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The Environment And The Substance Of The Universe

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COMMENT

The theory offered by Anatoly Vasiljevich Rykov, is unusual as a matter of fact and, probably, is even more unexpected on consequences. It is worthy the serious, qualified attention as the author tries to find fundamental interrelations in a universe from the unusual point of view. Perhaps, someone will see in A.V.Rykova's reasoning even elements of adjustment to known results of observation. But there is a question: whether "concurrence" received by him by accident is or here there is a certain latent physical sense? It unbiased discussion also should reveal.

It seems to me, if reasoning and A.V.Rykova's results have appeared in before Einstein time, they hardly would remain without attention. And, likely, it is already enough of it, that they have interested experts and today. Certainly, as well as any unusual theory, A.V.Rykova's reasoning require judgement and criticism that should be professional and argued.

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BRIFLY ABOUT THE PROBLEM OF KNOWLEDGE OF THE WORLD

Descriptions of many physical phenomena on the basis of which there are *technologies* of many devices useful to people and mechanisms are known:

1. Gravitation and the inertia described by mathematical formulas of Newton do not contradict these natural phenomena. Newton understood, that the secret of gravitation and inertia exists. Physics also search for the nature of "mechanism" of gravitation in the form of exchange particles (gravitons). The gravitons problem and the quantum theory of gravitation exists for many decades. We shall rebuke: the category of exchange particles offered by R. Feynman, is an attempt to find a simple explanation of the nature of material interactions. However conformity of such model to the device of the Nature remains is not proved as reality. Quantum gravitation has no final decision. Unification of all known force interactions is impossible owing to absence of understanding of the nature of gravitation.
2. The geometrical model of gravitation in frameworks of GR does not promote understanding of the mechanism of gravitation. Electromagnetic, weak and strong nuclear forces are formed at a level of elementary particles of the micro world. Theory of GR is not based on properties of elementary particles. This circumstance allows making the conclusions, that it is not the physical theory. The curvature of "empty" space as model of gravitation and inertia in general is impossible and is antiscientific. Allocation of gravitation in a separate category, not dependent on known interactions, is not comprehensible to modern physics owing to search of unity of all interactions.
3. The electricity has material carriers as the charged or ionized physical objects. Electron serves as the basic carrier of a current in all our electric devices. The electron nature (an elementary charge) also is unknown.
4. We freely enough manipulate with magnets, we can calculate any electromagnetic devices with the help of Maxwell's formulas. It is possible to assert, that the last are, as well as formulas of Newton, the mathematical description of the natural phenomena. But magnetism remains unknown subject within the framework of its nature.
5. To us the nature of electromagnetic waves which are distributed in the environment of " physical vacuum » is unknown. The term physical vacuum is unsuccessful. It is better to replace it with zero - substance (zero space) or *environment*.

Till now remain riddles:

1. The nature of gravitation.
2. The nature of "physical vacuum", the nature of empty space.
3. The nature of an electromagnetic wave.
4. The nature of magnetism.
5. The nature of restriction of speed of light in emptiness.
6. The nature of quantization of electron orbits in atoms.
7. The nature of the phenomenon a wave - particle.
8. The nature of a structure of "elementary" particles.
9. The nature of nuclear forces.
10. The nature of an electric charge and its masses.
11. Association of all interactions in the Nature.

Probably, the list is not full and can be continued. Behind examples to go not far:

1. Four measured space - time has generated illusion of an opportunity existence of multidimensional spaces, and even an opportunity of existence of "the parallel not crossed worlds" - a bluff which is taken by visionaries on arms. However the mathematics easily copes with similar opportunities, convincing in their real existence.
2. Delay of time has generated illusion of an opportunity of creation of "machines of time" and them invent at us in Russia, in the USA and in other places. Over the given example is triumphed with a principle of probability and comes to grief of determinism in the Nature. Last closes a way to construction of "machines of time" for the past, the present and the future are rigidly causally is investigators connected and cannot be the places rearranged in time.
3. Has generated a mental opportunity of transformation of space to time and, on the contrary, time into space.
4. The probability approach "is temporarily useful" there where people do not know all physical and time characteristics of the phenomena. Therefore, all probabilities in physics are generated by ignorance and are "pseudoscientific" notions or a time output from the created position: aspirations as soon as possible to understand the world without sufficient knowledge of it.
5. The theory of "superstrings" in which base not physical category of space - time is put.

A. Einstein's postulate in English sounds so «... light is always propagated in empty space with a definite velocity [c] which is independent of the state of motion of the emitting body ». Light is always propagated in empty space with the limited (certain) speed that does not depend on a condition of movement of a radiating body. All is told by extremely scientific image applying for deep physical sense.

And the deep physical sense consists in next that such property a certain physical *environment* can possess only. Really, if the speed of light radiated by a body further does not depend on speed of a body it is possible only in the certain *environment*. Such as, for example, air in which the sound is propagated with the certain speed independent of speed of a source and is determined only by density and volumetric elasticity of air. Thus, silently Einstein's postulate asserts a presence of *environment* instead of emptiness. The physical *environment* has parameters defining the speed of light which, as is known, is equal to a root square of product of return values electric and magnetic permeabilities. What gives the account of *the environment* of existence of substance of the universe?

1. Physical substantiation for "birth" of pair a electron–positron at the energy necessary for break of a dipole and for formation of "clot" of mass of two these particles. The birth of mass should have the model, which is for the present not clear, but can be submitted, as a certain vortex of a magnetic continuum inside a charged environment by electron and a positron.
2. A hypothesis, that values of charges (+) and (–) differ on $7,848981 \cdot 10^{-41}$ coulomb (infringement of symmetry) it is enough that *environment* was a source of gravitation and inertia. The weak electric charge of *environment* in which there is all material bodies, draws all bodies to each other under law after Coulomb, in the consent with the law of gravitation of Newton. On the other hand, the weak charge of *the environment* of one sign forms forces of pushing away which are shown as the extending Universe. Thus, the riddle of surprising unity of forces of gravitation and forces of negative pressure for the Universe is removed. The specified difference of values of charges (+) and (–) dipoles of *environment* logically follows from its electric structure, instead of is entered as any parameter.
3. The hypothesis of the nature of gravitation is confirmed with calculations of an angle of a deviation of an electromagnetic wave by the Sun. The calculated angle misses experimental value only in 5-th sign that depends on accuracy of knowledge of some the physical values that are included in the formula of calculation. Concurrence to Einstein's (GR) theory practically full. Difference makes that in theory GR the concept of space and time (geometry) prevails, and in the nature of gravitation the physical substantiation lays. Speed of light is changeable and is determined by a condition of *environment* that depends on electric, magnetic, gravitational potentials.
4. From the structure of *environment* and the nature of gravitation connected to it existence of "black holes" follows, at edge to which (border) limiting acceleration from forces of gravitation is realized. It results in destruction of connections in electric dipoles of *environment*, to a birth of substance and antistubstance (the so-called "evaporation" of black holes theoretically predicted by english scientist E. Hoyking). However, at edge of a black hole speed of light by virtue of disappearance of environment of its propagation is equal to zero. And in Einstein's theory it is spoken, that time is slowed down so, that electromagnetic fluctuations become with zero frequency.

