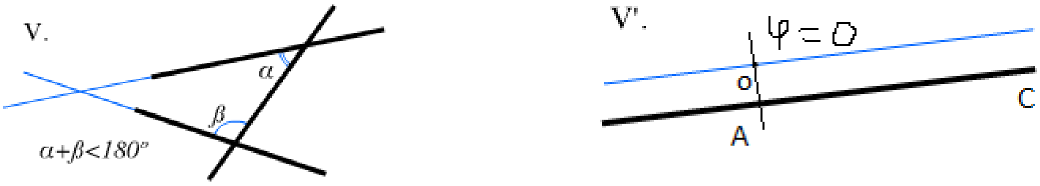
11.Superluminal photons

Table of contents.

11.1. Introduction.

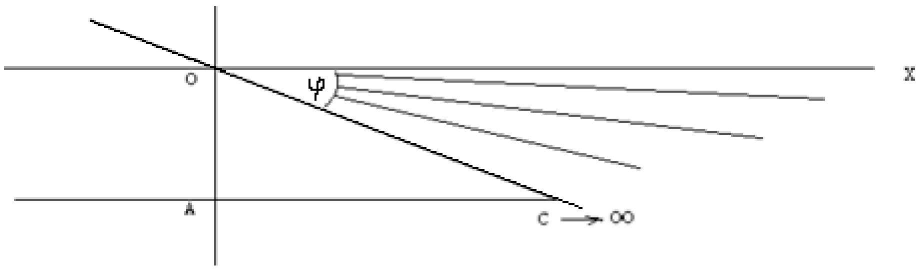
The tool for cognition of the laws of Nature is mathematics, the basis of which is the Euclidean axiomatics. Let us highlight here the definition of a point, a line and the conditions for parallelism of straight lines.

1. “A point is that of which nothing is a part”) (“Principles” by Euclid). Or, a point is something that has no parts,
2. Line - length without width.
3. and 5th postulate about parallel straight lines that do not intersect. If a straight line intersecting two straight lines forms interior one-sided angles less than two right angles, then, extended indefinitely, these two straight lines will meet on the side where the angles are less than two right angles.



rice. 1 Euclidean axiomatics .

In this case, many points at one point give again a point. Is it a point or a set of them, determined by a certain relationship between the elements of the set? Or, many lines in one line, gives a line again. Is it a line or many of them? Euclidean axiomatics does not provide answers to such questions. On the other hand, in Nature there is no space without matter, and there is no matter outside space. Space-matter is one and the same. The main property of matter is movement. In Galileo's experiments, a ball after an inclined plane moves along a horizontal plane endlessly, without external resistance forces. The main property of dynamic space-matter, within the dynamic angle of parallelism, (United **Theory 2 ,** http://viXra.org/abs/2210.0051) is also movement.



rice. 2. Dynamic space-matter.

Straight lines passing through point O , within the always dynamic angle of parallelism ($\varphi \neq const$), do not intersect AC at infinity. Infinity cannot be stopped, which is why such a dynamic space always exists. In general, we are talking about dynamic space-matter. Its properties are discussed in “Unified Theory 2”. Let's highlight the main thing. From the Euclidean space OAS, we cannot get into dynamic space-matter, within the always dynamic angle of parallelism ($\varphi \neq const$). Euclidean space itself in the XYZ axes loses its meaning.

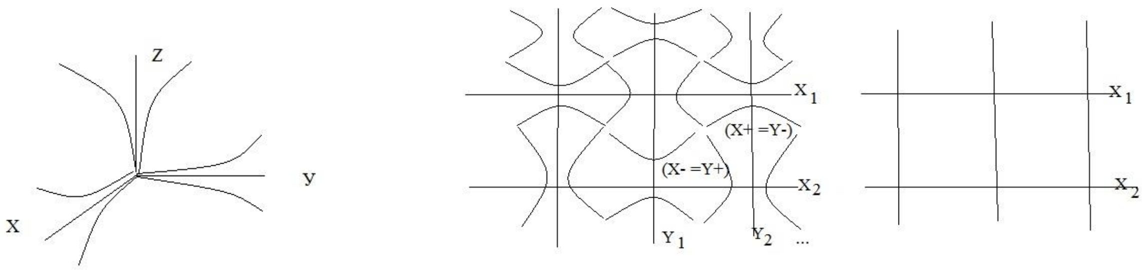


Fig.3 dynamic space-matter

Within the framework of the Euclidean ($\varphi = 0$)axes grid, we do not see dynamic $(X{+}{=}\,Y{-})$,$(X{-}{=}\,Y{+})$ space-matter, and we will not be able to imagine it. Therefore, the axioms of dynamic space-matter are introduced as facts that do not require proof. Already in these axioms the problem of the Euclidean axiomatics of a point, as a set of indivisible sphere-points, is solved in one indivisible sphere-point, but already on (n) convergence, dynamic space-matter. Any fixation (in experiments) of a non-zero ($\varphi \neq 0$) angle of parallelism gives a multisheet Riemannian space:

$\boldsymbol{e_i} = \frac{\partial X}{\partial x^i}\boldsymbol{i} + \frac{\partial Y}{\partial x^j}\boldsymbol{j} + \frac{\partial Z}{\partial x^k}\boldsymbol{k}$, $\boldsymbol{e^i} = \frac{\partial x^i}{\partial X}\boldsymbol{i} + \frac{\partial x^j}{\partial Y}\boldsymbol{j} + \frac{\partial x^k}{\partial Z}\boldsymbol{k}$, with a fundamental tensor $e_i(x^n) * e_k(x^n) = g_{ik}(x^n)$ and topology $(x^n = X, Y, Z)$ in Euclidean space. That is, Riemannian space is a fixed $(\varphi \neq 0) = const$)state of dynamic ($\varphi \neq const$)space-matter. And the mathematical properties of such space determine the physical properties of matter. All Criteria for the Evolution of Velocity Space, and in Riemannian Space too:

$\boldsymbol{e_i}(x^n) = \boldsymbol{v_i}, \quad \boldsymbol{e_k}(x^n) = \boldsymbol{v_k}, \boldsymbol{g_{ik}}\ (x^n) \equiv \boldsymbol{v^2},$ as a potential in the coordinate -time space of velocities $W^N = K^{+N} T^{-N}$, in multidimensional space-time. A striking example of this is Einstein's General Theory of Relativity. Moreover, Einstein's theory was created in a fixed $(\varphi \neq 0) = const)$Riemannian space. And there are no problems with quantum theories.

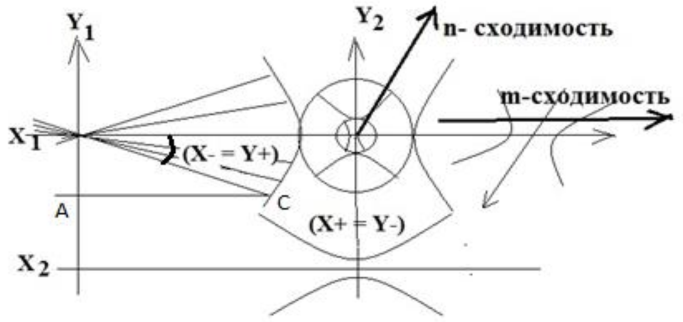


Fig. 3a. dynamic space-matter

11.2. Initial provisions.

From the axioms of such dynamic $(\varphi \neq const)$space-matter, as geometric facts that do not require proof. $(m-n)$convergence, are formed by Indivisible Areas of Localization as indivisible $(X\pm)$and $(Y\pm)$quanta of dynamic space-matter. Indivisible quanta $(X\pm = p)$, $(Y\pm = e)$, $(X \pm = \nu_\mu)$, $(Y \pm = \gamma_o)$, $(X\pm = \nu_e)$, $(Y\pm = \ \gamma)$, form OL $_1$ – the first Area of their Localization. This is exactly how OL $_2$ and OL $_3$ ... Areas of Localization of indivisible quanta.

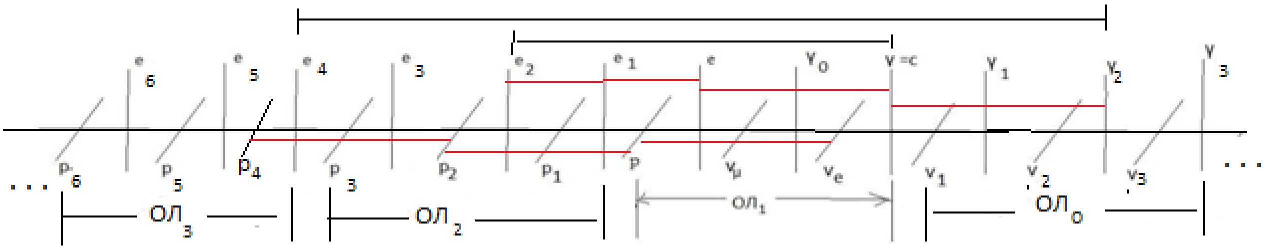


Fig.4 quantum coordinate system

"Unified Theory 2" presents the calculated characteristics of such quanta, which correspond to the recorded facts of reality. Let us highlight the facts necessary here. An electron emits and absorbs a photon : $(e \leftrightarrow \gamma\ )$. Their speeds are related by the relation: $(\upsilon_e = \alpha * c)$. This is exactly how the speeds of a photon $(\gamma \leftrightarrow \gamma_2\ )$ and a superluminal photon are related $(\upsilon_\gamma \leftrightarrow \alpha * \upsilon_{\gamma_2})$. They are connected by red lines in Fig. 4.

In "Black Holes" (http://viXra.org/abs/2312.0018), we considered the sequences of emission and absorption of indivisible (stable) quanta, in such a quantum coordinate system, in the form : $(p_8^+ \to p_6^-)$, $(p_6^- \to p_4^+)$, $(p_4^+ \to p_2^-)$, $(p_2^- \to p^+)$, with the corresponding atomic nucleus: (p^+/e^-)substances of an ordinary atom,(p_2^-/e_2^+) antimatter core of the "stellar atom",(p_4^+/e_4^-) matter of the core of the galaxy, (p_6^-/e_6^+) antimatter of the core of the quasar and " (p_8^+/e_8^-) matter of the core of the "quasar galaxy". Further, we proceed from the fact that quantum(e_{*1}^-) substances$(Y- = p_1^-/n_1^- = e_{*1}^-)$ planetary cores emits a quantum

$$(e_{*1}^+ = 2 * \alpha * (p_1^- = 1{,}532E7\ MeV)) = 223591MeV, \text{ or: } \quad \frac{223591}{p=938{,}28} = e_*^+ = 238{,}3 * p$$

the mass of the uranium nucleus, the "antimatter" quantum $M(e_*^+) = M(238{,}3 * p) = {}^{238}_{92}U$, the uranium nucleus. Such "antimatter" $(e_*^+ = {}^{238}_{92}U = Y-)$is unstable, and decays exothermically into a spectrum of atoms in the core of planets. Such calculations are consistent with observed facts.

11.3. Superluminal photons.

At superluminal level $w_i(\alpha^{-N}(\gamma = c))$ physical vacuum, such stars do not manifest themselves. Next, we are talking about the substance of $(p_3^+ \to p_1^-)$the nucleus$(Y- = p_3^+/n_3^0 = e_{*3}^+)$ "black spheres" around which, in their gravitational field, globular clusters of stars form. Similarly below, we are talking about radiation from antimatter matter and vice versa: $(p_6^+ \to p_5^-)$, $(p_5^- \to p_3^+)$, $(p_3^+ \to p_1^-)$, $(p_1^- \to \nu_\mu^+)$. The general sequence looks like: $p_8^+, p_7^+, p_6^-, p_5^-, p_4^+, p_3^+, p_2^-, p_1^-, p^+, \nu_\mu^+, \nu_e^-$ ....

Further: $НОЛ = M(e_4 = 1{,}15\ E16\ )(k = 3.13)M\left(\gamma_2 = 2{,}78\ E - 17\ \right) = 1$. These quanta$(p_4/e_4)$ galactic nuclei are surrounded by individually emitted quanta(p_2/e_2) the cores of stars are the reason for their formation. Such galactic nuclei, in the equations of quantum gravity, have spiral arms of mass trajectories, already: $v_i(\gamma_2 = \alpha^{-1}\mathrm{c}) = 137 * \mathrm{c}$, in superluminal speed space. Below the energy of light photons ($v_{\gamma_2} = 137 * \mathrm{c}$) in a physical vacuum, galaxies do not manifest themselves. Outside galaxies, we are talking about quanta from the core of mega stars ($Y- = p_5^-/n_5^- = e_{*5}^-$) . They generate many quanta ($e_{*5}^- = 2 * \alpha * p_5^- = e_{*4}^+ = 290p_4^+$) galactic nuclei. Likewise further.

The important thing is that an ordinary photon ($Y\pm = \gamma$) can emit and absorb a superluminal photon ($Y \pm = \gamma_2$)in exactly the same way that an electron ($Y\pm = e$) emits an ordinary photon ($Y\pm = \gamma$). The source of ordinary photons is stars. And the source of superluminal photons are the "heavy" electrons of the galactic nucleus.

$$\text{НОЛ} = M(e_2 = 3{,}524\ \mathrm{E}7\ )(k = 3.13)M(\gamma = 9{,}07\ \mathrm{E} - 9\ ) = 1$$
$$\text{НОЛ} = M(e_4 = 1{,}15\ \mathrm{E}16\ )(k = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E} - 17\ ) = 1$$

Moreover, for the photon ($Y\pm = \gamma$), the speed of a superluminal photon ($Y \pm = \gamma_2$)will have the same speed of light: $w = \frac{c+137*c}{1+\frac{137*c*c}{c^2}} = \frac{c(1+137)}{(1+137)} = c$. These connections are indicated in Fig. 4. Essentially, we're talking about "immersion" of quanta of the core of stars and galaxies into the corresponding levels of physical vacuum. As we see, quanta from the core of galaxies are "immersed" in superluminal velocity space.

And there is the fact of the presence of "supermassive compact objects" discovered in the core of galaxies. And there is another representation of the properties of such objects:

$$(R < R_0) = \frac{2GM}{(v_\mathrm{i} > c)^2}$$

with the presence of superluminal space: ($v_\mathrm{i} > c$)inside ($R < R_0$)such "black spheres" called "black holes". There are no "holes" and there are no singularities in "black holes". The mass of such "black spheres" ($M \neq 0$)is not zero, and this is a fact of our galaxy. A misconception about Einstein's General Theory of Relativity is that it is believed that non-zero mass is represented in the equation as the source of space-time curvature, as the source of gravity. There is no such mass in Einstein's equation. In the equation of Einstein's General Theory of Relativity, as a mathematical truth in dynamic space-matter in its entirety:

$$R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = \frac{8\pi G}{c^4}T_{ik}.$$

there is no mass: ($M = 0$), in its classical sense. In mathematical truth, this is the difference in relativistic dynamics at two fixed points of Riemannian space, one of which **is reduced to the Euclidean sphere** (these are key words), in an external, non-stationary($\lambda \neq 0$) Euclidean space- time. No one goes inside the sphere, just like in Newton's law. This is a law that has been tested many times: $F = \frac{Gm_1m_2}{K^2}$, where (K)- the distance between the centers of the massive spheres of the Earth and the Moon, for example. And if a small ball is lowered into the diametrical hole of a large ball, the gravitational force should tend to infinity at ($K = 0$). This is also a kind of singularity that does not exist in Nature. Newton's law is only valid outside a massive sphere.

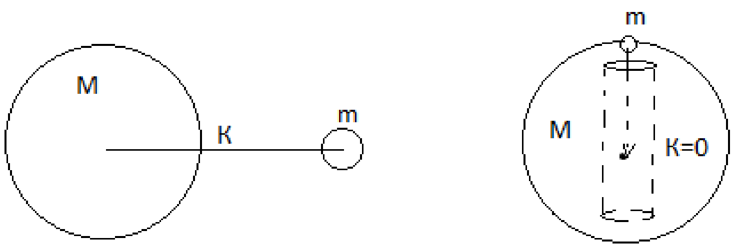


Fig.5. Newton's law

Likewise, the equation of Einstein's General Theory of Relativity is actually outside the Euclidean massive sphere, in its gravitational field. In physical truth, in the equation of the General Theory of Relativity, Einstein, in the unified Criteria of Evolution, Newton's formula (law) is "hardwired":

$$E = c^4K,\ P = c^4T,\ (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \quad \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$
$$\Delta c_{ik}^2 = \frac{c^4c^4K^2}{c^4c^4T^2} = \frac{G(c^2K_Y=m_1)(c^2K_Y=m_2)}{c^2(c^2T^2=K^2)} = \frac{Gm_1m_2}{c^2K^2}, \qquad \Delta c_{ik}^2 = \frac{Gm_1m_2}{c^2K^2},\ \ \Delta c_{ik}^2c^2 = F$$

As we see, in the equation of Einstein's General Theory of Relativity, the force of gravity acts in fields with zero mass. In relativistic dynamics $E^2 = \mathrm{m_0}^2c^4 + p^2c^2$, in fields with zero mass ($\mathrm{m_0}^2 = 0$), Einstein took only the energy-momentum tensor $\frac{E^2}{p^2} = c^2$, already like gravitational potential. It reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$ in the external field of gravity $c^2(X+)$, with their Principle of Equivalence, gives strength. Let's pay attention - the gravitational field both in Newton's law and in Einstein's General Theory of Relativity is reduced to the Euclidean sphere. In both cases, there is no entry into the Euclidean sphere with non-zero mass as a source of gravity.