5. By itself follows, that environment is the carrier of all kinds of electromagnetic radiation, starting from a stationary electric voltage and finishing superhigh-frequency "photons" which can be described not as electromagnetic but as the magnetoelectric phenomenon. In the latter case the main role is played with a magnetic continuum of environment, defining so small values of magnetoelectric indignation which in thousand times are less than values of atom of hydrogen. It is natural, that so small value generates illusion, that the photon possesses properties of particles.

6. The structure of *environment* directly leads to concepts of Quantum Mechanics, since quantization of electronic "orbits" in atoms. It is *environment* defines the "resolved"("allowed") electron locations around of nucleus. Thus, *environment* is a necessary place of existence of all substance, a matter of the Universe. One of certificates or a substantiation of this position is so-called the Compton length of a wave of electron which directly pays off with the big accuracy according to electric structure of *environment*.

7. It appears, that Planck's constant not is mysterious "quantum of action", and is completely defined by parameters of environment. Thus, that crisis which blame classical physics, is logically overcome by introduction of environment which is capable to perceive radiation in an electromagnetic bands of frequencies only in quantum's. Planck's constant invariable is present at all quantum approaches. This additional certificate for the benefit of necessity of the account of *environment* as natural place of existence of all substance in the nature.

8. Still it is not known what processes occur in the centers of galaxies. Observations show that the centers of galaxies give rise to substance of stars. They frequently expire with a fan from the centers and settle down approximately in one plane that testifies that the centers of galaxies quickly rotate and in equatorial area and have favorable conditions for emission of substance for stars are created. Planetary systems around of rotating stars are in a similar way formed. It is considered that the centers of galaxies are huge black holes. In the concept of the environment of existence of substance it is possible to state a hypothesis, that environment in a special condition gives rise to star systems - galaxies.

9. In astrophysics are more and more declined to understanding that there is a unknown "dark" matter which occupies approximately 90 % from all substance. Speak that this dark matter is responsible for expansion of the universe due to property of antigravitation. The hypothesis about the nature of gravitation answers positively to such assumptions: expansion of the Universe occurs because of a weak electric charge of environment, and the distributed mass of a magnetic continuum is that dark matter.

10. All elementary particles (electrons, positrons, mesons, protons, neutrons, etc.) are in *the environment* and are interacting with it. These interaction results in a case of electrons and positrons in a strong stretching of dipoles of the environment adjoining directly to borders of particles, break facilitating them by photons. In case of protons on their borders *environment* collapses so, that protons appear dressed in "fur coats" from virtual electrons and positrons. And only to the first Bohr orbit *environment* appears to be in a complete condition. This interaction of *environment* and particles results in the factors determining time of a life some of them. So the neutron has time of a life till 30 minutes depending on a condition in which it has left a nucleus. For mesons "tearing apart" coulombian forces between *environment* and particles so powerful, that time of a life of mesons extremely short. However, at movement of particles with the big speed relatively environment results to that these forces appreciably decrease and at the speeds close by speed of light, they are small. Time of a life of such particles is extended. In Einstein's theory it is spoken about "slowing down" of time. Finally, internal stability and external influence of environment determine time of a life of particles. Protons possess fantastic energy of connection, and they so destroy external influence, that time of a life of protons is huge.

11. At the big speeds of movement of particles in *the environment*, the condensation of a magnetic continuum that accepts for growth of mass of particles at growth of their speed ahead is formed. Probably, the list of the physical phenomena connected to presence of *an inhabitancy* of substance can be continued. But already it is quite enough of it to recognize a great role of *environment* in the existence of the Universe and in processes, in it occurring. The special place occupies "mechanism" of gravitation and inertia. For only it is capable "to open eyes" on the real organization of the Nature. The accepted methodology in physics it is possible the most exact description of the phenomena is necessary, but not sufficient for understanding of essence of "space" and substance. Consideration of *an inhabitancy* of substance can satisfy a condition of sufficiency.

The knowledge of the device of structure of *the environment* formed by an electric lattice from charged dipoles, surrounded with a magnetic continuum, enables for management of forces of gravitation and inertia. To influence on *environment* it is possible:

1. Radiation with the frequencies that are coming nearer to frequency of photons which energy goes on formation of pairs of electron-positron.

2. Electric voltage in *the environment*. Unsatisfiable because of real breakdown of substance.
3. Magnetic force (streams of a magnetic induction). It is the most perspective way of influence, achievable in terrestrial conditions (1-10 Tecna it is enough for indemnification of terrestrial gravitation).
4. Transformation weak acceleration in strong acceleration of shock type.

Potential electric and magnetic energy in *the environment* is huge. The estimation of it, proceeding from energy of one dipole equal of $1,6 \cdot 10^{-13}$ Joules, gives value of electric energy in one cubic meter of environment about 10^{+31} Joules that is equivalent annihilation of masses in 10^{+15} kg!

From Lorenz and Einstein's theory four-dimensional space - time follows. Substances here are not present. Abundantly clearly for any researcher of the Nature, that the space can be determined only by a presence in it of different bodies (substance) and existence of distances between bodies (system of coordinates). Current of time can be determined only when in substance there are changes (movement, dynamics of movement in any form). Thus, introduction of transformation of Lorenz and abstract space - time breaks radically a materialistic method of research of the nature and the Universe. The idealism has penetrated theoretical physics of XX century.

And how to be with the relativistic effects observable on experience? Unfortunately, strange image experiences testify for the benefit of relativistic effects. At least, there is no obvious divergence, except for some observable phenomena. It is possible to attribute to the last inexplicable even in relativism frameworks abnormal acceleration of device "Pioneer - 10" and other space devices. Employees of NASA have touched all conceivable and inconceivable ideas to find the reason of the acceleration, equal $8e-008 \text{ m/s}^2$. They have not found it. The author has made the assumption, that speed of light depends on a condition of space (*environment - ether*) from such "fields" as gravitation, acceleration of substance, electromagnetism. At start of space vehicles speed of light on the Earth is **of 2.99792458 (000000) $\cdot 10^8$ km/s**. In a free space speed of light **is of 2.997924580114694 $\cdot 10^8$ km/s**. For the Sun at which acceleration of a gravity in 28 times more terrestrial, the effect of decrease in speed of light on a surface of the Sun is more. The difference is already in the eighth sign on value of speed. In the research experts result Doppler's formula of displacement of frequency of waves of a radio communication with "Pioneer - 10" :

$$\Delta v = v_o V / c$$

Doppler's displacement of frequency depends not only on reduction of speed of movement **of device V** , but also from speed of light " **c** ". It is enough to define difference of speed of light in a free space from speed of light in a gravitational field of the Earth as the riddle of abnormal acceleration of the device can be solved so: there is no abnormal acceleration, and there is a dependence of speed of light on gravitation. The increase in speed of light in space just coincides with is familiar abnormal Doppler's displacement.