Thus, from two sides: $(R < R_0) = \frac{2GM}{(v_\mathrm{i} > c)^2}$, and $(v_{\gamma_2} = 137 * \mathrm{c})$, we came to the conclusion that there is a superluminal velocity space inside the "black sphere" of the galactic core, to which the gravitational field of Einstein's General Theory of Relativity is reduced. Inside the "black sphere", all the laws of physics, space-time, work as a special case of a fixed state of dynamic space-matter, but already in the space of superluminal speeds. This is why even photons cannot get inside the "black sphere" of the galactic core. Photons simply circle around such a "black sphere", which is called a "black hole".

The question is how to catch a superluminal photon $(Y \pm = \gamma_2)$with an ordinary photon $(Y \pm = \gamma)$? This is a typical problem of an electron absorbing $(Y \pm = e)$a photon $(Y \pm = \gamma)$. We are talking about a change in photon energy $(Y \pm = \gamma)$when a superluminal photon is absorbed $(Y \pm = \gamma_2)$. Photon energy has momentum: $E = p * c$, with zero mass $\mathrm{m_0}^2 = 0$. Such a photon can only absorb energy $E = p * \alpha * c$, already a superluminal photon $(Y \pm = \gamma_2)$. Thus, the photon energy $(Y \pm = \gamma)$, absorbing a superluminal photon $(Y \pm = \gamma_2)$, is equal to: $E = p * c * (1 + \alpha)$, where $(\alpha = 1/137)$, for any momentum of the primary photon $(Y \pm = \gamma)$. The task is to search for such photons in the direction of the galactic nucleus as a source of superluminal photons $(Y \pm = \gamma_2)$. For example, an orbital electron of hydrogen emits a photon as it moves from one orbit to another. It's clear. So, emitted photons, from the same orbits of hydrogen electrons in the direction towards the Galactic core, and in the direction perpendicular to the Galactic core, can have the following: $E = p * c * (1 + \alpha)$, energy difference. And trial experiments will have the decisive say here.

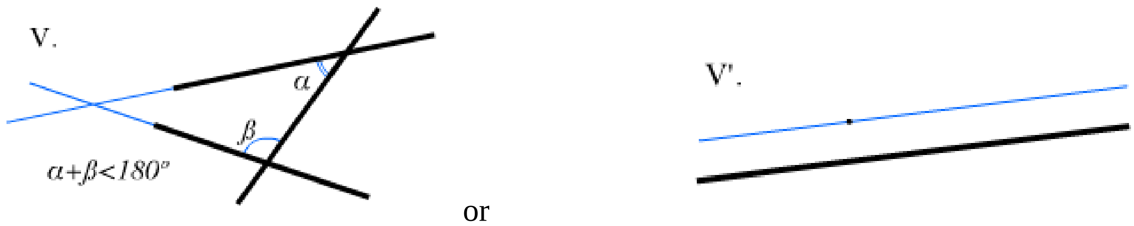
12.Space of the Universe

Content

12.1 Introduction

All theories about the Universe are presented within the framework of Euclidean definitions and postulates.

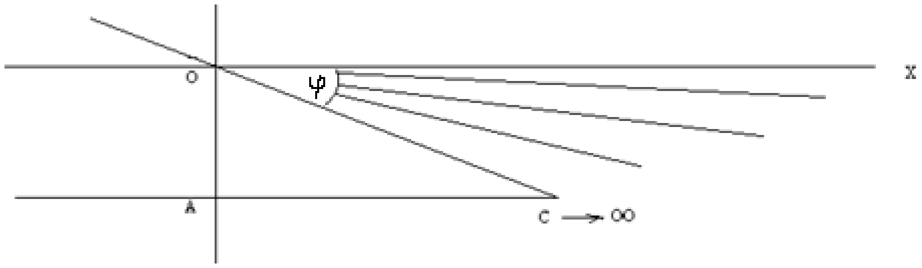
1. "A point is that, part of which is nothing") ("Beginnings" of Euclid). or a point is that which has no parts,
2. Line - length without width, and the 5th postulate about parallels that do not intersect.
5. If a line intersecting two lines forms interior one-sided angles less than two lines, then, extended indefinitely, these two lines will meet on the side where the angles are less than two lines.



or

Figure 1 Euclidean axiomatic

That is, through a point outside a line, only one line can be drawn parallel to the line. In the "Unified Theory 2" there are contradictions that are unresolvable in the Euclidean axiomatic. That is, many lines in one line (length without width), again a line. Is it a line or multiple lines? Similarly, the set of points in one point is again a point. Is it a point or multiple points? The Euclidean Elements do not provide answers to such questions. The problems of the 5th postulate are also well known.



There are real facts of the dynamic space of a bunch of straight lines that do not intersect, that is, parallel to the original line AC at infinity, presented in the "Unified Theory 2". And moving along the line (AC), there will be a dynamic space nearby, which we will not be able to get into.

Infinity cannot be stopped, so this already dynamic space always exists. And already the properties of this dynamic $(\varphi \neq const)$space are presented as the properties of matter, the main property of which is movement. There is no matter outside such space, and there is no space without matter. Space-matter is one and the same.

In such a dynamic space-matter, Euclidean axiomatics is presented as a special case of zero $(\varphi = 0)$angle of parallelism. At the same time, the problem of a multitude of exactly straight lines in one straight parallel line is solved, as “length without width”.

The main property of a dynamic space-matter is a dynamic $(\varphi \neq const)$ angle of parallelism. In this case, the Euclidean space in the XYZ axes loses its meaning.

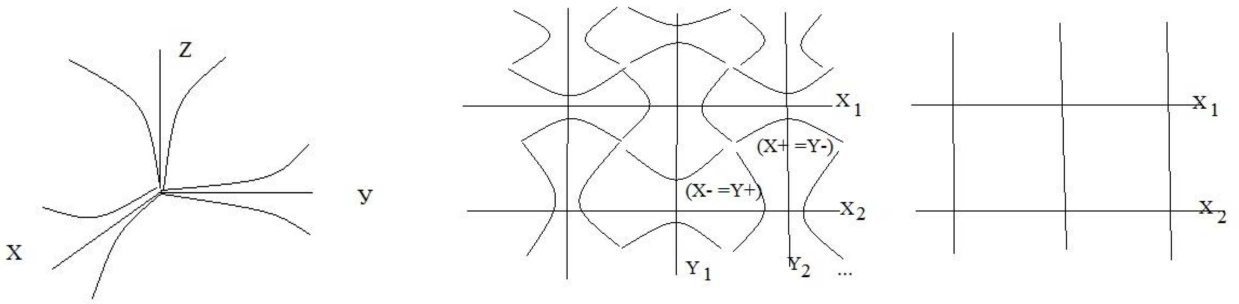


Fig.3 dynamic space-matter

Within the grid of Euclidean $(\varphi = 0)$ axes, we do not see dynamic$(X{+}{=}\,Y{-})$, $(X{-}{=}\,Y{+})$ space-matter, and we cannot imagine it. Therefore, the axioms of dynamic space-matter are introduced as facts that do not require proof. Already in these axioms the problem of the Euclidean axiomatic of a point is solved, as a set of indivisible points-spheres, in one indivisible point-sphere, but already on (n) convergence, dynamic space-matter.

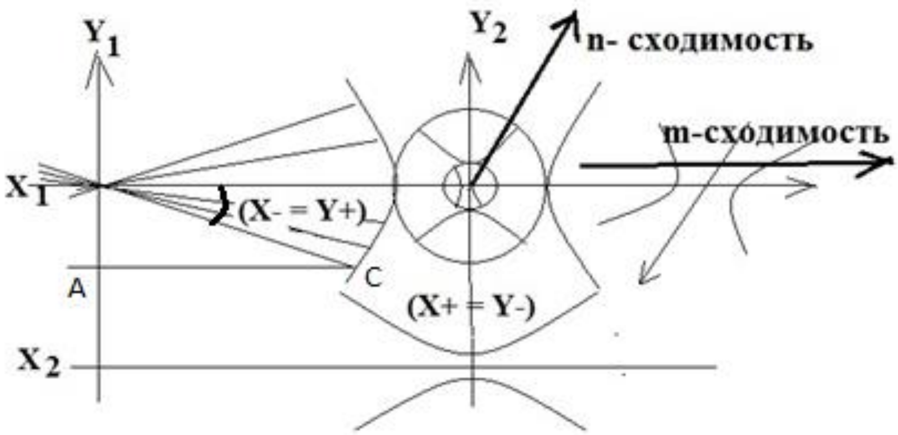


fig.3a - dynamic space-matter

Any fixation (in experiments) of a non-zero $(\varphi \neq 0)$ angle of parallelism gives a multi-sheeted Riemannian space. Now, within the framework of the axioms of dynamic space-matter in the form:

1. Non-zero, dynamic angle of parallelism, of a beam of parallel lines, determines orthogonal fields $(X-) \perp (Y-)$ of parallel lines - trajectories, as isotope characteristics of space-matter.

2. Zero angle of parallelism$(\varphi = 0)$, gives «length without width» with zero or non-zero (Y_0) - radius of sphere-point «That does not have parts» in Euclid $(\varphi \neq 0) \neq const$ e an axiomatic.

3. A beam of parallel lines with zero angle of parallelism$(\varphi = 0)$, «equally located to all its points», gives variety of straight lines in one «without width» Euclidean straight line.

4. Inside $(X-), (Y-)$ and outside $(X+), (Y+)$ fields of lines-trajectories non-zero$(X_0 \neq 0)$ or $(Y_0 \neq 0)$ of physical sphere-point, form Undivided Region of Localization $НОЛ(X \pm)$ or $НОЛ(Y \pm)$of dynamic space-matter.

5. In single fields $(X-=Y+)$, $(Y-=X+)$ of orthogonal lines-trajectories $(X-)\perp(Y-)$ there are no two the same sphere-points and lines-trajectories.

6. Sequence of Undivided Regions of Localization НОЛ$(X\pm)$, $(Y\pm)$,$(X\pm)$… on radius $X_0\neq 0$ or $(Y_0\neq 0)$ of sphere-point on one line-trajectory gives (n) convergence, and on different trajectories (m) convergence.

7. To each Undivided Region of Localization НОЛ of space-matter corresponds the unit of all its Criterion of Evolution (КЭ), in single $(X-=Y+)$, $(Y-=X+)$ space-matter on $(m-n)$convergences,

$НОЛ = КЭ(X-=Y+)КЭ(Y-=X+)=1, \qquad НОЛ = КЭ(m)КЭ(n)=1,$

In the system of numbers that are equal by analogy of numbers 1.

8. Fixation of an angle $(\varphi\neq 0)=const)$ or $(\varphi=0)$a beam of straight parallel lines, space-matter, gives 5th postulate of Euclid and an axiom of parallelism.

Any point of fixed lines-trajectories is presented by local basic vectors Rimanov's space:

$$\boldsymbol{e_i}=\frac{\partial X}{\partial x^i}\boldsymbol{i}+\frac{\partial Y}{\partial x^j}\boldsymbol{j}+\frac{\partial Z}{\partial x^k}\boldsymbol{k}, \qquad \boldsymbol{e^i}=\frac{\partial x^i}{\partial X}\boldsymbol{i}+\frac{\partial x^j}{\partial Y}\boldsymbol{j}+\frac{\partial x^k}{\partial Z}\boldsymbol{k},$$

With fundamental tensor $e_i(x^n)*e_k(x^n)=g_{ik}(x^n)$ and topology $(x^n=X,Y,Z)$ in Euclidean space. That is, Rimanov's space is fixed $(\varphi\neq 0)=const)$ state of dynamic $(\varphi\neq const)$ space-matter. Particular case of negative curvature $\left(K=-\frac{Y^2}{Y_0}=\frac{(+Y)(-Y)}{Y_0}\right)$ (Smirnov b.1, p.186) Rimanov's space is space of Lobachevski's geometry (Math encyclopedia b.5, p.439). Riemannian space is a fixed $(\varphi\neq 0=const)$state of a geodesic$(x^s=const)$ lines dynamic $(\varphi\neq const)$space-matter $(x^s\neq const)$. There is no such mathematics of Riemannian space $\boldsymbol{g_{ik}}(x^s\neq const)$, with a variable geodesic. There is no geometry of the Euclidean non-stationary sphere, no geometry of Lobachevsky space, with variable asymptotes of hyperbolas. A special case of negative curvature $\left(K=-\frac{Y^2}{Y_0}=\frac{(+Y)(-Y)}{Y_0}\right)$(Smirnov v.1, p.186) of Riemannian space is the space of Lobachevsky geometry (Mathematical Encyclopedia v.5, p.439). There are nine distinctive features of Lobachevsky geometry from Euclidean geometry (Fig. 1.2).

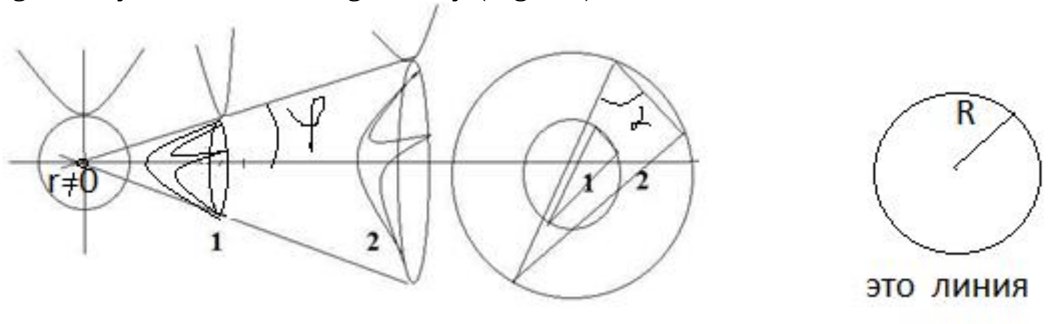


Fig. 1.2 Isotropic dynamics.

One of the features of Lobachevsky geometry is the sum of $(0^0<\sum\alpha<180^0)$the angles of a triangle, as opposed to their Euclidean projection $(\sum\alpha=180^0)$onto a plane. Equal areas $S_1=S_2$of triangles, at equal angles of parallelism $\varphi_1=\varphi_2$of a bundle of parallel straight lines, give projectively similar triangles in the Euclidean plane with equal angles at the vertices. A circle in the Euclidean plane is a line in Lobachevsky geometry. Here, the Euclidean "length without width" is the radius of a circle in Lobachevsky geometry. The larger the radius, the longer the "line". Such circles on the surface of the Euclidean sphere are a set of straight lines in the Universe. In our case, the Euclidean sphere is also dynamic. How can we create theories of the "Big Bang" or "cyclic Universe" in such a sphere? The answer is no way. This is about nothing. The zero radius of such a circle $(r=0)$means that there is no such circle, and there are no such lines. This is a conversation about nothing, they simply do not exist. This is about questions of singularity with their infinite criteria and impossibilities. They do not exist in mathematics or in Nature.These axioms already solve the problems of the Euclidean axiomatic of a set of points at one point "without parts" and a set of lines in one "length without width" of a line. Space-time is a particular case of a fixed $(\varphi\neq 0)=const)$ state of dynamic $(\varphi\neq const)$ space-matter. At the same time, all the Criteria of the Evolution of matter are formed in the multidimensional $W^N=K^{+N}T^{-N}$ space-time. They are presented in the "Unified Theory 2" in the form: $(\Pi=W^2)$ - potential, $(F=\Pi^2)$ - force....

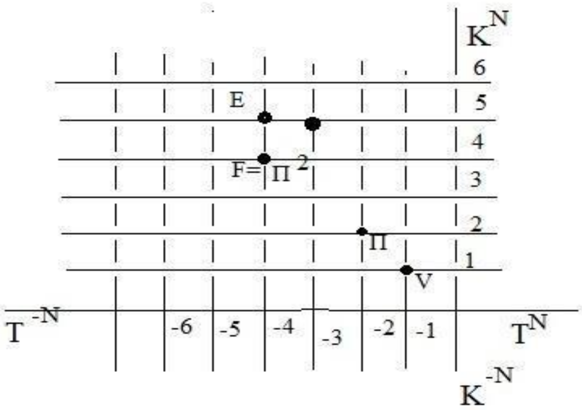


Fig.4 uniform Criteria of Evolution of space-matter.

In physical theories, we are talking about electro $(Y+=X-)$magnetic fields of charge: $q(Y+=X-)=ПК$, and gravite $(G+=Y-)$ mass fields with mass: $m(G+=Y-)=ПК$, and the corresponding equations of dynamics (which are derived) as mathematical truths. These are Maxwell's equations

$c*rot_Y B(X-)=rot_Y \mathrm{H}(X-)=\varepsilon_1\frac{\partial E(Y+)}{\partial T}+\lambda E(Y+)$ $rot_X E(Y+)=-\mu_1\frac{\partial \mathrm{H}(X-)}{\partial T}=-\frac{\partial \mathrm{B}(X-)}{\partial T}$;	$c*rot_Y M(Y-)=rot_Y N(Y-)=\varepsilon_2*\frac{\partial G(\mathrm{X}+)}{\partial T}+\lambda*G(\mathrm{X}+)$ M(Y-) $=\mu_2*N(Y-)$; $rot_y G(\mathrm{X}+)=-\mu_2*\frac{\partial N(Y-)}{\partial T}=-\frac{\partial M(Y-)}{\partial T}$;

and equations of dynamics of gravitational-mass fields.

Indivisible Areas of Localization, $(X\pm)$ and $(Y\pm)$, as facts of reality, we correlate with indivisible quanta $(X\pm=p)$ of a proton, $(Y\pm=e)$of an electron, $(X\pm=\nu_\mu)$, $(Y\pm=\gamma_0)$, $(X\pm=\nu_e)$, $(Y\pm=\gamma=c)$ photon. These quanta form the first Localization Area $(ОЛ_1)$. And like Cartesian, spherical, cylindrical, any other coordinate system in Euclidean axiomatic, it is already possible to represent the quantum coordinate system on (m) and (n) convergences, indivisible quanta of space-matter, in full.

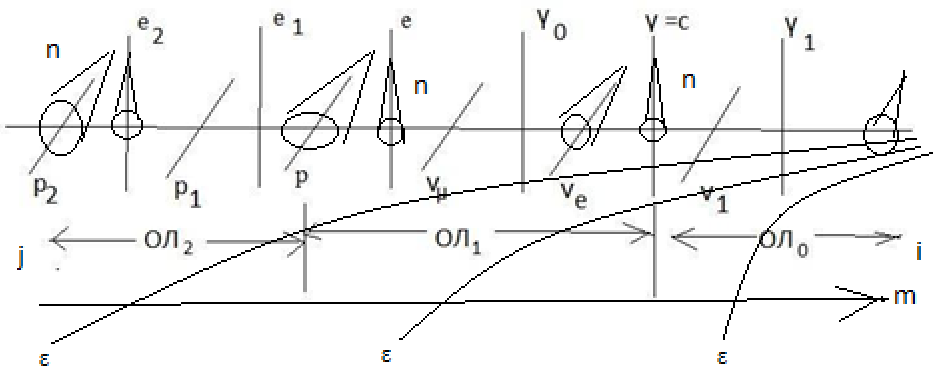


Fig.5 quantum coordinate system

Already in such a quantum coordinate system, one can consider the properties of the space-matter of the Universe, visible and invisible for photons and neutrinos of the $(ОЛ_1)$ level.

12.2 Properties of space-matter of the Universe

The visible space of the Universe is represented by a sphere with Euclidean isotropy. In fact, such a Euclidean sphere is expanding, that is, non-stationary. The reason for this non-stationary is considered to be dark energy, in the presence of observable dark masses. Extension conditions are calculated from the conditions of the 2-nd space

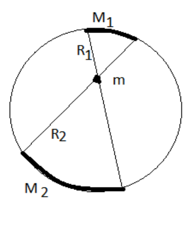


Fig.6. to the conditions of expansion of space-matter

velocity of the masses (M_1) and (M_2), relative to the mass of the observer (m):

$$\frac{mv^2}{2}=\frac{GMm}{R},\quad v^2=\frac{2GM}{R}=П,\quad \text{for } \frac{2GM_1}{R_1^2}=\frac{2GM_2}{R_2^2}\quad \text{or:}\quad \frac{M_1}{M_2}=\frac{R_1^2}{R_2^2},\ R^2\sim(M=\rho V).$$

As a result of transformations: $v^2=\frac{2G(\rho V)}{R}=\frac{2G\rho 4\pi R^3}{3R}=\frac{8\pi G\rho R^3}{3R}$, or: $(\frac{v}{R}=H)^2=\frac{8\pi G\rho}{3}$, we get:

$\rho_к=\frac{3H^2}{8\pi G}\approx 10^{-29}\left[\frac{г}{см^3}\right]$, critical density of irreversible expansion. (H) is the Hubble constant.

We are talking about the visible expansion, fixed $(Y\pm=\gamma=c)$ by photons $(ОЛ_1)$ of the level of indivisible quanta of space-matter $(p,\ e,\nu_\mu,\ \gamma_{0,}\ \nu_e,\gamma)$ in the quantum system coordinates. Now let's represent the indivisible quanta of space-matter, in the form $ОЛ_{ji}(m)$ of their (m) convergence.

$$ОЛ_j\ ...ОЛ_3\ ...(p_3\ e_3\ p_2\,e_2\,p_1\,e_1\ =ОЛ_2)(p,e,\nu_\mu,\ \gamma_{0,}\ \nu_e,\gamma=ОЛ_1)(\nu_1\gamma_1\,\nu_2\gamma_2\,\nu_3\gamma_3\ =ОЛ_0)\ ...ОЛ_{-1}ОЛ_{-2}\ ...ОЛ_i$$

In this case, the electron speed $(ОЛ_1)$ level: $(w=\left(\alpha=\frac{1}{137}\right)*c$, or $(w=\alpha^{(N=1)}*c.$ Einstein's Theory of Relativity and quantum relativistic dynamics, allow superluminal speeds in space-time.

$$\overline{W_Y}=\frac{c+Nc}{1+c*Nc/c^2}=c,\quad \overline{W_Y}=\frac{a_{11}Nc+c}{a_{22}+Nc/c}=c,\quad \text{for}\quad a_{11}=a_{22}=1.$$

Here $(\uparrow a_{11}\downarrow)(\downarrow a_{22}\uparrow)=1$ are the cosines of the angles of parallelism in the form: $\cos(\varphi_X)*\cos(\varphi_Y)=1$. Then the sub photon velocities (γ_i) of the physical vacuum are equal to: $(w_i=\alpha^{(-N=-1,-2...)}*c)$ superluminal velocities in $(ОЛ_i)$ levels of the physical vacuum. Similarly, the space of velocities in $(ОЛ_j)$ levels in the form:
$(w_j=\alpha^{(+N=1,2,3...)}*c)$ provided that $(w_j*w_i=\alpha^{+N}c*\alpha^{+N}c=П=c^2)$ potentials in Einstein's postulates for the $(ОЛ_1)$ level. In the same potentials, the mass spectrum of indivisible quanta of the entire quantum coordinate system $ОЛ_{ji}(m)$ at (m) convergence is calculated, similarly to the calculations of the masses$(ОЛ_1)$ level:

$$m(X+=Y-)=ПК,$$

$$m=\frac{F=П^2}{Y''}=\left[\frac{П^2T^2}{Y}=\frac{П}{(Y/K^2)}\right]=\frac{ПY=m_Y}{\left(\frac{Y^2}{K^2}=\frac{G}{2}\right)},\quad \text{where}\quad 2m_Y=Gm_X;\quad \text{and:}\quad m_Y=Gm_X/2$$

$$m=\frac{F=П^2}{X''}=\left[\frac{П^2T^2}{X}=\frac{П}{(X/K^2)}\right]=\frac{ПX=m_X}{\left(\frac{X^2}{K^2}=\frac{\propto^2}{2}\right)},\quad \text{where}\quad 2m_X=\propto^2 m_Y;\quad \text{and:}\quad m_X=\propto^2 m_Y/2$$

The full calculation of the mass spectrum in: $ОЛ_j$ and: $ОЛ_i$ _i levels of the physical vacuum, is performed by a simple program in TP7, and looks like.

"heavy": $e_j=2*p_{j-2}/\alpha^2$, $p_j=2*e_{j-1}/G$,	"sub particles": $\nu_i=\alpha^2*\gamma_{i-2}/2$, $\gamma_i=G*\nu_{i-1}/2$

program a1;
uses crt;
const a2=1/(137.036*137.036);
G=6.67e-8; n=12;
Var p,p1,p2,e1,e,e2:Real;
i,j,m:Integer;
begin clrscr;
p:=938.28; e:=0.511;
p1:=0.271;
e:=e; p:=p; p1:=p1;
for i:=1 to n do
begin
WriteLn('n=',i);
e1:=2*p1/a2; WriteLn('e1=',e1);
p2:=2*e/G; WriteLn('p=', p2);
e2:=2*p/a2; WriteLn('e2=',e2);
p1:=2*e1/G; WriteLn('p1=',p1);
e:=2*p2/a2;
WriteLn('e=',e);
p:=2*e2/G;
WriteLn('p1=',p);
end ;
ReadLn;
end.
	program a1;
	uses crt;
	const a2=1/(137.036*137.036);
	G=6.67e-8; n=12;
	Var p,p1,p2,e1,e,e2:Real;
	i,j,m:Integer;
	begin clrscr;
	p:=938.28; e:=0.511;
	p1:=0.271;
	e:=e; p:=p; p1:=p1;
	for i:=1 to n do
	begin
	WriteLn('n=',i);
	e1:=G*p/2; WriteLn('e1=',e1);
	p2:=a2*e/2; WriteLn('p=', p2);
	e2:=G*p1/2; WriteLn('e2=',e2);
	p1:=a2*e1/2; WriteLn('p1=',p1);
	e:=G*p2/2;
	WriteLn('e=',e);
	p:=a2*e2/2;
	WriteLn('p1=',p);
	end ;
	ReadLn;
	end.

Each $ОЛ_j$, and $ОЛ_i$ level contains two mass and three charge isopotentials.

Table 1.

	Quanta of the nucleus	$2\alpha * p_j = N * p_{j-1}$	N	$(X\pm) = p^+_J$ (MeV)	$(Y\pm) = e_J$ (MeV)
OL_{+11}				$p^+_{27} = 2e_{26}/G$ p^+_{27} = 2.7 E111 MeV	$e_{27} = 2p_{25}/\alpha^2$ e_{27} = 1.48 E108 MeV
	○ Exaquasar	$2\alpha * p^-_{26} = 290 p^+_{25}$	14	$p^-_{26} = 2e_{25}/G$ p^-_{26} = 7.9 E107 MeV	$e_{26} = 2p_{24}/\alpha^2$ e_{26} = 9.1 E103 MeV
		$2\alpha * p^-_{25} = 238 p^+_{24}$		$p^-_{25} = 2e_{24}/G$ p^-_{25} = 3.96 E103 MeV	$e_{25} = 2p_{23}/\alpha^2$ e_{25} = 2.6 E100 MeV
OL_{+10}	Superquasar . ● Galact . 1st kind	$2\alpha * p^+_{24} = 25 p^-_{23}$	13	$p^+_{24} = 2e_{23}/G$ p^+_{24} = 2.4 E99 MeV	$e_{24} = 2p_{22}/\alpha^2$ e_{24} = 1.32 E96 MeV
	black spheres	$2\alpha * p^+_{23} = 290 p^-_{22}$		$p^+_{23} = 2e_{22}/G$ p^+_{23} = 7.04 E95 MeV	$e_{23} = 2p_{21}/\alpha^2$ e_{23} = 8.1 E91 MeV
	○ superquasar 1st kind	$2\alpha * p^-_{22} = 238 p^+_{21}$	12	$p^-_{22} = 2e_{21}/G$ p^-_{22} = 3.5 E91 MeV	$e_{22} = 2p_{20}/\alpha^2$ e_{22} = 2.35 E88 MeV
OL_{+8}		$2\alpha * p^-_{21} = 25 p^+_{20}$		$p^-_{21} = 2e_{20}/G$ p^-_{21} = 2 , 16 E87 MeV	$e_{21} = 2p_{19}/\alpha^2$ e_{21} = 1 , 17 E84 MeV
	●● Superquasar . Galact . 2 kinds	$2\alpha * p^+_{20} = 290 p^-_{19}$	11	$p^+_{20} = 2e_{19}/G$ p^+_{20} = 6 , 25 E83 MeV	$e_{20} = 2p_{18}/\alpha^2$ e_{20} = 7 , 2 E79 MeV
	black spheres	$2\alpha * p^+_{19} = 238 p^-_{18}$		$p^+_{19} = 2e_{18}/G$ p^+_{19} = 3 , 13 E79 MeV	$e_{19} = 2p_{17}/\alpha^2$ e_{19} = 2 , 08 E76 MeV
OL_{+7}	○○ superquasars 2 genera	$2\alpha * p^-_{18} = 25 p^+_{17}$	10	$p^-_{18} = 2e_{17}/G$ p^-_{18} = 1 , 9 E75 MeV	$e_{18} = 2p_{16}/\alpha^2$ e_{18} = 1 , 04 E72 MeV
		$2\alpha * p^-_{17} = 290 p^+_{16}$		$p^-_{17} = 2e_{16}/G$ p^-_{17} = 5 , 55 E71 MeV	$e_{17} = 2p_{15}/\alpha^2$ e_{17} = 6 , 38 E 6 7 MeV
	● megastar galaxies	$2\alpha * p^+_{16} = 238 p^-_{15}$	9	$p^+_{16} = 2e_{15}/G$ p^+_{16} = 2 , 77 E 6 7 MeV	$e_{16} = 2p_{14}/\alpha^2$ e_{16} = 1, 85 E 6 4 MeV
OL_{+6}	black spheres	$2\alpha * p^+_{15} = 25 p^-_{14}$		$p^+_{15} = 2e_{14}/G$ p^+_{15} = 1 ,7 E 6 3 MeV	$e_{15} = 2p_{13}/\alpha^2$ e_{15} = 9.26 E 59 MeV
	○ megastars	$2\alpha * p^-_{14} = 291 p^+_{13}$	8	$p^-_{14} = 2e_{13}/G$ p^-_{14} = 4.93 E 59 MeV	$e_{14} = 2p_{12}/\alpha^2$ e_{14} = 5.67 E 55 MeV
	Superplanets	$2\alpha * p^-_{13} = 238 p^+_{12}$		$p^-_{13} = 2e_{12}/G$ p^-_{13} = 2.46 E 55 MeV	$e_{13} = 2p_{11}/\alpha^2$ e_{13} = 1.64 E 52 MeV
OL_{+5}	● quasar galaxies of the 1st type	$2\alpha * p^+_{12} = 25 p^-_{11}$	7	$p^+_{12} = 2e_{11}/G$ p^+_{12} = 1 , 12 E 51 MeV	$e_{12} = 2p_{10}/\alpha^2$ e_{12} = 8 , 2 2 E 47 MeV
	black spheres	$2\alpha * p^+_{11} = 290 p^-_{10}$		$p^+_{11} = 2e_{10}/G$ p^+_{11} = 4 ,4 E 47 MeV	$e_{11} = 2p_9/\alpha^2$ e_{11} = 5 , 03 E 43 MeV
	○ quasars 1st kind	$2\alpha * p^-_{10} = 238 p^+_9$	6	$p^-_{10} = 2e_9/G$ p^-_{10} = 2, 19 E 43 MeV	$e_{10} = 2p_8/\alpha^2$ e_{10} =1, 46 E 40 MeV
OL_{+4}		$2\alpha * p^-_9 = 25 p^+_8$		$p^-_9 = 2e_8/G$ p^-_9 =1.3 4 E 39 MeV	$e_9 = 2p_7/\alpha^2$ e_9 = 7.3 E 35 MeV
	●● quasar galaxies of type 2	$2\alpha * p^+_8 = 290 p^-_7$	5	$p^+_8 = 2e_7/G$ p^+_8 = 3.88 E 35 MeV	$e_8 = 2p_6/\alpha^2$ e_8 = 4.47 E 31 MeV
	black spheres	$2\alpha * p^+_7 = 238 p^-_6$		$p^+_7 = 2e_6/G$ p^+_7 = 1.94 E 31 MeV	$e_7 = 2p_5/\alpha^2$ e_7 =1.3 E2 8 MeV
OL_{+3}	○○ quasars 2 genera	$2\alpha * p^-_6 = 25 p^+_5$	4	$p^-_6 = 2e_5/G$ p^-_6 = 1.19 E2 7 MeV	$e^+_6 = 2p_4/\alpha^2$ e^+_6 = 6.48 E 23 MeV
	Intergalactic black spheres	$2\alpha * p^-_5 = 290 p^+_4$		$p^-_5 = 2e_4/G$ p^-_5 = 3.45 E 23 MeV	$e_5 = 2p_3/\alpha^2$ e_5 = 3.97 E1 9 MeV
	● star Galactics	$2\alpha * p^+_4 = 238 p^-_3$	3	$p^+_4 = 2e3/G$ p^+_4 = 1.7 E1 9 MeV	$e^-_4 = 2p_2/\alpha^2$ e^-_4 = 1.15E+1 6 MeV
OL_{+2}	Galactic black spheres	$2\alpha * p^+_3 = 25 p^-_2$		$p^+_3 = 2e2/G$ p^+_3 = 1.057 E 15 MeV	$e3 = 2p_1/\alpha^2$ e_3 = 5.7 55 E 11 MeV
	○ Stars	$2\alpha * p^-_2 = 290 p^+_1$	2	$p^-_2 = 2e_1/G$ p^-_2 = 3.0 5 E 11 MeV	$e2 = 2p/\alpha^2$ e2 = 3,524 E7 MeV
	Planets	$2\alpha * p^-_1 = 238 p^+$		$p^-_1 = 2e/G$ p^-_1 = 1 , 532 E7 MeV	$e_1 = 2\nu_\mu/\alpha^2$ e_1 = 10216 MeV
OL_{+1}	level	$2\alpha * p^+ = 25 \nu^-_\mu$	1	$p^+ = 2\gamma_0/G$ p^+ = 938.28 MeV	$e^- = 2\nu_e/\alpha^2$ e^- = 0.511 MeV
		$2\alpha * \nu^+_\mu = 292 \nu^-_e$		$\nu_\mu = \alpha^2 e_1/2$ ν_μ = 0.27 1 MeV	$\gamma_0 = Gp/2$ γ_0 = $3.13*10^{-5}$ MeV
			0	$\nu_e = \alpha^2 e/2$ ν_e = $1.36*10^{-5}$ MeV	$\gamma = G\nu_\mu/2$ $\gamma^+ = 9.07*10^{-9}$ MeV