Such dependence of speed of light gives completely other interpretation for a deviation of rays of light by heavy objects in space. As a result of different speed of light in space **$c(o)$** and about a gravitating body **$c(g)$** the factor of refraction which is well-known in optics changes: **$n=c(o)/c(g)$** . So there are gravitational lenses in space, a deviation of a ray of light by the Sun. Observable red displacement from sources on heavy massive objects also speaks that speed of light at radiation is small and at its propagation to a free space there is a red shift of frequencies in radiation. Conditions of black holes, which are already found out in the Universe, are those, that their gravity reduces speed of light up to zero, and we do not see black holes. They are shown only as indirect manifestation and still on characteristic jets (to the streams of particles directed along magnetic force lines and conterminous to an axis of rotation). The jets phenomenon testifies that physical processes of a black hole occur, despite of "delay of time" up to zero that follows from GR.

And so is business with all "relativistic" effects ("delay" of time, a deviation of light gravitation, red shift) - instead of normal their physical explanation is used obvious infringement of a principle of materiality of our world. Once again we shall recollect absurd from the point of view of normal logic introduction of dependence of time from coordinates of space $t: t' = kx + nt$ (a relativity of time). In this formula Lorenz and Einstein have sentenced the Special Theory of the Relativity (GR) to inevitable crash.

What to do? What approach can be applied in the real theory of relativity? We shall carry out analogy between *environment* of propagation of electromagnetic waves, a source of gravitation - inertia and air in which the sound is propagating. Air is located above the Earth, which can be accepted as absolute Galilei space!

The analogy even can be deepened that air can be ionized. We shall assume, anions will be more than basic ions. In this case, ionized air will draw all bodies to each other, and to be "source" of gravitation.

Speed of a sound is defined by the module of compression, density and does not depend on speed of a source or the receiver. Gravitation is result of a superfluous electric charge.

All bodies that are taking place in the air environment move not only concerning air that has an opportunity of moving be relative repeat, and concerning the Earth as absolute system of readout. It is obvious, that in this case Galilee transformations are fair and are not connected in any way to wave processes (sound) in air. The air as environment resists to movement of any body. Resistance especially grows at approach to a speed of bodies a sound barrier. The similar picture should be and at movement of bodies in *the environment*. While it is considered, that "the light barrier" in *the environment* is insuperable.

Introduction of absolute space in which there is a special structure of *environment* eliminates the contradiction of a principle of Galilee relativity by Maxwell wave equation. Thus Lorentz's transformations - Einstein appear not at has put. They are not necessary. Thus, *environment* is the third working category (essence) between substance and the valid emptiness of absolute space. Connection of substance with *environment* is known connection of *environment* with real emptiness of absolute space while is unknown and can be a subject of hypotheses. We shall assume that the structure of *environment* can move in absolute space. For example, there is expansion of Universe after the Big Explosion at a its birth. Then in each concrete point "rigid" connection of structure with space and increase of speed of its relative movement in absolute space like an inflated sphere far from the observer can be accepted. Such model does not contradict astrophysical observation - increase in speed expansion of galaxies in process of distance grows from the location of the observer. It is shown in Doppler's effect (red shift in radiation, which increases in process of expansion of space objects from the observer). Movement of bodies in *the environment* can be found out only on Doppler's effects, instead of addition of speeds of light and a source (receiver).

Our analogy of physical vacuum as *environments* with air and sound waves in it appears enough plausible and evident.

ELECTRON AND A POSITRON

Development in XIX century of knowledge about an atomic structure of substance and step-type behavior of an electric charge has led to opening of an elementary particle - electron - the carrier of an elementary and negative indivisible electric charge. Dirac has predicted existence of antiparticles, and a positron as the antiparticle has been found out in space beams by the American scientists Andersen, and others in 1932. Key parameters of electron (positron) the following:

Mass is $m_e = 9.10938188 \cdot 10^{-31}$ kg,

Charge is $e_{o+} = 1.602176462 \cdot 10^{-19}$ Coulomb.

The quantum mechanics for electron establish parameters: spin, the magnetic moment, etc. Quantum questions here we shall not concern, though the elementary charge and mass of electron is that other, as quantum's of a charge and mass. A real question - charges of electron and a positron are identical? Experience shows that with not so big accuracy up to 10-th sign after a point they are identical. Whether but so it if to assume higher accuracy? As while it is impossible to answer this question with the help of experiment, that is an opportunity to assume, that in this case symmetry of our world is broken also charges of electron, a positron are not equal down to 21-st sign. What does it give? One of the main results consists in that, according to the law of preservation of the charge, opened by Faraday, charges of electron and a positron, electron and cannot destroy a charge of proton. Differently, electrons cannot fall to a nucleus of atom, electron and a positron cannot annihilate differently as at destruction of their masses, and charges remain and form the connected charges (dipoles) of *environment*. As it will be shown below in section about a source of gravitation, the inequality of charges of electron and a positron generates forces of gravitation.

An electron and a positron are truly elementary particles. It privately proves to be true chromodynamics quantum that is based on the theory of quarks on which all particles it is heavier electron (positron) will consist of quarks with a fractional charge in relation to the unit charge of electron. In it is weakness of a position chromodynamics quantum - making the application for finer structure of such particles as a proton, a neutron, etc., it failures in a problem of a structure electron and a positron. But finds way out, declaring the last are "partners" of quarks!

ELECTROMAGNETIC ESSENCE OF ENVIRONMENT

The attitude to physical vacuum in the orthodox physics is ambiguous. There are many publications about physical vacuum. Einstein has defined *environment* as essence with zero speed of light and with zero (if not negative!) energy. Dirac has entered concept about physical vacuum as about the sea of virtual particles that can give rise at entering energy to particles and antiparticles. Virtual particles arise for one instant of time from *the environment* and come back. *Environment* "boils" by virtual particles. It has received the name as "Dirac's sea". Boiling as name of fluctuations of *environment* is more often. There is also such definition of *environment*: a field of energy of zero points. It is practically impossible to list, read and give references to all publications to a theme of physical vacuum and its energy. As opposed to Einstein's opinion there are statements of known scientists that energy of *environment* is inexhaustible. In physics there is a model of electromagnetic, nuclear and weak interactions with the help of virtual particles or the nuclear *environment*. So interaction between particles is carried out with the help of virtual photons, strong and weak interaction with the help mesons, gluons and heavy **W** particles. Thus, the problem long-range action or short-range interaction is solved, avoiding concepts of "material" physical fields. Few authors consider that known «relict radiation» is direct display of the physical processes occurring in *the environment* (its modern activity).

As the photon *environment* we shall understand accepted in physics certain «a photon field» as a source of virtual photons for exchange particles as it is accepted in orthodox physics at electromagnetic interactions. The term chosen by us is not far from an essence of the phenomenon of electromagnetic waves (light) in a space. Before a conclusion of the basic parities in structure of *environment* we shall pay attention the reader to the

$$r_e = \xi \frac{e_o^2}{m_e c^2}$$

known formula for classical radius of electron: . The classical radius of electron follows from equality its electric and mass (nuclear) energy. The important circumstance is the recognition of validity of Coulomb in a microcosm. Below classical radiuses of electron, a proton is understood as the real value of these particles. And only it results in those not ordinary consequences which are received in the given paradigm but which are very similar to the truth.

For penetration into structure of *environment* we use the phenomenon of transformation of a photon into electron and a positron. We shall make the assumption, that *environment* possesses some structure. This most important and cardinal assumption is in the theory of *environment* at a level of a **hypothesis**.

The photon having frequency ν , deforms structure of *environment*. Being in structure with a value between its elements r_e , the photon creates deformation Δr . Thus energy of deformation will be $e_o E \Delta r_e$, where e_o - an elementary charge of electron or positron, E - intensity of an electric field of structure. Energy of a photon is equal to energy of deformation where h there is Planck's constant:

$$h\nu = e_o E \Delta r_e, \quad (1)$$

where ν – frequency of a photon. Deformation depends on time. The photon is an electromagnetic phenomenon with amplitude: $r_e \sin(2\pi \nu t)$

$$\Delta r = \Delta[r_e \sin(2\pi \nu t)] = 2\pi \nu r_e \Delta t \cos(2\pi \nu t). \quad (2)$$

Let's determine intensity of an electric field, where N - unknown factor of proportionality:

$$E = N \xi \frac{e_o}{r_e^2}. \quad (3)$$

Let's substitute the received expressions, amplitude from (2) and intensity from (3) in (1):

$$h = 2\pi N e_o^2 \xi \frac{1}{r_e / \Delta t}. \quad (4)$$

$r_e / \Delta t = c = \sqrt{\eta \xi}$ – velocity of light.

Let's determine unknown number:

$$\odot^1 N = \frac{h}{2\pi e_o^2 r_q} = 137,039909 = \alpha^{-1}, \quad (5)$$

where $r_q = \sqrt{\xi/\eta}$, $\eta = \frac{1}{\mu} = 1,0000000028 \cdot 10^7 [a^2 \cdot m^{-1} \cdot \kappa^2 \cdot c^2]$ – the magnetic constant of *environment* equal to return value of magnetic permeability,

$\xi = \frac{1}{\varepsilon} = 8,98755179 \cdot 10^9 [a^{-2} \cdot m^3 \cdot \kappa^2 \cdot c^{-4}]$ – The electric constant of *environment* equal to return value to a

dielectric constant. In directories CODATA for value the number 4π is entered: $\mu = 4\pi 10^{-7}$. However, further **everywhere 4π it is reduced** and does not influence all resulted calculations.

In result have received number to return value to a constant of thin structure. From (5) the known formula for Planck's constant follows:

$$h = 2\pi e_o^2 \alpha^{-1} \sqrt{\xi/\eta} = 6.6260755 \cdot 10^{-34} [J \cdot s]. \quad (6)$$

By virtue of a way of a conclusion it was necessary to set Planck's known constant as main. Actually Planck's constant is **derivative** value from a constant of thin structure and electromagnetic parameters of *environment*, which should be counted as the most fundamental constants in a present conditions of the Universe.

$$E = \alpha^{-1} \xi \frac{e_o}{r_e^2} = 1.00856 \cdot 10^{23} [B/m]$$

Relevantly to receive electric intensity of structure is as . Such intensity should be applied to destruct the structure.

The following stage will be the reference to "photoeffect" for *environment*.

On the well-known experimental fact we shall construct elements of structure. A photon with energy $w \geq 1MeV = 1,6 \cdot 10^{-13} \text{ Дж}$ [Карякин and др., 1964] at interaction with *environment* transforms a "virtual" pair from a electron–positron into real particles. Physics object to such treatment of transformation of a photon in particles. The photon does not cooperate directly with *environment*, transformation occurs only at the presence of an extraneous particle that is necessary for withdrawal of a photon impulse. But the parity of energy remains in force. The equation of energy of a photon for «red border» $h\nu_{rb}$ and energy of pair is:

$$w = \xi \frac{e_o^2}{r} = 2\pi\alpha^{-1} e_o^2 r_q \nu_{rb} = 1,6493 \cdot 10^{-13} J. \quad (7)$$

From (7) we find the value of a structural element:

$$r_e = \frac{\alpha^{-1} \xi}{2\pi r_q \nu_{rb}} = 1,398763188 \cdot 10^{-15} m. \quad (8)$$

Exact value $\nu_{rb} = 2.4892126289 \cdot 10^{20} \text{ Hz}$ for frequency of red border follows from an equation

$2\pi\nu_{rb} r_e \Delta t = \frac{2\pi\nu_{rb} r_e^2}{c} = \alpha r_e$ at the assumption, that $r_e / \Delta t = c$. From these conditions we shall determine limited value of deformation of a dipole at which the photon **beats out** from the *environment* a real pair from electrona and a positron:

$$\Delta r_{rb} = \frac{h\nu_{rb} r_e^2 \alpha}{e_o^2 \xi} = 1,020672 \cdot 10^{-17} m \quad (9)$$

¹ Further everywhere concurrence which seem surprising, we shall mark it as \odot .

« **The conditions necessary for a birth of pairs.** The birth of pair represents process of transformation of a photon in two elementary particles - electron and a positron. Process is possible in that case when "mass" of a photon will be not less sums of masses of rest of electron and a positron:

$m_{\phi} \geq m_{-} + m_{+}$ or power condition $h\nu \geq 2m_0c^2 = 2 \cdot 0,511 = 1,022 \text{ MeV}$. A photon [Окунь, etc., 1999] has no mass in any condition. However, besides the law of conservation of energy, should will be executed the law of preservation of an impulse. But the impulse of pair always is less than impulse of a photon. Hence, process is possible only in the event that one more particle that will take up surplus of an impulse will participate in it. This particle can be a heavy nucleus or easy electron. Thus the boundary condition $h\nu = 2m_0c^2$ will not be broken».

The citation is taken from the directory [Карякин and др., 1964]. In any case, we as physically proved take the specified boundary condition. And the destiny of an impulse of a photon is not deciding in the above-stated conclusion of structure.