OL $_0$	Physical vacuum level			$\nu_1=\alpha^2\gamma_0/2$ $\nu_1=8.3*10^{-10}$ M eV	$\gamma_1=G\nu_e/2$ $\gamma_1=4.5*10^{-13}$ MeV
			-1	$\nu_1=\alpha^2\gamma/2$ $\nu_2=2.4*10^{-13}$ MeV	$\gamma_2=G\nu_1/2$ $\gamma_2=2.78*10^{-17}$ MeV
				$\nu_3=\alpha^2\gamma_1/2$ $\nu_3=1.2*10^{-17}$ MeV	$\gamma_3=G\nu_2/2$ $\gamma_3=8.05*10^{-21}$ MeV
OL - $_1$	Physical vacuum level		-2	$\nu_4=\alpha^2\gamma_2/2$ $\nu_4=7.4*10^{-22}$ MeV	$\gamma_4=G\nu_3/2$ $\gamma_4=4.03*10^{-25}$ MeV
				$\nu_5=\alpha^2\gamma_3/2$ $\nu_5=2.14*10^{-25}$ MeV	$\gamma_5=G\nu_4/2$ $\gamma_5=2.47*10^{-29}$ MeV
			-3	$\nu_6=\alpha^2\gamma_4/2$ $\nu_6=1.07*10^{-29}$ MeV	$\gamma_6=G\nu_5/2$ $\gamma_6=7.13*10^{-33}$ MeV
OL $_{-2}$	Physical vacuum level			$\nu_7=\alpha^2\gamma_5/2$ $\nu_7=6,57*10^{-34}$ MeV	$\gamma_7=G\nu_6/2$ $\gamma_7=3.58*10^{-37}$ MeV
			-1	$\nu_8=\alpha^2\gamma_6/2$ $\nu_8=1.898*10^{-37}$ MeV	$\gamma_8=G\nu_7/2$ $\gamma_8=2.2*10^{-41}$ MeV
				$\nu_9=\alpha^2\gamma_7/2$ $\nu_9=9.5*10^{-42}$ MeV	$\gamma_9=G\nu_8/2$ $\gamma_9=6,33*10^{-45}$ MeV
OL $_{-3}$	Physical vacuum level		-2	$\nu_{10}=\alpha^2\gamma_8/2$ $\nu_{10}=5,8*10^{-46}$ MeV	$\gamma_{10}=G\nu_9/2$ $\gamma_{10}=3,2*10^{-49}$ MeV
				$\nu_{11}=\alpha^2\gamma_9/2$ $\nu_{11}=1.685*10^{-49}$ MeV	$\gamma_{11}=G\nu_{10}/2$ $\gamma_{11}=1.9*10^{-53}$ MeV
			-3	$\nu_{12}=\alpha^2\gamma_{10}/2$ $\nu_{12}=8.46*10^{-54}$ MeV	$\gamma_{12}=G\nu_{11}/2$ $\gamma_{12}=5,62*10^{-57}$ MeV
	Physical vacuum OL $_{-2}$ levels			$\nu_{13}=\alpha^2\gamma_{11}/2$ $\nu_{13}=5.2*10^{-58}$ MeV	$\gamma_{13}=G\nu_{12}/2$ $\gamma_{13}=2,8*10^{-61}$ MeV
			-4	$\nu_{14}=\alpha^2\gamma_{13}/2$ $\nu_{14}=1.5*10^{-61}$ MeV	$\gamma_{14}=G\nu_{13}/2$ $\gamma_{14}=1.7*10^{-65}$ MeV
				$\nu_{15}=\alpha^2\gamma_{10}/2$ $\nu_{15}=7.5*10^{-66}$ MeV	$\gamma_{15}=G\nu_{14}/2$ $\gamma_{15}=5*10^{-69}$ MeV
	Physical vacuum OL - $_1$ level		-1	$\nu_{16}=\alpha^2\gamma_{14}/2$ $\nu_{16}=4.6*10^{-70}$ MeV	$\gamma_{16}=G\nu_{15}/2$ $\gamma_{16}=2.5*10^{-73}$ MeV
				$\nu_{17}=\alpha^2\gamma_{15}/2$ $\nu_{17}=1.33*10^{-73}$ MeV	$\gamma_{17}=G\nu_{16}/2$ $\gamma_{17}=1.5*10^{-77}$ MeV
			-2	$\nu_{18}=\alpha^2\gamma_{16}/2$ $\nu_{18}=6.7*10^{-78}$ MeV	$\gamma_{18}=G\nu_{17}/2$ $\gamma_{18}=4.4^{3}*10-^{81}$ MeV
	Physical vacuum OL $_{-2}$ levels			$\nu_{19}=\alpha^2\gamma_{17}/2$ $\nu_{19}=4.1*10^{-82}$ MeV	$\gamma_{19}=G\nu_{18}/2$ $\gamma_{19}=2.2*10^{-85}$ MeV
			-3	$\nu_{20}=\alpha^2\gamma_{18}/2$ $\nu_{20}=1.18*10^{-85}$ MeV	$\gamma_{20}=G\nu_{19}/2$ $\gamma_{20}=1.36*10^{-89}$ MeV
				$\nu_{21}=\alpha^2\gamma_{19}/2$ $\nu_{21}=5.9*10^{-90}$ M eV	$\gamma_{21}=G\nu_{20}/2$ $\gamma_{21}=3.94*10^{-93}$ MeV
	Physical vacuum OL $_{-2}$ levels		-4	$\nu_{22}=\alpha^2\gamma_{20}/2$ $\nu_{22}=3.6*10^{-94}$ MeV	$\gamma_{22}=G\nu_{21}/2$ $\gamma_{22}=1.975*10^{-97}$ M eV
				$\nu_{23}=\alpha^2\gamma_{21}/2$ $\nu_{23}=1.05*10^{-97}$ MeV	$\gamma_{23}=G\nu_{22}/2$ $\gamma_{23}=1,2*10^{-101}$ MeV
			-4	$\nu_{24}=\alpha^2\gamma_{22}/2$ $\nu_{24}=.5.26*10^{-102}$ MeV	$\gamma_{24}=G\nu_{23}/2$ $\gamma_{24}=3.494*10^{-105}$ M eV

12.3.Parameters of the space-matter of the Universe in the quantum coordinate system.

Let us consider the properties of the classical representations of the Criteria for the Evolution of Matter. In the presented table of masses of indivisible (stable) quanta $(Y\pm)$ and $(X\pm)$ of space-matter, we are talking about the inert $m(Y-)$ mass, for example, $\gamma(Y-)$ of a photon, and the gravitational mass $m(\text{X}+)$ e.g. $p(\text{X}+)$ proton or $\nu_e(\text{X}+)$ neutrino. We are talking about: $p(\text{X}-)=e(Y+)$, $\nu_\mu(\text{X}-)=\gamma_0(Y+)$, $\nu_e(\text{X}-)=\gamma(Y+)$ three charge and two: $(m=\Pi K)$ mass $e(Y-)=\nu_\mu(\text{X}+)$, $\gamma_0(Y-)=\nu_e(\text{X}+)$ isopotentials in each $ОЛ_j$, and $ОЛ_i$ level of physical vacuum. We are talking about the energy $E=(\Pi_1\Pi_2*K)$ of the interaction of the potentials of two points at a distance(K) , with a force$(F=\Pi^2=\Pi_1\Pi_2)$. The potential itself is: $\Pi=(K*b)$, this is the acceleration (b) at a distance (K). Energy $E=mc^2$, or $E=\hbar\nu$, where $m=\nu^2*V$, and so on.

In classical relativistic dynamics: $R^2-c^2t^2=\frac{c^4}{b^2}=\overline{R}^2-c^2\overline{t}^2$, space-time space-time itself experiences acceleration:$b^2(R\uparrow)^2-b^2c^2(t\uparrow)^2=(c^4=F)$. In the same Criteria,$\left(b=\frac{K}{T^2}\right)(R=K)=\frac{K^2}{T^2}=\Pi$, we are talking about the potential in the velocity space ($\frac{K}{T} = \overrightarrow{e}$) of a vector space in any $\vec{e}(x^n)$ coordinate system, where $\Pi = g_{ik}(x^n)$ is the fundamental tensor of the Riemannian space. Then in general we have:

$$\Pi_1^2 - \Pi_2^2 = (\Pi_1(X+) - \Pi_2(Y-))(\Pi_1(X-) + \Pi_2 * (Y+)) = (\Delta\Pi_1(X+= Y-)) \downarrow (\Delta\Pi_2(X-= Y+)) \uparrow= F$$

This force on the entire radius ($R = K$) of the visible sphere of a single ($X\pm= Y\mp$) space-matter of the Universe, gives (dark) energy ($U = FK$) to the dynamics of the Universe, in gravity ($X+= Y-$) mass and in electro($Y+ = X -$)magnetic fields. Therefore, this is the energy of the relativistic dynamics of the Universe.

$$(\Pi_1^2 - \Pi_2^2)K = (\Pi_1 - \Pi_2)K(\Pi_1 + \Pi_2) = (\Delta\Pi_1)(X+= Y-) \downarrow K(\Delta\Pi_2)(X-= Y+) \uparrow= FK = U$$

What is its nature? On the radius ($R = K$) of the dynamic sphere of the Universe there is a simultaneous dynamics of a single ($X\pm= Y\mp$) space-matter. Considering the dynamics of potentials in gravitational mass ($X+= Y-$) fields, as already known, $(\Pi_1 - \Pi_2) = g_{ik}(1) - g_{ik}(2) \neq 0$, we are talking about the "gravity" equation $R_{ik} - \frac{1}{2}Rg_{ik} - \frac{1}{2}\lambda g_{ik} = kT_{ik}$ of the General Theory of Relativity, in any system $g_{ik}(x^m = X, Y, Z, ct \neq const)$ of coordinates, of non-stationary Euclidean space-time , in the form: $(x^m = X, Y, Z, ct) * \{\left(ch\frac{X(X+=Y-)}{Y_0=R_0(X-)}\right)(X+= Y-) * \cos\varphi_X(X- = Y+) = 1\}$, and in various $ОЛ_j$, and $ОЛ_i$ levels of the physical vacuum of the entire Universe. At the same time: $\left(R_{ik} - \frac{1}{2}Rg_{ik} = \Delta\Pi_1 = kT_{ik} + \frac{1}{2}\lambda g_{ik}\right)(X+= Y-)$, in addition to the space-matter curvature caused by the energy-momentum tensor (kT_{ik}), we are also talking about dynamics physical vacuum: $\frac{1}{2}\lambda(g_{ik} = 4\pi a^2 * \rho)$, where from ($a(t) \to \infty$) and ($\rho = \frac{1}{(T\to\infty)^2} \equiv H^2$), and $НОЛ = (T_i \to \infty)(t_i \to 0) = 1$, the Universe disappears in time ($t_i \to 0$), at infinite radii ($a(t) \to \infty$), with the Hubble parameter ($H = \frac{\dot{a}}{a}$) of the inflationary model and ($a(t) = cT * ch\frac{ct}{cT}$). The gradient of such a ($\Delta\Pi_1$) potential is also known to give quantum gravity equations with inductive $M(Y-)$ (hidden) mass fields in the gravitational field. We are talking about ($\Delta\Pi_1 \sim T_{ik}$) $\downarrow$ ($X+= Y-$) energy-momentum: $T_{ik} = \left(\frac{E=\Pi^2 K}{p=\Pi^2 T}\right)_i \left(\frac{E=\Pi^2 K}{p=\Pi^2 T}\right)_k = \frac{K^2}{T^2} \equiv (\Pi)$, gravity ($X+= Y-$) of the mass fields of the entire Universe, with a decrease in the density of mass ($Y-$) trajectories on the Planck scale.

$$\Pi K = \frac{(K_i\to\infty)^3}{(T_i\to\infty)^2} = \left(\frac{1}{(T_i\to\infty)^2} = (\rho_i \to 0) \downarrow\right)\left(K_i^{\ 3} = V_i \uparrow\right)(X+= Y-) = (\rho_i \downarrow V_i \uparrow)(X+= Y-),$$

$$(R_j) * (R_i = 1{,}616 * 10^{-33} sm) = 1, \qquad (R_j) = 6{,}2 * 10^{32} sm \qquad (\rho_i(Y-) \to 0).$$

In quantum relativistic dynamics, we are talking about the non-stationary Euclidean space of a sphere, which in space-matter has the form of a dynamic ellipsoid. Moreover, the photon comes to the surface from the center of the ellipsoid at the same time. This is due to the dynamics of the speed of light, when: ($c = \frac{\downarrow\lambda\uparrow}{\downarrow T\uparrow}$), the scale of the period (photon frequency $\uparrow \nu \downarrow= \frac{1}{\downarrow T\uparrow}$) and the wavelength ($\downarrow \lambda \uparrow$) change. This is analogous to classical relativistic dynamics, using the example of two observers. A (on the platform) and B (in the car), when simultaneous flashes of light for A in front and behind the car will not be simultaneous for B, who will see blue light in front and red light behind the car. The light wave itself does not change, but the period of interaction for the forward (approaching) wave decreases, and for the back (receding) wave increases, which changes the color of the wave. And the passage of time slows down in the "red" interaction, and accelerates in the "blue" interaction. Similarly, the light at a larger diameter will be "red", with the passage of time slowing down, at a smaller one "blue".

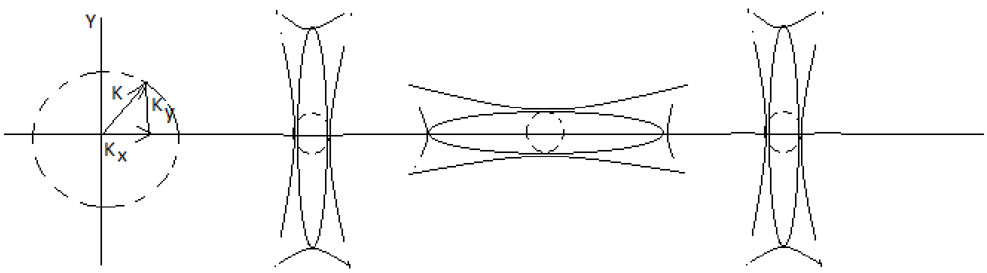


Fig.7. quantum relativistic dynamics

And the same relativistic quantum dynamics $e(Y-)_j \to \gamma(Y-)_i$ in the levels $ОЛ_j$, and $ОЛ_i$ of the physical vacuum of the entire Universe.