The dipole distance almost precisely is equal to the classical radius divided on two. As the justification of absence of a tautology that energy of scale - quantum is almost precisely equal to energy of the double particle mass.

Deformation of a dipole has the than given value electroelastic character less and at the greater value of deformation there is a destruction of a dipole, by a birth of pair from free electron and a positron. Remarkable consequence from the formula (9), determining strength of a dipole:

$$\odot \Delta r_{rb} = 1,020672 \cdot 10^{-17} = \alpha r_e. \quad (10)$$

This consequence has allowed to specify the frequency of red border. It is known that the photoeffect in *the environment* is frequently accompanied by scattering of two electrons and one positron. One of electrons is the extraneous participant it was possible to them to be in a place of the act of "birth" of pair an electron-positron. To this there is a normal explanation, besides necessity of exception of an impulse that the photon possesses. Presence of free electron is deformed with ENVIRONMENT on its surface, on value at which the photoeffect is energetically facilitated:

$$\xi \frac{e_o^2}{r_e} = \xi e_o^2 \alpha^{-1} \frac{\Delta r}{r^2}; \quad \Delta r = \alpha \frac{r^2}{r_e} = 5,067116 \cdot 10^{-18} m. \quad (11)$$

In an ideal case if the photoeffect occurs directly on a surface of free electron, energy of a photon can decrease almost in 2 times.

The photoeffect for platinum gives value of deformation $\Delta r_{Pt} = 6,2 \cdot 10^{-23} m$. Differently, *environment* "is stronger" some platinum almost on 6 orders. There is still very important remark. Planck's constant appears

$$h = 2\pi e_o^2 \sqrt{\frac{\xi}{v}} \frac{r_e}{\Delta r_{rb}}$$

equal to Δr_{rb} , it is completely defined by dielectric, magnetic constants and structural elements of environment: a charge of a dipole, dipole distance and its limiting stretching. The origin of a constant of Planck is obliged to environment. All phenomena, which description to not do without its application, testify that such phenomena develop in the environment. It is enough to recollect that Lamb explained thin structure of radiation **by fluctuations of physical vacuum**. Consideration by physics of the similar phenomena in emptiness inevitably results in inexplicable riddles and paradoxes, infringement of concept of common sense. Differently, the value of a constant of Planck is the certificate for the benefit of existence of modern ether as *structure of environment*.

As in *the environment* it is found out certain charged massless dipole it will be natural to speak about its polarization. Similar judgements about polarization of physical vacuum can be found out and in other authors.

Polarization:

$$\sigma_e = \frac{e_o}{4\pi r_e^2} = 1.6056 \cdot 10^9, K\Lambda / M^2 \quad (12)$$

Polarization from a charge of a proton on distance of the first orbit of atom of hydrogen makes

$$\sigma_{be} = \frac{e_0}{4\pi r_{be}^2} = 4.553 [ac / M^2]$$

The value of polarization (12) from the electron is limiting. It is really necessary to have smaller polarization that the photoeffect has taken place at the presence of the stranger electron. This fact is perceived by physicists as an obligatory condition for realization of "transformation" of a photon in a pair of particles. In our conclusion presence of a foreign particle is a noise that should be excluded for reception of the exact decision of a problem of structure.

Polarization decreases for 9 orders at distance from a positive elementary charge up to the first orbit of atom of hydrogen. We shall notice, that $\sqrt{\Delta r_e / \Delta r_{be}} = 137.0362 = \alpha^{-1}$ and $\sigma_e / \sigma_{be} = \alpha^{-4} = (137.0365)^4$. From here we receive connection polarization with deformation for charges electron or a positron:

$$\frac{\sigma_{be}}{\sigma_e} = \left(\frac{\Delta r_{be}}{\Delta r_e} \right)^2 = \alpha^4$$

$$\sigma_{\Delta r} = \alpha^{-2} \frac{e_o}{4\pi r^4} (\Delta r)^2 = S \cdot (\Delta r)^2, \quad S = 6.254509137 \cdot 10^{43}, [acM^{-4}] \quad (13)$$

Let's address to power ratio at a photoeffect. Energy $w = 1.6493 \cdot 10^{-13} J$ (the formula 7) goes on break of connection of electron+positron in a dipole and formation of free pair electron and a positron with energy $w = 1.6374 \cdot 10^{-13}$, i.e.

$$w = 1.6493 \cdot 10^{-13} = 1.6374 \cdot 10^{-13} + 1.1949 \cdot 10^{-15} J \text{ where energy of break is designed according to}$$

$$r + dr_{rb} = 1,3987 \cdot 10^{-15} + 1,0207 \cdot 10^{-17} = 1,409034 \cdot 10^{-15}$$

$$\text{and} \quad \Delta w = w - \xi \frac{e_o^2}{r + \Delta r_{rb}} = 1,1949 \cdot 10^{-15} J. \quad (14)$$

Let's notice, that the relation of energy of connection to energy of pair electron and a positron equally

$$\frac{\Delta w}{w_{ep}} = \frac{1.1949 \cdot 10^{-15}}{1.6374 \cdot 10^{-13}} = 0.0072975 = \alpha$$

© Thus, the constant of thin structure is equal to the relation of

energy of connection of a dipole to energy of pair electron – positron at free condition at rest: $w_{ep} = 2m_e c^2$. Continuing the classical approach to structure, we shall notice, those force electrical elastic deformation and factor of elasticity b is determined from:

$$f = b \Delta r_{rb} = \xi \frac{e_o^2}{r^2}, \quad b = \xi \frac{e_o^2}{\Delta r_{rb} r^2} = 1,155406 \cdot 10^{19} \quad kg / s^2. \quad (15)$$

Let's check up correctness of calculations. Energy of deformation

$$w_{rb} = \alpha^{-1} f \cdot \Delta r_e = \alpha^{-1} b \Delta r_e \cdot \Delta r_{rb} = 1.649347 \cdot 10^{-13}$$

J. That coincides with full energy of a photoeffect in *the environment*. Last result with participation of constant thin structure pays attention that macrointeraction in the world occurs not to each separate cell of a dipole, and with the some of cluster, made approximately from 137,036 dipoles. As for the first time we saw it at a conclusion of key parameters of *environment* (the formula 5).