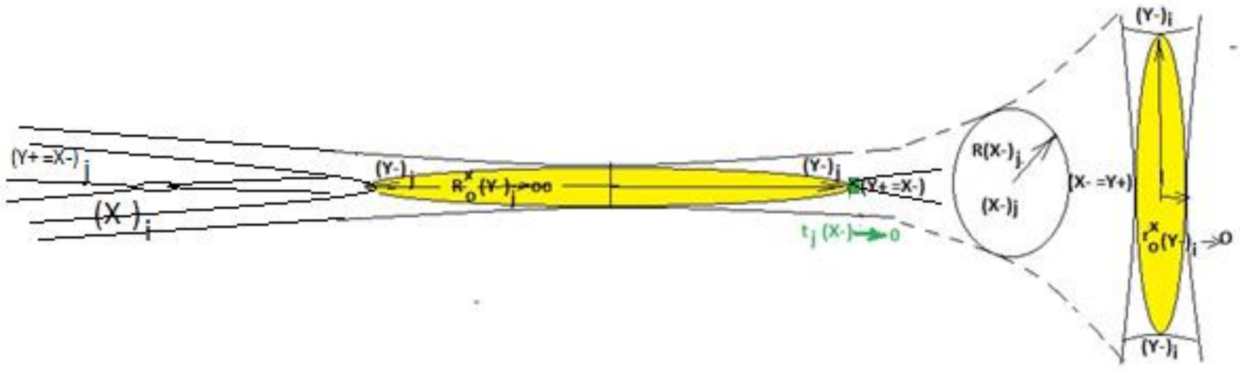


Fig.7a. quantum relativistic dynamics

In quantum gravity, we are talking about quantum dynamics: $e(Y-)_j \rightarrow \gamma(Y-)_i$ in $ОЛ_j$, and $ОЛ_i$ physical vacuum levels at the (m) convergence of the entire Universe. In the unified Criteria of the Evolution of space-matter, the density $(\rho = \frac{ПК}{К^3} = \frac{1}{Т^2} = \nu^2)$, give $c = \frac{\lambda(Y-)_J \rightarrow 0}{T(Y-)_J \rightarrow 0}$ about zero parameters of the instantaneous "Explosion" infinitely large $(\rho(Y-)_J = \frac{1}{T(Y-)_J^{\ 2}} \rightarrow \infty)$ density of dynamic masses in $(Y+ = X-)_J$ field of the Universe. At infinitely small $(T(Y-)_J \rightarrow 0)$ periods of dynamics, in dynamic space-matter: $НОЛ = (T(Y-)_J \rightarrow 0) * (t(Y+= X-)_J \rightarrow \infty) = 1$, in the $(X-)_J$ field of the Universe, an infinite number of events occur, in "compressed time" $(t(Y+= X-)_J \rightarrow \infty)$, at the level ν_i/γ_i quanta and with the origin $(T(Y-)_J = 1) * (t(Y+= X-)_J = 1) = 1$, time $(t(X-)_J = 1)$. From the axioms $НОЛ = КЭ(m = j) * КЭ(n = i) = 1$, or $(\rho(Y+= X-)_J \rightarrow 0)(\rho(X-)_i \rightarrow \infty) = 1$ united space-matter of the initial Universe, quanta $(\rho(X-= Y+)_i \rightarrow \infty)$ are born immediately. And already in such a physical vacuum in $(\rho(X+= Y-)_i \rightarrow 0)$, quanta $(\gamma(Y-)_i = (\rho(Y-)_i \rightarrow 0)$ with near zero mass density. And we are talking about the radius of the sphere of a non-stationary Euclidean expanding space, $R(X-)_J \rightarrow \infty$, on (m) convergence, and $r(X-)_i \rightarrow 0$, on (n) convergence, i.e. superluminal speeds: $(w_i = \alpha^{(-N=-1,-2\ldots)} * c)$, in $(ОЛ_i)$ levels of physical vacuum.

In the axioms of dynamic space-matter $НОЛ = КЭ(m = j) * КЭ(n = i) = 1$, there are Indivisible Areas of Localization: $(X \pm)_{ji} = p_j(X^n)\nu_i(X^n)$and $(Y \pm)_{ji} = e_j(Y^n)\gamma_i(Y^n)$states of quanta, with mutually orthogonal $(X^n) \perp (Y^n)$coordinate systems. This means that if there is $(Y- = e_j)$, then there are always $(Y- = \gamma_i)$quanta. Likewise $(X- = p_j)$with $(X- = \nu_i)$quanta. This implies a quadratic form of the dynamics of quantum energy: $(\Delta E^2 = \hbar^2 \Delta(\rho = \nu^2)$.

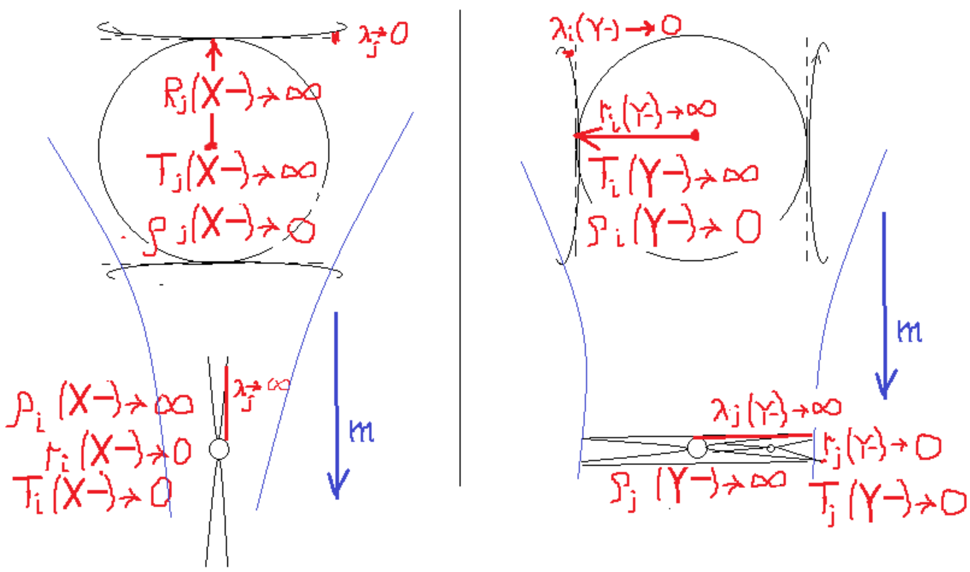


Fig.8a. to the dynamics of the space-matter of the Universe

The larger the radius of the dynamic sphere $(r \to R)$ the less curvature$(\lambda_\infty \to \lambda_0)$ space-matter and vice versa, in accordance with the properties НОЛ $= (r\lambda_\infty) = (R\lambda_0) = 1$, of space-matter itself.
Here: $\lambda(X-) = (r \to R)tg\,\varphi(X-)$, and $\lambda(Y-) = (r \to R)tg\,\varphi(Y-)$ respectively. Exactly the same, density ratios НОЛ $= (\rho_\infty\lambda_\infty) = (\rho_0\lambda_0) = 1$, at constant field potentials. And exactly the same properties (T)- the period of the dynamics of the quanta and (t)– their relative time of events, НОЛ $= (T_0 t_\infty) = (t_0 T_\infty) = 1$. At infinitely large radii, the Universe disappears in time(t_0) and the density of space-matter is reduced to zero (ρ_0)in all cases. The opposite picture in hyperbolic properties occurs in the depths of the physical vacuum of the Universe. This state of dynamic space-matter is represented by quanta:

$$(X\pm)_{ji} = p_j\begin{pmatrix} R_j(X-) \to \infty \\ \rho_j(X-) \to 0 \end{pmatrix}\nu_i\begin{pmatrix} r_i(X-) \to 0 \\ \rho_i(X-) \to \infty \end{pmatrix} = 1, \quad (Y\pm)_{ji} = e_j\begin{pmatrix} r_j(Y-) \to 0 \\ \rho_j(Y-) \to \infty \end{pmatrix}\gamma_i\begin{pmatrix} R_i(Y-) \to \infty \\ \rho_i(Y-) \to 0 \end{pmatrix} = 1$$

Properties of dynamic spheres$(r \to R)$ in velocity space:

$\big(W_j(X-) = \alpha^N c \to 0\big)\big(v_i(X-) = \alpha^{-N} * c \to \infty\big) = 1$: The following relations hold:

НОЛ $= \big(R_j(X-) \to \infty\big)\big(\lambda_j(X-) \to 0\big) = 1$, НОЛ $= \big(r_i(X-) \to 0\big)\big(\lambda_i(X-) \to \infty\big) = 1$, and

$$\big(W_j(Y-) = \alpha^N c \to 0\big)\big(v_i(Y-) = \alpha^{-N} * c \to \infty\big) = 1$$

НОЛ $= \big(R_i(Y-) \to \infty\big)\big(\lambda_i(Y-) \to 0\big) = 1$, НОЛ $= \big(r_j(Y-) \to 0\big)\big(\lambda_j(Y-) \to \infty\big) = 1$.

The selected states of the physical vacuum determine the modality of the properties of matter, for example, proton, electron and antimatter, respectively. Quanta of space-matter have the properties of emitting and absorbing. Electron $(Y\pm= e)$ emits and absorbs $(Y\pm= \gamma)$ a photon. Therefore we can say that $(Y\pm= e_j)$ quanta of higher density of mass $\rho(Y-)$fields, successively emit quanta $(Y\pm= e_{j-2})$of lower density, and then $(Y\pm= \gamma)$the quanta emit $(Y\pm= \gamma_{i-2} \ldots . \gamma_{i-22})$ quanta into the full depth of the physical vacuum, with near zero density. On the contrary, quanta $(X\pm= p)$ higher density mass $\rho(X-)$fields are absorbed sequentially by quanta $(X\pm= p_{j+2})$lower density. At the same time, conditions are formed: $\rho_j(X-) \to \infty$, and $R_j(X-) \to \infty$, a new cycle of the dynamics of the Universe. Various densities $(\rho_\infty)$and (ρ_0)in different $(X- = Y+)$ And $(X- = Y+)$ fields, give a difference in densities $(\Delta(\rho = \nu^2) \neq 0)$. It is this $(\Delta\rho = \frac{\Delta E^2}{\hbar^2})$ difference in densities that causes the radiation and (or) absorption of the energy of space-matter quanta. We are talking about quantum (non-vanishing) dynamics

$$\big(R_j(X-) \to \infty\big) \to \big(R_i(X-) \to 0\big)\text{And}\big(R_i(Y-) \to \infty\big) \to \big(R_j(Y-) \to 0\big)$$

space-matter, in quantum $(m-n)$ coordinate system. The argument for such dynamics is the "dark energy" of expansion $(R_i(Y-) \to \infty)$ space-matter. Such dynamics of accelerations:

$(b = \rho R)$, $\big(\rho_j(X-) \to 0\big)\big(R_j(X-) \to \infty\big) =$ НОЛ, And$\big(\rho_i(Y-) \to 0\big)\big(R_i(Y-) \to \infty\big) =$ НОЛ

quanta of dynamic space-matter, is determined and has the property of the uncertainty principle. In other words, in these $(X\pm)_{ji}$and$(Y\pm)_{ji}$ levels $R_j(X-)$,$R_i(Y-)$ physical vacuum, the properties of any point, are the properties of the space-matter of the entire Universe. This is the space of velocities in which all the Criteria of the Evolution of matter are formed. Let's call them the Background Criteria of the Evolution of charge and mass $(X-)_j$and$(Y-)_i$ trajectories, with their quantum dynamics. And already on this background $(\rho_j(X-) \to 0)$, $(\rho_i(Y-) \to 0)$that is: $(\rho \equiv \nu^2)$the dynamics of the Dominant, any Criteria of Evolution, in the multidimensional space of speeds, goes towards increasing frequencies $(\uparrow \rho \equiv \uparrow \nu^2)$, as well as the densities of quanta of dynamic space-matter on their (m) convergence.

On the other hand, such properties give quantum entanglement of the entire dynamic space-matter of the Universe as a whole. We are talking about the simultaneous and opposite dynamics of any Evolution Criteria on infinite $R_j(X-)$,$R_i(Y-)$ radii of spheres-points in each level $(m-n)$of convergence of the physical vacuum. To understand, this is similar to a tablecloth on a table, where "lie, say, two objects A and B" at any distances. If you "pull the tablecloth" (the background quantum of space-matter), then objects A and B with opposite properties (say, the wave function $i\psi = \sqrt{(+\psi\,(-\psi\,)}$of convergence quanta (m)) will change simultaneously at any distances. In this case, object A does not interact with object B. And this happens in all $(m-n)$ levels of spheres-points of space-matter of the entire Universe.

In the big picture, we have the dynamics of quanta (m) convergence $(\uparrow \nu^2)$, in one sphere-point, but already $(n)$the convergence $(\downarrow \nu^2)$of spheres-points of the entire Universe, with the indicated quantum entanglement and the uncertainty principle at each $(m-n)$level of the physical vacuum. And such dynamics are accompanied by radiations (“explosions”) of quanta $\big(Y\pm= e_j\big) \ldots (Y\pm= \gamma_{i-2} \ldots . \gamma_{i-22})$, into the full depth of the physical vacuum, with the subsequent generation of structural forms similar to the generation nuclei $(Y\pm = e_{+}^{*}) = 238p^{+}$, with their decay into a spectrum of atoms. And this happens everywhere.

As is known, density itself is a unit of measurement of physical quantities in the unified Criteria, equations of dynamics in electromagnetic (Maxwell) and gravitational fields, in the field of the Universe.

$c * rot_{Y}B(X-) = rot_{Y}H(X-) = \varepsilon_{1}\frac{\partial E(Y+)}{\partial T} + \lambda E(Y+)$ $rot_{X}E(Y+) = -\mu_{1}\frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T}$;	$c * rot_{Y}M(Y-) = rot_{Y}N(Y-) = \varepsilon_{2} * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$ $M(Y-) = \mu_{2} * N(Y-)$; $rot_{y}G(X+) = -\mu_{2} * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T}$;

These are the properties of space-matter itself. Moreover $\lambda(X-)_{J} \to \infty$, and $\lambda(X-)_{i} \to 0$, $c = \frac{\lambda(X-)_{i}\to 0}{T(X-)_{i}\to 0}$, with density $(\rho(X-)_{i} = \frac{1}{T(X-)_{i}^{2}} \to \infty)$ at the limit level $(OЛ_{i})$, as the "bottoms" of the physical vacuum **.**

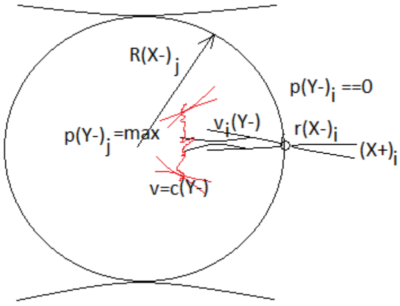


Fig.8b. to the dynamics of the space-matter of the Universe

In quantum gravity, the acceleration of mass trajectories $(Y- = X+)$ in a gravitational field $G(X+)\left[\frac{K}{T^{2}}\right] = \psi\frac{\hbar}{\Pi^{2}\lambda}G\frac{\partial}{\partial t}grad_{n}Rg_{ik}(X+)\left[\frac{K}{T^{2}}\right]$ maximum, for $\lambda(X-)_{i} \to 0$, in $(OЛ_{i})$ levels of the physical vacuum. We are talking about the superluminal velocity space $(w_{i} = \alpha^{(-N=-1,-2\ldots)} * c)$, $\gamma_{i}(Y-)$ photons of the $(OЛ_{i})$ level, with their dynamics period: $c = \frac{\lambda(Y-)_{i}\to\infty}{T(Y-)_{i}\to\infty}$, $T(Y-)_{i} \to \infty$.This means that at infinite radii $R(X-)_{J} \to \infty$ “at the bottom” of the physical vacuum, at each of its points $r(X-)_{i} \to 0$, at (n) convergences, the Universe “disappears” in time: $t = (n \to 0) * T(Y-)_{i} = 0$. "At the bottom" of the physical vacuum, in $(OЛ_{i})$ levels, we cannot fix events by photon $\gamma_{i}(Y-)$ with dynamics period $T(Y-)_{i} \to \infty$. At the same time , any density: $(\rho(Y-)_{J} = \frac{1}{T(Y-)_{J}^{2}} \to \infty)$ dynamic masses “falls” into the depths $(\rho(Y-)_{i} \to 0)$ of the physical vacuum$(OЛ_{i})$ levels, at (n)convergence at every point of space-matter of all $(R(X-)_{J} \to \infty)$ Universe. The masses themselves

$e(Y-)_{J} = (X+ = p_{j})(X+ = p_{j})$, have the structural form of “black spheres” with “ jets ”$e(Y-)_{J} \to \gamma_{i}(Y-)$ decays. And every time there is a generation $2\alpha\left(X+ = p_{j}\right) = e(Y-)_{J-1}$ quanta in mass trajectories. This creates the effect of an “expanding Universe” with the effect of the primary $(T(Y-)_{J} \to 0)$ “Big Bang”. At the same time, the speed of light, $\gamma(Y-)$ photon $(OЛ_{1})$ level, remains unchanged in any level of physical vacuum:

$c = \frac{\lambda(Y-)_{i}\to\infty}{T(Y-)_{i}\to\infty} = c = \frac{\lambda(Y-)_{j}\to 0}{T(Y-)_{j}\to 0} = c = \frac{\lambda(X-)_{i}\to 0}{T(X-)_{i}\to 0}$. For $\gamma(Y-)$ photons of the $(OЛ_{1})$ level, “falling” into near-zero mass densities $(\rho(Y-)_{i} = \frac{1}{T(Y-)_{i}^{2}} \to 0)$, with acceleration $G(X+)\left[\frac{K}{T^{2}}\right] = \upsilon * H\left[\frac{K}{T^{2}}\right]$, where (H) fixed Hubble constant: $H = \frac{\upsilon}{R}$. The wavelength $\gamma(Y-)$ of photons $\cos(\varphi_{Y}) \uparrow * \cos(\varphi_{X}) \downarrow = 1$, increases $\lambda_{Y}(\varphi_{Y}) \uparrow * \lambda_{X}(\varphi_{X}) \downarrow = 1$, when “falling into near zero density” at the limiting radii $(R(X-)_{J} \to \infty)$ of the Universe, in the limiting depth of the physical $(r(X-)_{i} \to 0)$ vacuum. These "relic $\gamma(Y-)$ photons" $(OЛ_{1})$ level (red in the figure) are seen in experiments. Further we speak about superluminal $\gamma_{i}(Y-)$ photons. The mathematical truth is that on the infinite radii of the entire space-matter of the Universe $R_{j}(X-) \to \infty$ with its mass $\lambda_{i}(Y-) \to \infty$ trajectories, the density of matter $(\rho_{j}(X-) \to 0)$, $(\rho_{i}(Y-) \to 0)$, tends to zero. At any point of the sphere $R_{j}(X-) \to \infty$ of the Universe, the non-locality (simultaneity) of the dynamics of the set of points chosen in symmetries is valid at the energy level

$(X-=Y+)_j$ of the electromagnetic field of the physical vacuum. The proper time of dynamics t is reduced to zero in the axioms $НОЛ=(t_i(Y+)\to 0)T_i(Y-)\to\infty)=1$ dynamic space-matter, as well as acceleration dynamics:

$(b=(R_j(X-)\to\infty)(\rho_j(X-)\to 0)=const)$, $(b=(\lambda_i(Y-)\to\infty)(\rho_i(Y-)\to 0)=const)$ mass trajectories. In other words, the mathematical truth is the disappearance of the dynamic space-matter mass density at infinity, and the Universe disappears in time $t_i(Y+=X-)\to 0$ with the acceleration same $(b=const)$ of the entire space-matter. On the other hand, $r_i(X-)\to 0$ takes place $(\rho_i(X-)\to\infty$, and the beginning $(\lambda_j(Y-)\to 0)$, $(\rho_j(Y-)\to\infty)$, such ("Explosion"), "instantaneous" $T_j(Y-)\to 0$, period of the Universe dynamics.

In this case, we have:

1. Energy of radiation and (or) absorption $\Delta E^2=\hbar^2\Delta\rho$, quanta of space-matter, in the form known to us: $E=mc^2$, or $E=\hbar\nu$, where $m=\nu^2V$, and so on, but already at$ОЛ_{ji}(m-n)$ spectrum of the quantum coordinate system of space-matter of the entire Universe. It's about radiation$(\rho_\infty(Y-=e_j)\to\rho_0(Y-=\gamma_i)$ mass and $(\rho_\infty(X-=p_j)\to\rho_0(X-=\nu_i)$charge fields.
2. We always have a vortex:$rot_Y B(X-)$ And$rot_Y M(Y-)$ quantum dynamics $(X\pm)$and $(Y\pm)$ in a single space - matter $(X-=Y+)$, $(Y-=X+)$.
3. The dynamics $(\Delta\rho)$of densities themselves are due to the "stepwise (quantum) failure" of densities (ρ_∞), into the "endless void" $(\rho_\infty\to\rho_0)$.
4. Combination of densities: $\rho(X-)\rho(Y-)=1$, this is an Indivisible Area of Localization of a single and dynamic space - matter $(X-=Y+)$, $(Y-=X+)$. Quantum $\rho(X-)$field dynamics $(X\pm)$, always generates $\rho(X+=Y-)$a field, and quantum dynamics $\rho(Y-)$of the field $(Y\pm)$, always generates $\rho(Y+=X-)$a field.
5. Emission $\rho(Y-)$and absorption $\rho(X-)$of densities $(\rho_\infty\to\rho_0)$occurs simultaneously with their quantum dynamics $\rho(Y-)\to\rho(Y+=X-)$and $\rho(X-)\to\rho(X+=Y-)$. This is a multi-stage and multi-level process in quantum$ОЛ_{ji}(m-n)$ coordinate system.
6. It is necessary to take into account the scale of $(r=10^{-33}sm)(R=10^{33}sm)=1$such dynamics of each such $(R\lambda=1)$, $(r\lambda=1)$quantum of them$ОЛ_{ji}(m-n)$ spectrum.

The quantum dynamics of the space-matter of the Universe in the quantum coordinate system, during the expansion of the Universe, is due to the primary "failure" of the densities $\rho_j(Y-=e_j)$ to near-zero mass $\downarrow(\rho_i(Y-=\gamma_i)\approx 0)$ density of the physical vacuum . In the axioms of dynamic space-matter: $НОЛ=КЭ(X-=Y+)КЭ(Y-=X+)=1$, and $НОЛ=КЭ(m)КЭ(n)=1$, each $(X\pm)$ and $(Y\pm)$ quantum $ОЛ_{ji}(m)$ of the spectrum corresponds to the dynamic conditions $cos^2\varphi_X cos^2\varphi_Y=1$ and $0\le\varphi<\varphi_{max}$, $\varphi\ne 90^0$, $ch(Y/X_0)*cos\varphi_Y=1$, $ch(X/Y_0)*cos\varphi_X=1$, with Interaction constants: $cos^2\varphi_X=G=6{,}672*10^{-8}$, and $cos\varphi_Y=\alpha=1/137{,}036$. This means that with a decrease in the angles of parallelism $\varphi_i(Y-)\to 0$ with the disappearance of fields, the angles of quanta $\varphi_i(X-)\to\varphi_{MAX}(X-)$ increase, and vice versa. In this case, matter does not disappear, but passes from one type to another, in the form of a change in dominant fields along their $ОЛ_{ji}(m)$ spectrum.

12.4.Properties of indivisible quanta in the quantum coordinate system.

We can determine the limiting parameters of the space-matter dynamics of the entire Universe, in a quantum coordinate system. Speaking about the space of velocities $e_j(Y-)$ and $\gamma_i(Y-)$ of quantum's $ОЛ_{ji}(m)$ of the quantum coordinate system, by analogy with the velocities of an electron and a photon: $w_e=\alpha^{N=1}*c$, we can say about the speeds $w(e_j)=\alpha^N*c$, macro electrons $(ОЛ_j)$ levels and $w(\gamma_i)=\alpha^{-N}*c$, already superluminal sub photons $(ОЛ_i)$ physical vacuum levels. We will define limit values (N). For the $(ОЛ_1)$ level $(p,e,\nu_\mu,\gamma_0,\nu_e,(\gamma=c))$ the Planck length and time are defined:

$$l_{pl}=\sqrt{\frac{Gh}{c^3}}=\sqrt{G}K=\sqrt{\frac{6.67*10^{-8}*6.62*10^{-27}}{(3*10^{10})^3}}=4*10^{-33}sm$$

$$T_{pl}=\sqrt{\frac{Gh}{c^5}}=\sqrt{G}T=\sqrt{\frac{6.67*10^{-8}*6.62*10^{-27}}{(3*10^{10})^5}}=1.35*10^{-43}s\text{ , где }\quad\sqrt{G}=\cos\varphi_X$$

These limit values of length (l_{pl}) and time (T_{pl}) are calculated with the constant $\sqrt{G}$, and refer to the limit quantum $(X\pm=\nu_i)$ of the level $(ОЛ_i)$ of the physical vacuum. From the relation $T_{pl}=\sqrt{\frac{Gh}{c^5}}=\sqrt{G}T_i=1.35*10^{-43}s$, for the period (T_i) of the quantum dynamics (ν_i) , we get:

$$(\sqrt{G})^N*1=1.35*10^{-43}s\text{ , or }\quad N=log_{\sqrt{G}}(T_{pl}=10^{-43})\text{ , and }\quad N=-43\frac{ln10}{ln\sqrt{G}}\approx 12.$$

In the spectrum of ($ОЛ_i$) levels, $N = 12$ corresponds to the sub neutrino quantum (ν_{24}) with the isopotential of the sub photon quantum ($\gamma_{24}^{+} = \alpha^{-12} * c$). By analogy with the emission of a photon by an electron ($e \rightarrow \gamma$) similarly to a neutrino ($p \rightarrow \nu_e[N = 0]$) proton, we are talking about radiation in ($ОЛ_i$) levels of the physical vacuum:

($\gamma \rightarrow \gamma_2[N = 1]$), ($\gamma_2 \rightarrow \gamma_4[N = 2]$), ($\gamma_4 \rightarrow \gamma_6[N = 3]$), ($\gamma_6 \rightarrow \gamma_8[N = 4]$),… ($\gamma_{22} \rightarrow \gamma_{24}[N = 12]$)… and ($\nu_e \rightarrow \nu_2[N = 1]$), ($\nu_2 \rightarrow \nu_4[N = 2]$), ($\nu_4 \rightarrow \nu_6[N = 3]$), ($\nu_6 \rightarrow \nu_8[N = 4]$),… ($\nu_{22} \rightarrow \nu_{24}[N = 12]$).

In the axioms of dynamic space-matter, $НОЛ = КЭ(m)КЭ(n) = 1$, we obtain for the masses (M) of indivisible quanta in $(ОЛ_{ji})$ levels:

$$НОЛ = M(e_1 = 1{,}15\ \mathrm{E}4\ )(k = 3.13)M(\gamma_0 = 3.13.\mathrm{E} - 5\ ) = 1$$
$$НОЛ = M(e_2 = 3{,}524\ \mathrm{E}7\ )(k = 3.13)M(\gamma = 9{,}07\ \mathrm{E} - 9\ ) = 1$$
$$НОЛ = M(e_3 = 5{,}755\ \mathrm{E}11\ )(k = 3.86)M(\gamma_1 = 4.5.\mathrm{E} - 13\ ) = 1$$
$$НОЛ = M(e_4 = 1{,}15\ \mathrm{E}16\ )(k = 3.13)M(\gamma_2 = 2{,}78\ \mathrm{E} - 17\ ) = 1$$
$$НОЛ = M(e_5 = 3{,}97\ \mathrm{E}19\ )(k = 3.13)M(\gamma_3 = 8.05.\mathrm{E} - 21\ ) = 1$$
$$НОЛ = M(e_6 = 6{,}48\ \mathrm{E}23\ )(k = 3.83)M(\gamma_4 = 4{,}03\ \mathrm{E} - 25\ ) = 1$$
$$НОЛ = M(e_8 = 4{,}47\ \mathrm{E}31\ )(k = 3.14)M(\gamma_6 = 7{,}13\ \mathrm{E} - 33\ ) = 1$$
…………………………
$$НОЛ = M(e_{26} = 9{,}1\ \mathrm{E}103\ )(k = 3.14)M\left(\gamma_{24} = 3{,}5\ \mathrm{E} - 105\ \right) = 1$$

Obviously, we are talking about vortex mass ($Y-$)trajectories:

$$c * rot_X M(Y- = \gamma_i) = \varepsilon_2 * \frac{\partial G(\mathrm{X}+)}{\partial T} + \lambda * G(\mathrm{X}+)$$

equations of dynamics in a circle ($k = 3.14 = \pi = \frac{2\pi R = l}{2R}$) in each ($ОЛ_i$) level of the physical vacuum. Therefore, we are talking about exactly such radiations already in ($ОЛ_j$) levels of the physical vacuum: ($e \rightarrow \gamma[N = 0]$) , because: $w(\gamma) = \alpha^{N=0} * c) = c$, $w(e) = \alpha^{N=1} * (\gamma = c)$ and further:

($e_2 \rightarrow e[N = 2]$), ($e_4 \rightarrow e_2[N = 3]$), ($e_6 \rightarrow e_4[N = 4]$)… ($e_{26} \rightarrow e_{24}[N = 14]$), likewise:
($p_2 \rightarrow p[N = 2]$), ($p_4 \rightarrow p_2[N = 3]$), ($p_6 \rightarrow p_4[N = 4]$)… ($p_{26} \rightarrow p_{24}[N = 14]$).

We are talking about the space-matter of the entire Universe, defined by constants: ($\hbar$, c, G, α). The radiation itself in ($ОЛ_j$) levels of the physical vacuum is caused by acceleration (b) in the relativistic dynamics of the entire space-matter: $b^2(R\uparrow)^2 - b^2c^2(t\uparrow)^2 = (c^4 = F)$ giving the potentials:

$$\left(b = \frac{K}{T^2}\right)(R = K) = \frac{K^2}{T^2} = \Pi \text{ , "dark" energy:}$$
$$(\Pi_1^2 - \Pi_2^2)K = (\Pi_1 - \Pi_2)K(\Pi_1 + \Pi_2) = (\Delta\Pi_1)(X+= Y-)\downarrow K(\Delta\Pi_2)(X-= Y+)\uparrow = FK = U$$

For all quanta $ОЛ_{ji}(m)$ of the spectrum, the period of dynamics ($0 \leftarrow T \rightarrow \infty$) takes place has a different “scale”, but always for ($T = 1$) the wavelength $\lambda(e_j)\downarrow = w(e_j) * (T = 1) = \alpha^N * c * (T = 1)$ for macro electrons, and $\lambda(\gamma_i)\uparrow = w(\gamma_i) * (T = 1) = \alpha^{-N} * c * (T = 1)$ for sub photons. In the Planckian length limits in the axioms of dynamic space-matter: $(R_j) * (R_i = 4 * 10^{-33} sm) = 1$ we have limiting $(R_j) = 2.5 * 10^{32} sm$, sizes with near zero mass densities: ($\rho_i(Y-) \rightarrow 0$) , in ($ОЛ_i$) levels of the physical vacuum.

The dynamics of matter ($\varphi \neq const$) is fixed in the Euclidean ($\varphi = 0$), ($\varphi = const$), axiomatic of the Evolution Criteria formed in the space ($K^{\pm N}T^{\mp N}$) of time. To each ($\varphi = const$) fixed state corresponds to its own space-time, as well as the Criteria of Evolution, in accordance with the Theories of Relativity. In the Indivisible Area of Localization,

$$НОЛ = M(e_{26} = 9{,}1\ \mathrm{E}103\ )(k = 3.14)M(\gamma_{24} = 3{,}5\ \mathrm{E} - 105\ ) = 1\ ,$$

the exoquasar quantum ($Y\pm = e_{26}$) corresponds to the speed $w(e_{26}) = \alpha^{N=14} * c$. In the coordinate system of atomic (p/e) structures $ОЛ_1$ of the level of ordinary atoms, where ($w_e = \alpha * c$) is the electron velocity, there is a relation relative to the electron $N = 13$ in the form:

$$НОЛ = w_j(e_{26}) * w_i(\gamma_{24}) = (\alpha^{13} w_e) * (\alpha^{-13} w_e) = w_e^2 = \Pi_e = 1$$

In this case, the wavelength $\lambda(e_{26}) = \alpha^{13}(\lambda(e) = w_e(T_j = 1))$ is calculated, through the electron wavelength,

$$\lambda(e) = \frac{h}{m_e \alpha * c} = \frac{6.626 * 10^{-27} * 137.036}{9.1 * 10^{-28} * 3 * 10^{10}} = 3.32 * 10^{-8} sm\ , \quad \lambda(e_{26}) = \alpha^{13}\lambda(e) = 5.5 * 10^{-36} sm\ ,$$

And the first emitted quanta, ($e_{26}) \rightarrow \alpha(e_{24}$), have: $2\lambda(e_{24}) = 2\alpha^{-1}\lambda(e_{26}) = 1.5 * 10^{-33} sm$, dimensions in circles corresponding to the Planck dimensions ($\lambda_{pl} = 4 * 10^{-33} sm$) calculated in ($\hbar, G, c$) constants.