One of results is higher than the resulted conclusion value of Compton length of a wave is:

$$\lambda = 4\pi(r + \Delta r_{rb}) \cdot \alpha^{-1} = \frac{h}{m_e c} = 2.42631058 \cdot 10^{-12}$$

m. We shall meet expression $\pi\alpha^{-1} = 430.511$. The Compton length of a wave electron is still known for that its length is stacked in length of the first orbit of atom

$$\frac{2\pi a_0}{\lambda} = \frac{2\pi \cdot 5,29177249 \cdot 10^{-11}}{2,42631058 \cdot 10^{-12}} = 137,0359897$$

of hydrogen practically precisely 137,036 times: . **This result speaks only about one - the reason and the beginning of Quantum Mechanics (QM) lay in structure of *environment*. It is "mechanism" of QM.**

We find out only electric structure. It represents a crystal lattice in which the arrangement of units is not established. The elementary structure is formed either a tetrahedron, or a cube, or a dodecahedron. The question on anisotropy of *environment* in that case follows. It can be solved by different ways. Or the lattice is more complex than the specified elementary structures, or in larger scale exist clusters from the dipoles, located is organized. And clusters can be located in more complex configuration in which anisotropy proves in an insignificant degree. Besides it is well known that dodecahedron has not any anisotropy. There are data, that anisotropy is really observed and shown as relative value about 10^{-4} [Ефимов, 1991]. Besides the American researchers came to a conclusion, that our universe has appearance of a crystal of a dodecahedron. Such crystal is deprived anisotropies. Any crystal repeats itself from microstructures up to macro.

The physical vacuum is *the environment* of propagation of electromagnetic waves (light). Therefore the crystal lattice should be added with the magnetic continuum. There are bases to believe that the magnetic continuum at the given stage of research can be accepted as the real continuum. We shall name conditionally a continuum magnet-mass.

Now astrophysics fined out attributes of existence of "dark" mass and "dark" energy. It is possible, that the dark mass is this magnet-mass continuum, and dark energy follows from potential energy of structure of a charged lattice.

THE NATURE OF ELECTROMAGNETIC WAVE (LIGHT)

Electromagnetic waves are theoretically open by D.Maksvell (1831-1879), in practice they were open by G. Hertz (1859-1905). However till now nature EMW is unknown. The structure of *environment* gives an opportunity to define their nature due to opening by Maksvell of the currents of displacement in dielectric, which have found confirmation in capacitors. Capacitors possess ability of conductivity at a variable voltage on plates. In dielectrics there are **connected** charges. They have received such name as against free charges - carriers of anyone - constant and alternating currents. The connected charges are capable to form only alternating currents by transfer from one dipole up to other electric potential or electric polarization. Here the term "current" is conditional. Actually on dielectric waves of polarization proceed. Actually the current as a stream of charges in dielectric does not exist. At a constant voltage in dielectric there are no waves of polarization. In this case there is only the constant polarization of the connected charges counterbalancing enclosed to dielectric an external constant electric voltage. So, the current of Maksvell displacement current generates

$$\overline{dH} = \frac{1}{c} \overline{j}$$

magnetic intensity:

The equation is given, as it is accepted, in the vector form. The differential means orthogonality of the given birth magnetic intensity to a direction of a current of displacement. In turn the current of displacement is

$$\vec{j} = \frac{d\vec{E}}{dt}$$

raised the variable electric voltage: $\vec{j} = \frac{d\vec{E}}{dt}$. In last expression the multiplier $1/4\pi$ so it very much frequently brings mess in the used system of SE is omitted and it is necessary to ignore simply this multiplier. Thus, in dielectric there are all attributes EMW - electric intensity E , a current of displacement, magnetic intensity H

$$\frac{dH}{dt} = \frac{1}{c} \frac{dE}{dt}$$

which form orthogonal a vector together with a direction of propagation of a wave $\frac{dH}{dt} = \frac{1}{c} \frac{dE}{dt}$. The capacitor that is taking place under a variable voltage radiates EMW that at high frequency is easily found out.

Speed of a wave in dielectric is determined by electric and magnetic parameters of dielectric $c_d = \sqrt{\eta_d \xi_d}$.

At radiation on space velocity of EMW gets value $c = \sqrt{\eta \xi} = 2.99792458 \cdot 10^8 \text{ m} \cdot \text{s}^{-1}$. The unique conclusion follows - light (an electromagnetic wave) **are possible only in the environment** where there are the connected dipoles, capable to form currents of displacement. And, at last, there is one more incontestable proof in physics, that ENVIRONMENT is dielectric. The fact, that electric and magnetic intensity in EMW - are cophased is established by practical consideration. Maxima and minima in vectors E and H are cophased. How it is shown by above-mentioned formulas for these values is depending on a current of displacement. Thus, that **ENVIRONMENT is** dielectric is an experimental fact.

The structure forms dielectric, and itself dielectric is organized in crystal structure. With one remark: in it there are no masses. The last is obliged to the circumstance, that at annihilation of electron and a positron their masses turn into energy of gamma - quanta of radiation, and charges form an additional dipole of structure. In a result answers to questions that there is nature of EMW and that limits speed of its propagation in the environment here are received. Strange that till now in physics seriously nobody thought of answers on these fundamental questions.

And still till now remains not clear - that such electromagnetic indignation of environment as it is formed and propagated. For clearness we shall result the circuit (see fig.1) which explains the specified problems. The big black circle designates electron, making vertical fluctuations in a source along an axis with pointers. The positive charge of a dipole nearest to it follows in this movement. The negative charge (a black circle) following dipole is involved in this movement with the speed determined by frequency of electron oscillations. Process is propagates with speed of light and for one second the result of electron oscillations a source appears on distance $3 \cdot 10^8 \text{ m}$ as an electromagnetic wave. It will be shown below, that the length of a wave of "red

border" radiations for photon "vacuum" coincides with $\lambda_{rb} = 2\pi r \cdot \alpha^{-1} = 1.204302 \cdot 10^{-12} \text{ m}$. Completely clearly it is visible, that depole distance of photon "vacuum" by all means enters as quantum of length of an electromagnetic wave. On fig.1 $\pi \alpha^{-1} = 430,511$ constants of a lattice enter into length of a wave. From the resulted values it is possible to receive time of transfer of action from electron to the first charge of a dipole which repeats its oscillations. The period of a wave is expressed by equality $T/861 = 4.665643 \cdot 10^{-24} \text{ s}$. The period on **2*430,511** dipole distances, we shall receive time of polarization of one dipole $T/861 = 4.665643 \cdot 10^{-24} \text{ sec}$. We shall check up calculations by definition of speed of transfer of interaction: **$c = 2.99792458 \cdot 10^8 \text{ km/s}$** . Speed of light is received, anything surprising is not present. The result confirms that the resulted approach to the phenomenon of radiation and propagation of electromagnetic oscillation is true.

It is important to emphasize, that the electromagnetic wave is not formed by a charge of one sign, and made of alternating elementary charges of opposite signs and their displacement. If it to not take into account, there can be a false notions, that the wave of indignation is formed by gradual growth or reduction of displacement of a charge of one sign. Differently, each dipole on a way of propagation of indignation passes process from minimal before the maximal displacement set by energy or frequency of an electromagnetic wave. The electromagnetic phenomenon is connected to alternation of charges of a different sign while gravitation is transferred by inphase fronts of charges of one sign.

Propagation of deformation of one sign can be considered as soliton propagation. The deep understanding of essence of quantum representations is connected to the circuit fig.1 in an electromagnetic wave. From the point of view of physics of the beginning of XX century - amplitudes of waves should develop. The photoeffect contradicted

such representation. A.Einstein's work has explained the fact of dependence of a photoeffect from frequency of radiation and its independence of brightness of radiation.

That the amplitude of deformation of dipoles has increased for fig.1, it is necessary to increase speed of electron movement, represented in the beginning of coordinate "0", i.e. frequency of its fluctuations, or to increase a charge of electron, having presented, that in one place can simultaneously may be 2 and more electrons, that in the nature it is impossible. Thus, all quantum phenomena are completely defined by a discrete structure of a matter and environment. A spectrum of electromagnetic radiation it agrees to «the Physical encyclopedia» [1998] it is submitted in table 1:

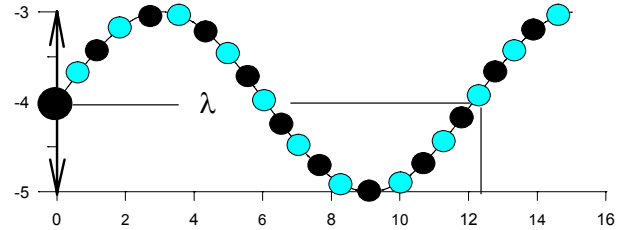


Fig.1. The circuit of formation of an electromagnetic wave In structure.

Table 1

Frequency, Hz	Length of a wave, m	The name of a range	Sources
10^3	$3 \cdot 10^5$	Radiowaves	Alternating currents in conductors and in electronic streams (generators of radio frequencies and the MICROWAVE)
10^{12}	$3 \cdot 10^{-3}$	Infra-red radiation	Molecules and atoms at thermal and electric influences
$3,75 \cdot 10^{14}$	$8 \cdot 10^{-7}$	Seen light	Molecules and atoms at thermal and electric influences
$7,5 \cdot 10^{14}$	$4 \cdot 10^{-7}$	Ultra-violet radiation, soft roentgen	Atoms under influence accelerated electrons
$3 \cdot 10^{17}$	10^{-9}	roentgen and scale - radiation	Processes in atoms under influence of the accelerated charged particles
$3 \cdot 10^{20}$	10^{-12}	gamma - radiation	Nuclear processes, radioactive disintegration, space processes
10^{23}	$3 \cdot 10^{-15}$	gamma - radiation	Nuclear processes, radioactive disintegration, space processes

The table looks enough full. The least length of a wave for structure of photon "vacuum" practically coincides with a constant of its lattice $\lambda_{\min} = 2r_e \approx 3 \cdot 10^{-15} m$. Here it is covered either a riddle, or the direct contradiction. It is known that «the red border» corresponds to length of a wave $\lambda_{rb} = 1,2044 \cdot 10^{-12} m$, that in **430,511 times more** the constant lattice and any problems does not arise at interpretation. Below we shall meet this number.

In usual crystals, with reduction of length of a wave of elastic waves till the values of a constant of a lattice, speed of their propagation should decrease down to zero. The reason of it is made in clearing deformations of ionic units of a lattice. The problem arises at a question on how can exist and $3 \cdot 10^{-15} m$ in the structure accepted by us a flat electromagnetic wave will be propagated with that length of a wave. Besides it appears that in the same encyclopedia there are other data on gamma - radiation with the big frequencies (smaller lengths of waves). These data are resulted in tab. 2:

Table 2.

2.48935e+020	1.2043e-012	Soft radiation	The excited nucleus, nuclear reactions
2.48935e+021	1.2043e-013	Average	Annigalation , space beams and substance.
2.48935e+025	1.2043e-017	Rigid	Brake, magneto-brake (synchro-generator), dispersion electrons on low energy photons and on relict radiation, disintegration of particles (peons), Annigalation $P\bar{P}$
2.48935e+028	1.2043e-020	Ultrahigh energy	
2.48935e+031	1.2043e-023	Ultrahigh energy	

First of all, there are questions on sources of rigid and more vigorous waves. It is accepted to speak any more about waves, and about photons. Their electromagnetic nature is established only in alpha and beta disintegrations of nucleus on absence of deviations of gamma - radiations in magnetic fields. In the first line we have full concurrence to «red border». The second line gives still chance of generation and propagation in charging structure, and last three lines leave far for frameworks of possible "recognition" photons of rigid structure as envarement of propagation. The further work above the given problem is necessary. A possible way - opening of the new nature of electromagnetic radiation as magnetoelectric, i.e. a wave movements of charges raise not, and generation of indignations of a magnetic continuum and formation, according to for-

mula, an electric voltage $rot \vec{E} = -\frac{\partial \vec{B}}{\partial t}$. The "local" stream of a magnetic induction $\vec{\Phi}_\gamma = s \vec{B}$, which proceeds from small area of the environment limited to the closed surface s , is created. For such model of formation of an ultrashort-wave magnetoelectric wave there is no necessity to consider quantum structure of environment. It is necessary to know properties of a "magnetic" continuum. For a scalar $E = cB$ [Feinman, 1964]

or $\xi \eta = \left(\frac{E}{B}\right)^2 B = \frac{1}{\eta} H$ $\frac{\xi}{\eta} = \left(\frac{E}{H}\right)^2$. Then we receive, that where connection of electric and magnetic constants with a square of the relation electric and magnetic strength is reflected.

Confirmation of it see in «the Physical encyclopedia», section «Electromagnetic radiation». On the other hand, electric intensity E is not equal to zero a case when inside volume from which stream E proceeds,

there is an electric charge $div \vec{E} = \xi q_k$. The conclusion follows, that the source of a magnetic induction creates a certain charge in a magnetic continuum, the value and which natures for this moment are not clear. It is probable, so in the environment gamma - quants ultrahigh energy are formed. However, the formula for Planck's constant testifies, that it is determined both electric, and magnetic penetrability. It is necessary to expect, that energy of gamma-quantum also is determined, as well as in case of an electromagnetic wave $w = h\nu$ with that feature that there is in doubt a presence of an elementary charge in the formula

$$h = 2\pi\alpha^{-1} \sqrt{\frac{\xi}{\eta}} q_i^2$$

Relations of inphase of electric and magnetic amplitudes in an electromagnetic wave determines a curious

transformation of the given formula $h = 2\pi\alpha^{-1} \frac{E}{H} q_i^2$. Thus it looks as the characteristic of radiation. Maks Planck has entered it for definition of intensity of radiation. There is a lawful question: why in physics it is accepted to use the given constant in classification of elementary particles? I shall remind, that at all particles have the spin, determined by numbers 0, 1/2, 1 ... and so on, increased on value $h/2\pi$. In such definition of spin there is no moment of rotation, and there is only formal concept used for convenience of classification of the big variety of particles.