From the experimental data, for the minimum ($\lambda_i \approx 10^{-16} sm$) distances are measured by ($Y\pm = \gamma$) quanta, with the dynamics period: $T = \frac{\lambda_i}{c} \approx 10^{-26} s = \alpha^N T_i$, value (N) for period: ($T_i = 1$) of dynamics, calculated: $10^{-26} = \alpha^N(T_i = 1)$, $N = -26 log_\alpha 10 = -26\frac{\ln 10}{\ln \alpha} \approx 12$, $N = 12$. This order ($ОЛ_i$) of the spectrum

corresponds to $(Y\pm = \gamma_{24})$ a sub photon quantum. It corresponds to the quantum $(Y\pm = e_{26})$, with wavelength $\lambda(e_{26}) = r_{26} = 5.5 * 10^{-36} sm$, within the entire Universe: $НОЛ = R_{26} r_{26} = 1$ or
$R_{26} = \frac{1}{r_{26}} = 1.8 * 10^{35} sm$ in radius sphere: $R = \frac{\alpha^{-12} * c(T=1)}{2\pi} = \frac{4.3855*10^{25} 3*10^{10}}{6.28} \approx 2.1 * 10^{35} sm$,
(1 light year=365.25*24*3600*3*10^{10}=9.5*10^{17} sm). In both cases, we are talking about sizes of the order $R = 2 * 10^{17}$ light years. Today, the fixed limits of the Universe are about $R_i \approx 14$ billion light years. In the quantum coordinate system $ОЛ_{ji}(m)$ of dynamic space-matter, we have about 15million such fixed Universes.
From theoretical calculations of Planck quantities, for$(X-)$ fields of the Universe:

$$l_{pl} = \sqrt{\frac{G\hbar}{c^3}} = 4 * 10^{-33} sm, \qquad t_{pl} = \frac{l_{pl}}{c} = 1. = 1.35 * 10^{-43} s = (\sqrt{G})^N * (T = 1),$$

$$N = log_{\sqrt{G}}(t_{pl}) = \frac{\ln(1.35*10^{-43})}{\ln(\sqrt{G = 6.67*10^{-8}})} = \frac{-98.7}{-8.26} = 12.$$

We have a space of maximum sub neutrino velocities: $v(\nu_{24}) = (\sqrt{G})^{-12} * c = 3.4 * 10^{53} sm/s$, defines space-matter$(X-)$ field of the Universe, in which the maximum speeds of sub photons take place: $v(\gamma_{24}) = (1/137)^{-12} * c = 4.37 * 10^{35} sm/s$. For 1 period, we get the dimensions$(X-)$ fields of the Universe: $R(X- = \nu_{24}) = (\sqrt{G})^{-12} * c(T = 1) = 3.4 * 10^{53} sm$, and the area filled with sub photons: $R(Y- = \gamma_{24}) = (1/137)^{-12} * c(T = 1) = 4.37 * 10^{35} sm.$, from the moment the dynamics begin. One light year: $1св.г. = 9.5 * 10^{17} sm$. That is: $R(X -) = 3.6 * 10^{35}$light years of space$(X-)$ fields of the Universe, and $R(Y -) = 4.6 * 10^{17}$light years,$(X-)$ fields of the Universe filled with photons and sub photons. This is $N = 4.6 * 10^{17}/(13.75 * 10^9) = 33.5$a million of the Universe “visible” to us. As we see, she$(X-)$ the universe is even larger, with $(Y-)$mass field dynamics.

12.5 Valid objects of the Universe

The objects of the Universe will be called “sphere-points” $ОЛ_{ji}(n)$ of convergence, in each fixed "point" $ОЛ_{ji}(m = const)$, quantum coordinate system. For example, objects:

$$НОЛ = M(e_2 = 3{,}524\ E7\ )(k = 3.13) M(\gamma = 9{,}07\ E - 9\ ) = 1$$

by analogy with the nucleus (p/e) of ordinary atoms, we are talking about quanta (p_2/e_2) of the nucleus of a star. Stars with such a nucleus have a limiting energy level of the physical vacuum, at the level of (γ) photon. Below the energy of a photon, in the physical vacuum, the star does not manifest itself. Like proton radiations $(p^+ \to \nu_e^-)$ antineutrinos, we are talking about radiations of antimatter matter and vice versa. That is: $(p_8^+ \to p_6^-)$, $(p_6^- \to p_4^+)$, $(p_4^+ \to p_2^-)$, $(p_2^- \to p^+)$, with the corresponding atomic nucleus: (p^+/e^-) substances of an ordinary atom, (p_2^-/e_2^+) antimatter of the nucleus of a "stellar atom", (p_4^+/e_4^-) the matter of the galaxy nucleus, (p_6^-/e_6^+) the antimatter of the quasar nucleus, and (p_8^+/e_8^-) the matter of the nucleus of the "quasar galaxy".

Further, we proceed from the fact that the quantum (e_{*1}^-) of matter $(Y- = p_1^-/n_1^- = e_{*1}^-)$ of the nucleus of planets emits a quantum $(e_{*1}^+ = 2 * \alpha * (p_1^- = 1{,}532E7\ MeV)) = 223591 MeV$, or:
$e_{*1}^+ = \frac{223591MeV}{p=938{,}28MeV} = 238{,}3 * p$, Uranium nuclei. This «antimatter» $(e_*^+ = {}^{238}_{92}U = Y-)$ is unstable, and exothermically decays into a spectrum of atoms, in the nucleus of planets.

In the superluminal level $w_i(\alpha^{-N}(\gamma = c))$ of the physical vacuum, such stars do not manifest themselves. Further, we are talking about the substance $(p_3^+ \to p_1^-)$ of the nucleus $(Y- = p_3^+/n_3^0 = e_{*3}^+)$ of "black spheres", around which, in their gravitational field, globular clusters of stars form. Similarly, below, we are talking about radiation of antimatter by matter and vice versa: $(p_6^+ \to p_5^-)$, $(p_5^- \to p_3^+)$, $(p_3^+ \to p_1^-)$, $(p_1^- \to \nu_\mu^+)$. The general sequence is: $p_8^+ ,p_7^+ ,\ p_6^-,\ p_5^-,\ p_4^+,\ p_3^+ ,\ p_2^- ,\ p_1^- ,p^+,\nu_\mu^+ ,\nu_e^-$ ....

Further: $НОЛ = M(e_4 = 1{,}15\ E16\ )(k = 3.13) M(\gamma_2 = 2{,}78\ E - 17\ ) = 1$. These quanta (p_4/e_4) of galactic nuclei are surrounded by individually emitted quanta (p_2/e_2) of stellar nuclei, and are the reason for their formation. Such nuclei of galaxies, in the equations of quantum gravity, have spiral arms of mass trajectories narrower: $w_i(\gamma_2 = \alpha^{-1}c) = 137 * c$, in superluminal velocity space. Below the energy $(w_i = 137 * c)$ of light photons in the physical vacuum, galaxies do not manifest themselves. Outside galaxies, we are talking about nucleus quanta $(Y- = p_5^-/n_5^- = e_{*5}^-)$ of mega stars. They generate $(e_{*5}^- = 2 * \alpha * p_5^- = e_{*4}^+ = 290 p_4^+)$ set of galactic nucleus quanta. Similarly next: $НОЛ = M(e_6 = 6{,}48\ E23\ )(k = 3.83) M(\gamma_4 = 4{,}03\ E - 25\ ) = 1$. We are talking about quanta $(Y- = p_6^-/n_6^- = e_{*6}^-)$ of the nucleus of quasars, which also individually emit (p_4/e_4)

quanta of the nucleus of galaxies. In other words, the nucleus of a quasar is surrounded by quanta of the nucleus of a galaxy. They say that the quasar is at the center of the galaxy. Such quasars plunge into the physical vacuum level up to superluminal speeds $w_i(\gamma_4 = \alpha^{-2}c) = (137^2 * c)$. This is deeper than the physical vacuum level of the galaxy. These are completely different objects. In other words, quasars bend space-matter at the level of 〚(γ〛_4) quanta. Further, we are talking about quanta of matter of the nucleus $(Y- = p_7^+/n_7 = e_{*7}^+)$ of "black spheres", around which clusters of galaxies form in their gravitational field, and Further: $НОЛ = M(e_8 = 4{,}47\ E31)(k = 3.14)M(\gamma_6 = 7{,}13\ E - 33) = 1$. We are talking about quanta (p_8/e_8) of the nucleus of quasar galaxies, which also individually emit quanta $(p_6^-/n_6^- = e_{*6}^-)$ of the nucleus of quasars. Such quasar galaxies plunge into the physical vacuum level up to superluminal speeds $w_i(\gamma_6 = \alpha^{-3}c) = 137^3 * c$. Similarly next.

In the axioms $НОЛ = КЭ(m)КЭ(n) = 1$, or $M_j(X+) * M_i(Y-) = 1$, dynamic space-matter, we are talking about the source of gravity of the gravitational mass $M_j(X+)$ in $ОЛ_j$ levels and inertial $M_i(Y-)$ masses in в $ОЛ_i$ levels of the physical vacuum, with their Einstein equivalence principle in a single gravitational $(X+ = Y-)$ mass field. These masses: $M_j * M_i = (M = ПK)^2 = 1$, in the form of a quadratic form, are represented in the quantum fields of their interaction:

$$\hbar = Gm_0\frac{\alpha}{c}Gm_0(1-2\alpha)^2 = GM_j\frac{\alpha}{c}GM_i(1-2\alpha)^2 = \frac{(6{,}674*10^{-8})^2*(1-2/(137.036))^2}{137.036*2.993*10^{10}} = 1.054508*10^{-27}$$

in quantum: $G(X+)\left[\frac{K}{T^2}\right] = \psi\frac{\hbar}{П^2\lambda}G\frac{\partial}{\partial t}grad_n Rg_{ik}(X+)\left[\frac{K}{T^2}\right]$, gravity$(X+ = Y-)$mass fields. Thus, the limiting mass $M_j(X+)$ of the source of gravity is determined by $M_i(Y-)$ inertial mass of mass $(Y- = \gamma_i)$ fields in $ОЛ_i$ levels of the physical vacuum, as an object $ОЛ_{ji}(n)$ of convergence or:
$НОЛ = ОЛ_{ji}(n) = M_j(X+) * M_i(Y- = \gamma_i) = 1$. Thus, we obtain the limiting masses in the Universe: for example, for a star $M_j(X+) = M_2(p_2^-/n_2^0) = 1/(\gamma)$ under the conditions $(e_2^+ * (k) * \gamma) = 1$. Similarly:
Limit mass of planets, for $1MeV = 1.78*10^{-27}g$: $\frac{1}{\gamma_0} = \frac{1}{3.13*10^{-5}MeV*1.78*10^{-27}g} = M_1(p_1^-/n_1^-) \approx 1.8*10^{31}g \approx \frac{M_s}{100}$, where$(M_s = 2*10^{33}g)$ is the mass of the Sun. Further, the limiting mass of stars, with a nucleus of antimatter:
$\frac{1}{\gamma} = \frac{1}{9.07*10^{-9}MeV*1.78*10^{-27}g} = M_2(p_2^-/n_2^-) \approx 6.2*10^{34}g \approx 31M_s$, or ranging from $\frac{M_s}{100}$ to $31M_s$ mass.

Similarly, the limiting mass $(p_3^+/n_3^0 = e_{*3}^+)$ of "black spheres", with a nucleus of matter:
$\frac{1}{\gamma_1} = \frac{1}{4.5*10^{-13}MeV*1.78*10^{-27}g} = M_3(p_3^+/n_3^0) \approx 1.25*10^{39}g \approx 625220M_s$, from $31M_s$ to $625220M_s$ mass.
limiting mass of a galaxy, $(p_4^+/n_4^0 = e_{*4}^+)$ with a nucleus of matter:
$\frac{1}{\gamma_2} = \frac{1}{2.78*10^{-17}MeV*1.78*10^{-27}g} = M_4(p_4^+/n_4^0) \approx 2*10^{43}g \approx 10^{10}M_s$, from $625220M_s$ to $10^{10}M_s$ mass.
limiting mass of an extragalactic mega star, $(p_5^-/n_5^- = e_{*5}^-)$ with an antimatter nucleus:
$\frac{1}{\gamma_3} = \frac{1}{8.05*10^{-21}MeV*1.78*10^{-27}g} = M_5(p_5^-/n_5^-) \approx 7*10^{46}g \approx 3{,}5*10^{13}M_s$, from $10^{10}M_s$ to $3{,}5*10^{13}M_s$ mass.
limiting mass of an extragalactic mega star, $(p_6^-/n_6^- = e_{*6}^-)$ with an antimatter nucleus:
$\frac{1}{\gamma_4} = \frac{1}{4.03*10^{-25}MeV*1.78*10^{-27}g} = M_6(p_6^-/n_6^-) \approx 1{,}4*10^{51}g \approx 7*10^{17}M_s$, from $3{,}5*10^{13}M_s$ to $7*10^{17}M_s$ mass.
…………………………………………………………………………………….

Each kernel of such objects $ОЛ_{ji}(n)$ of convergence generates a set of corresponding quanta $(2*\alpha*p_j^{\pm} = e_{*j}^{\mp} = N\ p_{j-1}^{\mp})$ specified in table, and emits $(p_j^{\pm} \to p_{j-2}^{\mp})$. This is a set (N) of quanta of the nucleus of planets, stars, galaxies, quasars…. For example, the nucleus of the Sun, like a star, emits hydrogen nuclei $(p_2^- \to p^+ \to \nu_e^-)$ and electron antineutrino, but generates $(2*\alpha*p_2^- = e_{*2}^+ = N\ p_1^+)$ quanta of, shall we say, "stellar matter" (p_1^+/e_1^-) in the solid surface of a star. This "stellar matter" (p_1^+/e_1^-) cannot interact with hydrogen (p^+/e^-) , but it can emit muonic antineutrino $(p_1^+ \to \nu_\mu^-)$, and positron, which forms muons, which in decay give: (e^+) positrons: $(Y\pm = \mu) = (X- = \nu_\mu^-)(Y+ = e^+)(X- = \nu_e^-)$, in the Earth's atmosphere. Or, the nucleus quanta of a mega star with $(p_5^-/n_5^- = e_{*5}^-)$ emit $(p_5^- \to p_3^+)$ matter quanta, but generate nucleus quanta $(2*\alpha*p_5^- = e_{*5}^+ = N\ p_4^+)$ galaxies. We see, as it were, the "surface" of the galaxy, but the nucleus of such an object $ОЛ_{ji}(n)$ convergence, has a mass ranging from $(10^{10}M_s)$ to $(3.5*10^{13}M_s)$ solar masses.

We are talking about admissible objects $ОЛ_{ji}(n)$ of convergence, in the dynamic space-matter of the Universe. At the same time, the calculated causal relationships are indicated.

12.6 Intergalactic spacecraft without fuel engines.

The physical reality is the different space of the velocities of the Sun and the Earth. Without any fuel engines, the Earth flies in the space of the physical vacuum at a speed of $30км/c$, and the Sun at a speed of the order of $265км/c$. We are talking about the main property of space-matter - movement. The mass flow $(Y-)_A$ of the apparatus is created by the fields of Strong and Gravitational Interaction of energy quanta $(X\pm = p_1)$, $(X\pm = p_2)$,

$ОЛ_2$ the level of indivisible quanta of the space-matter of the physical vacuum, interconnected by the same $(X+)$ fields on the trajectories $(X-)$ of the module, without an external energy source.

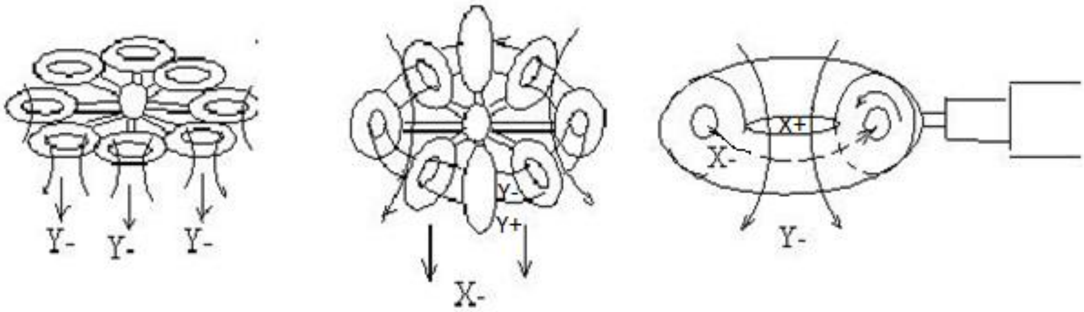


Fig.9. Intergalactic spacecraft without fuel engines.

Consistently including the space of velocities, the apparatus $(Y-)_A$, $(X-)_A$ in the level of the singularity of the physical vacuum, the apparatus goes along the radial trajectory from the level of the singularity of the physical vacuum of the quantum $(X\pm)$ of the space-matter of the planet, $(Y\pm)$ the space-matter of the star, $(X\pm)$ the space-matter of the galaxy, $(Y\pm)$ the space-matter of the cluster of galaxies, to other clusters and galaxies in field of the Universe, with reverse inclusions when returning to the planet of one's own or another galaxy. Thus, to create mass fields $(Y-=\gamma_i)_A$, space of velocities, it is necessary to use fields $(Y-)_A = (X+ = p_j) + (X+ = p_j)$ of "heavy" quanta as "working substance" closed on $(X-)$ the trajectory of the "ring" of the device, in the conditions of $НОЛ = (e_j)(k)(\gamma_i) = 1$, Indivisible Area of Localization. These are the conditions in the quantum coordinate system when the quantum (e_j) does not manifest itself below the energy level (γ_i) of physical vacuum quanta. These levels correspond to:

$НОЛ = M(e_1)(k=3.13)m(\gamma_0) = 1$	$НОЛ = \sqrt{G}M(p_1)(k=1.8)\sqrt{G}m(\nu_\mu) = 1$
$НОЛ = M(e_2)(k=3.13)m(\gamma) = 1$	$НОЛ = \sqrt{G}M(p_2)(k=1.7)\sqrt{G}m(\nu_e) = 1$
$НОЛ = M(e_3)(k=3.86)m(\gamma_1) = 1$	$НОЛ = \sqrt{G}M(p_3)(k=17)\sqrt{G}m(\nu_1) = 1$
$НОЛ = M(e_4)(k=3.13)m(\gamma_2) = 1$	$НОЛ = \sqrt{G}M(p_4)(k=1.8)\sqrt{G}m(\nu_2) = 1$
$НОЛ = M(e_5)(k=3.15)m(\gamma_3) = 1$	$НОЛ = \sqrt{G}M(p_5)(k=1.8)\sqrt{G}m(\nu_3) = 1$
$НОЛ = M(e_6)(k=3.9)m(\gamma_4) = 1$	$НОЛ = \sqrt{G}M(p_6)(k=18.9)\sqrt{G}m(\nu_4) = 1$
…………………………	………………………………………..
$НОЛ = M(e_{26})(k=3.14)m(\gamma_{24}) = 1$	$НОЛ = \sqrt{G}M(p_{25})(k=1.8)\sqrt{G}m(\nu_{23}) = 1$

We are talking about the quantum coordinate system $ОЛ_{ji}(m-n)$ in the space-matter of the Universe, in each $ОЛ_j$ or $ОЛ_i$ level there are three $(X-=Y+)$ charge and two $(X-=Y+)$ mass isopotential. And in this quantum coordinate system, "heavy" (p_j/e_j) quanta are represented, each of which has its own "depth" of energy levels (ν_1/γ_i) of physical vacuum quanta. Let's represent them as models of such $R_{ji}(m)$ Indivisible Regions of space – matter of the Universe.

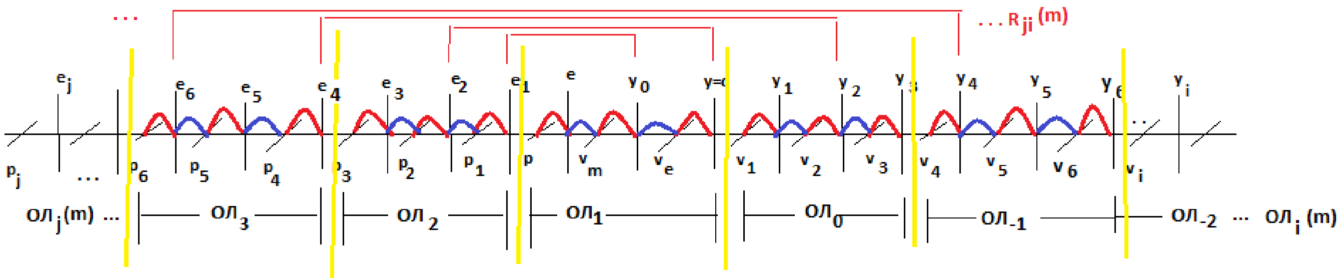


Fig.10.2. spectrum of indivisible quanta

This is a certain sphere in the space-matter, in the center of which are "heavy" (p_j/e_j) quanta, which determine the "bottom", and "up" along the radius, to the level (ν_i/γ_i) of physical vacuum quanta space-matter of the Universe, for any similar object inside this sphere. These are spheres around a planet, a star, a galaxy, a quasar…. On the example of quants:

$$\text{НОЛ}(X\pm=p_1^+)=(\boldsymbol{Y}-=e^+)(X+=\nu_\mu^-)(\boldsymbol{Y}-=e^+)=\frac{2m_e}{G}=15{,}3\ TeV\ ,$$

$$\text{НОЛ}(Y\pm=e_2^-)=(\boldsymbol{X}-=p^-)(Y+=e^+)(\boldsymbol{X}-=p^-)=\frac{2m_p}{\alpha^2}=35{,}24\ TeV\ ,$$

we are talking about the synthesis of matter $(X\pm=p_1^+)$, on colliding beams $(e^+e^+\to p_1^+)$ of positrons with virtual quanta (ν_μ^-), and $(Y\pm=e_2^-)$ on colliding beams $(p^-p^-\to e_2^-)$ of antiprotons of positrons with virtual quanta (e^+), similar to an electron $(e^-=\nu_e^-\gamma^+\nu_e^-)$. We can also talk about the sequential synthesis of "heavy" (p_j/e_j) quanta, namely, substances $(X\pm=p_j^+)$, for $(Y-)_A$, $(X-)_A$ apparatus, in individual processes.

$(\ldots\leftarrow p_6^+\leftarrow e_5^+\leftarrow p_3^+\leftarrow e_2^+\leftarrow p^+)$ and $(\ldots\leftarrow p_7^+\leftarrow e_6^+\leftarrow p_4^+\leftarrow e_3^+\leftarrow p_1^+\leftarrow e^+)$synthesis. It is essential that the electron (e^-) emits and absorbs the photon (γ^+) , but it cannot emit and absorb the "dark" photon (γ_0). This "dark" photon is emitted and absorbed by the "heavy" electron $(e_1)\to(\gamma_0)$. Similarly, the "heavy" proton $(p_1)\to(\nu_\mu)$ emits and absorbs the muon neutrino. These are invisible quanta, not interacting, and non-contact with quanta (p^+/e^-) of the atoms of the periodic table. We can neither see nor fix them. But these invisible quanta (blue color in the indicated sequences) have charge isopotentials and can form Structural Forms not visible to us, similar to ordinary (p^+/e^-) atoms. These are: structures (ν_μ/γ_0) ,(p_1/e_1)… This is how we gradually master the potentials of the core of planets, the core of stars, the core of galaxies and the core of quasars. But for the $(Y-)_A$ apparatus, we can form only contact quanta (p_4^+) of the galactic nuclei and quanta $(p_6^+)$of the substance of the quasar nucleus. And the apparatus itself $(Y-)_A$, sequentially "plunges" into the physical vacuum, as: $\text{НОЛ}=(e_4)(k)(\gamma_2)=1$, $\text{НОЛ}=(e_6)(k)(\gamma_4)=1$, and superluminal $(\gamma_2=137*c)$, и $(\gamma_4=137^2*c)$velocity spaces.This is how we gradually master the potentials of the nucleus of planets, the nucleus of stars, the nucleus of galaxies and the nucleus of quasars. At the same time, the device itself $(Y-)_A$, sequentially "plunges" into the physical vacuum, as: $\text{НОЛ}=(e_2)(k)(\gamma)=1$, $\text{НОЛ}=(e_4)(k)(\gamma_2)=1$, $\text{НОЛ}=(e_6)(k)(\gamma_4)=1$ …, light (γ=c) and superluminal

$(\gamma_2=137*c)$, $(\gamma_4=137^2*c)$ velocity space. These are quite admissible in the Special $\overline{W_Y}=\frac{c+Nc}{1+c*Nc/c^2}=c,$ and in the Quantum $\overline{W_Y}=\frac{a_{11}Nc+c}{a_{22}+Nc/c}=$ c, Theories of Relativity in Euclidean $a_{ii}=\cos(\varphi=0)$, $a_{11}=a_{22}=1$, angles of parallelism. The $(Y-)_A$ apparatus itself moves in the specified sphere of the space-matter of the Universe, in different levels of physical vacuum. It is worth noting that the volume of space-matter of a star is "immersed" in the space of velocities $(\gamma=c)$, the volume of galaxies is "immersed" in the space of velocities $(\gamma_2=137*c)$, the volume of quasars is "immersed" in space $(\gamma_4=137^2*c)$ are already superluminal speeds. The apparatus represented by $(Y-)_A$ moves in the specified sphere, in the space of velocities $(\gamma_2=137*c)$ of the galaxy nucleus, or $(\gamma_4=137^2*c)$ of the quasar nucleus. The question is, how does the crew feel in the central capsule of the apparatus, in the superluminal space of speeds? Just like the Earth, being in the sphere of the space-matter of the star, the Sun, does not feel 265 km / s of the speed of the Sun (read apparatus) in the space-matter of the Galaxy. Capsule with crew, covered with material and fields $(Y-)_A$ of the vehicle. The capsule moves to another $(\text{ОЛ})_j$ level. In the indicated spheres $R_{ji}(m)$ of Indivisible Regions, spheres of space - matter, speeds $p_je_j(m)$ quanta $w_j(p_je_j)*v_i(\nu_i\gamma_i)=c^2$, because $w_j=\alpha^{+N}*c)(v_i=\alpha^{-N}*c)=c^2$. And these speeds (N=j=1,2,3…), $w_j(p_je_j)=(\alpha=\frac{1}{137})^{+N}*c\to0$, in the very center $(Y-)_A$ apparatus. Such properties of space-matter.

Now let's consider the real physical properties of the quantum $(Y-=\frac{p^+}{n})$ of the Strong Interaction of the ordinary nucleus $\text{ОЛ}_1(p,e,\nu_\mu^-,\nu_e^-,\gamma)$ of the physical vacuum level. Its mass (Y-) trajectories are formed by gravity (X+ =Y-)

mass fields of two protons (X+ =p)(X+ =p)=(Y-), in atomic mass units: $(Y- = \frac{\alpha * p^+}{931,5\ MeV} = \frac{938,28\ MeV}{137,036*931,5\ MeV} = 0,0073 aem)$, for a proton with mass: $m(p) = 1aum + \frac{\alpha p}{931,5\ MeV} aum = 1,0073\ aum$. At the same time, we understand that and energy $E(1aum) = mc^2 = 1.6604 * 10^{-27} * (2,997924 * 10^8)^2 * (1Дж = 6.2422 * 10^{18} eV) = 931.5 MeV$

$1aem = \frac{m(^{12}_6C)}{12} = 1.6604 * 10^{-27} kg$. We are talking about inductive mass (Y-), in the equation $rot_y G(X+) = -\frac{\partial M(Y-)}{\partial T}$ of dynamics. This is exactly how the mass $(Y-)_A$ apparatus trajectories are formed, by "heavy" quanta $(Y- = Np_j^+)_A$, on (X-) trajectories of a closed ring, in different levels of the physical vacuum, in the superluminal velocity space. (X-) trajectories of a closed ring, in fact, a vortex field of dynamic equations: $rot_Y G(X+) = -\frac{\partial M(Y-)}{\partial T}$, similar to induction $rot_X E(Y+) = -\frac{\partial B(X-)}{\partial T}$, of the magnetic field of the coil. There are several such (X-) "coil turns" in $(Y-)_A$ apparatus to increase the density $\rho(Y-) = \frac{\partial M(Y-)}{\partial T}\left[\frac{1}{T^2} = \frac{m=K^3/T^2}{V=K^3}\right]$ mass $(Y-)_A$ vehicle trajectories. Thus, it is necessary to create full periods of quanta $(Y- = \gamma_i)_A$, the space of velocities by the fields $(Y-)_A = (X+ = p_j) + (X+ = p_j)$ of "heavy" quanta as a "working substance", closed on the trajectory (X-) of the "ring" of the apparatus with Indivisible Localization Area $НОЛ = (e_j)k(\gamma_i) = 1$. From the ratios for quanta, $T_J(X- = p_J) \to \infty$, $\lambda_J(X- = p_J) \to \infty$, the greater the quantum mass $(X- = p_J)$ formed $(p_j = 2(e_{j-1})/G)$ by quanta (e_{j-1}), the greater $\lambda_J(X- = p_J)$, the greater the diameter of the "ring" D of the device. For ratios $(E = \Pi^2 K_X)(X-)(E = \Pi^2 K_Y)(X+) = НОЛ(X\pm = p_J)$, there are ratios $\uparrow E(X-) \downarrow E(X+) = НОЛ(X\pm = p_J)$, or $\uparrow K_X(X-)K_Y \downarrow (X+) = НОЛ(X\pm = p_J)$, as well as for masses $\uparrow (m = \Pi K_X)(X-)(m = \Pi K_Y) \downarrow (X+) = НОЛ(X\pm = p_J)$. The entire mass is concentrated in the field $(X- = p_J)$ formed by the electric fields $(X- = p_J) = (Y+ = e_{J-1})(Y+ = e_{J-1})$ of mass $(Y- = e_{J-1})$ trajectories, in the form $m(X- = p_j) = 2m(Y- = e_{j-1})/G)$ of mass fields. It means that in the created quanta $НОЛ = \lambda(Y+ = e_{J-1})\lambda(Y- = e_{J-1}) = 1$ it is enough to know the wavelength $\lambda(Y+ = e_{J-1}) = \frac{1}{\lambda(Y- = e_{J-1})}$, to calculate the order of the quanta $N(e_J)$ that form the trajectory of the "working substance" quanta $(X- = p_j)$.

For example, if for you need a "ring" of diameter , $D = \frac{2\lambda(X- = p_J)}{(\pi \approx 3)}$, $D = 10м$, then $\lambda(X- = p_J) = 15м = \lambda(Y+ = e_{J-1})$. That is, there is a quantum $\lambda(Y- = e_{J-1}) = \frac{1}{\lambda(Y+ = e_{J-1})} = 6,67 * 10^{-3} см$ length . This corresponds to the relations $\lambda(Y- = e_{J-1}) = 6,67 * 10^{-3} см = 2\pi * \alpha^N (\lambda_e = 3.3 * 10^{-8} см)$, whence $\alpha^N = 2 * 10^{-5}$, for $(J-1)$ gives $N = \log_\alpha 2 * 10^{-5} = \frac{\ln(2 * 10^{-5})}{\ln(\alpha = 1/137)} = \frac{-10,82}{-4,92} = 2.2 \approx 2$. Then $(N_j = 3)$ corresponds to the order of quanta $(\alpha^3 * c) = W(e_4)$ of the working substance $(X- = p_4^+)$, in a "ring" with a diameter of 10m. Such "rings" give an intergalactic apparatus. The speed of an intergalactic apparatus with such a "working substance" $(X- = p_4^+)$, at the singularity level $НОЛ = m(e_4) * m(\gamma_2) = 1$, is $V(Y- = \gamma_2) = \alpha^{-1} * c \approx 137 * c$. For Earth time of 10 years, you can fly $(r = 10лет * \alpha^{-1} * c)км$ or $(r = 10 * 365,25 * 24 * 3600 * 137 * 3 * 10^5 = 1,3 * 10^{16} км = 8,8 * 10^7 a.e = 425,8пк$. That is, our galaxy (30 kpc), the device will fly by in about 705 years. For the crew of such a vehicle, the proper time is $T = \alpha(705лет) = 5,14лет$, the singularity (γ_2) level time. The greater the mass of the quantum (p_j), the greater the length of its "wave" $\lambda(X- = p_j)$. For $(N_J = 4)$ quasar nucleus matter $(X- = p_6^+)$ quanta, have $(N_{J-1} = 3)$. Then from the relation $2\pi * \alpha^N (\lambda_e) = \lambda(Y- = e_{J-1=3}) = 6,28 * (1/137)^3 * 3.3 * 10^{-9} см = 8,14 * 10^{-15} см$, and we calculate

$$\lambda(Y+ = e_{J-1=5}) = \frac{1}{\lambda(Y- = e_{J-1})} = \frac{1}{8,14 * 10^{-15} см} = 1,23 * 10^{14} см = \lambda(X- = p_6^+)$$

. This is

$1,2*10^{14}\,см \approx 10^{9}\,км = 8,2\;а.е.$ the diameter of the nucleus $(X- = p_6^{+})$ of an extragalactic quasar with nucleus quanta. The "working substance" of such quanta $НОЛ = m(e_4)*m(\gamma_2) = 1$ is given by flights already outside the galaxies in the Universe. For 10 years of Earth time, you can fly in the Universe, $(r = 10лет*(V(\gamma_4) = \alpha^{-2}*c) = 1,78*10^{18}\,км$ or 183 500 light years. For own time $t = \alpha^{2}(10лет)$ in the device or 4 hours 40 minutes. This is the time for $(Y- = \gamma_4)$ quanta, in the intergalactic level of the singularity of the physical vacuum.

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