That the electromagnetic wave can be raised by change of magnetic intensity or a magnetic induction, well known. There are magnetic aerals of radiation and reception. But at lengths of the waves surpassing in tens, hundreds times a *constant* of the crystal lattice equal double to dipole distance, problems are not present. They arise, when the length of a wave is comparable to value of a lattic constant. Excitation of a magnetoelectric wave by formation of a whirlwind of intensity of a magnetic continuum can give the solution to the problem. As the first approach the decision of a task in view we will address to Maxwell formulas and R. Feynman's their successful treatment.

- 1) $\oint H_\ell d\ell = i_{np} + i_{cm}$ - Circulation of intensity of a magnetic field is equal to the sum of a current of conductivity and a current of displacement. Here that fact is expressed, that the magnetic field is distinct from zero, both at moving electric charges, and at change of an electric field in time. I.e

$$\oint H_\ell d\ell = i_{np} + \frac{\partial}{\partial t} \int S D_n dS$$

. All electromagnetic phenomena are connected only through currents $i_{np} + i_{cm}$. Ignoring of this connection by only mathematical equating functions E and H conducts to an incorrect conclusion, that **electric and magnetic intensity generate each other directly, passing currents.**

- 2) $\oint E_\ell d\ell = -\frac{\partial}{\partial t} \int S B_n dS$ - Mathematical "fact" of occurrence of an electric field at change in time of a magnetic field. From an induction of a magnetic field it is possible to replace integral a full stream of a mag-

$$\Phi = \int S B_n dS$$

netic induction from a source inside the closed surface and it is possible to copy the second

equation so: $\oint E_\ell d\ell = -\frac{\partial \Phi}{\partial t}$

- 3) $\oint S D_n dS = q$ - The stream of an electric induction through the closed surface is equal to a full charge inside this surface. The equation describes an electric field around of charges.

- 4) $\oint S B_n dS = 0$ - A stream of a magnetic induction $\Phi = 0$ through any closed surface which is not containing moving charges (absence of currents of displacement!).

In the differential form of Maxwell equation will be copied so:

1. $\text{rot } \bar{H} = \bar{i}_{np} + \frac{\partial \bar{D}}{\partial t}$

2. $\text{rot } \bar{E} = -\frac{\partial \bar{B}}{\partial t}$

3. $\text{div } \bar{E} = \frac{\rho}{\epsilon_o}$

4. $\text{div } \bar{B} = 0$

R. Feynman [1964] states this material in the following form:

1. $\text{div } \bar{E} = \frac{\rho}{\epsilon_o}$ - The stream of vector E through the closed surface is equal to a charge inside of it.

2. $\text{rot } \bar{E} = -\frac{\partial \bar{B}}{\partial t}$ - The integral from vector E on the closed contour is equal to change time to a stream of an induction of a vector " B " through a contour.

3. $\text{div } \bar{B} = 0$ - The stream of a vector B through the closed surface is equal to zero (in case inside the closed cavity there are no sources of a magnetic - monopole or variables a current - *a comment of the author*).

$$\text{rot } \bar{B} = \frac{1}{c^2} \left(\frac{\bar{j}}{\epsilon_o} + \frac{\partial \bar{E}}{\partial t} \right)$$

- The integral of a vector B on a contour is determined by a current in a contour and change in time of vector E . In this formula, unfortunately, it is necessary to ascertain infringement of dimension.

$$\text{rot } \bar{\Phi} = \frac{1}{c^2} \left(\frac{\bar{j}}{\epsilon_o} + \frac{\partial \bar{E}}{\partial t} \right)$$

Dimension is carried out when the stream of a magnetic induction

equal

$\Phi = B \cdot S$ is entered. It also meant by Feynman.

$$\text{div } \bar{j} = - \frac{\partial \rho}{\partial t}$$

The Faraday law of preservation of charge occurs from 1. and 4. -

- a stream of the charge

forming a vector of a current, through the closed surface is equal to speed of change of a charge inside it. On

$$\text{rot } \bar{E} = - \frac{\partial}{\partial t} \text{rot } \bar{A} \rightarrow \text{rot} \left(\bar{E} + \frac{\partial \bar{A}}{\partial t} \right) = 0$$

and

Feynman **calibration** by introduction of certain potentials

$$\text{div } \bar{A} = - \frac{1}{c^2} \frac{\partial \varphi}{\partial t}$$

(Lorentz's calibration) is made. Change of potential is entered i due to addition $\text{grad } \varphi$, and the given operation is named «calibration transformation». At calibration there is no infringement of Maxwell laws, the form of their representations only varies. In result it is received two wave equations for the description of an electromagnetic wave:

$$\frac{\partial^2 A}{\partial x^2} - \frac{1}{c^2} \frac{\partial^2 A}{\partial t^2} = - \frac{j}{\epsilon_o c^2}$$

- For one coordinate.

In three-dimensional space the equation enters the name with derivatives on all three coordinates:

$$\frac{\partial^2 \varphi}{\partial x^2} - \frac{1}{c^2} \frac{\partial^2 \varphi}{\partial t^2} = - \frac{\rho}{\epsilon_o}$$

. In the right parts currents and charges of environment are kept. We shall note the important circumstance, for transition the right parts are equated to emptiness to zero. **So transition from ether to emptiness against "will" of Maxwell was made.** It appears that electromagnetic waves are propagating in emptiness, instead of in the environment in which there can be charges and currents of displacement. Currents of displacement form cross-section to vector ***E V.Pointing*** vector cannot be any EMW at all! All practice testifies that all without exception electromagnetic devices work by a principle: ***E*** generates currents of conductivity and displacement, currents generate a magnetic induction ***B*** and, back, the variable induction ***B*** generates currents which raise ***E***. ***It is impossible*** to equate functions ***E (t)*** and ***B (t)***, passing currents correctly to understand essence of the electromagnetic phenomena.

The wave equation can be received and without operation of calibration. We take 4 equation on R.Feynman's record with our specification:

$$\text{rot } \bar{\Phi} - \frac{1}{c^2} \frac{\partial \bar{E}}{\partial t} = \frac{1}{c^2 \epsilon_o} \bar{j} = \frac{1}{\eta} \bar{j}$$

. The second equation gives

$$\text{rot } \bar{E} = - \frac{1}{S} \frac{\partial \Phi}{\partial t}$$

. We shall make operation

rot to a stream of an induction of a magnetic field –

$$\text{rot}(\text{rot } \bar{\Phi}) - \frac{1}{c^2} \frac{\partial}{\partial t} (\text{rot } \bar{E}) = \frac{1}{\eta} \text{rot } \bar{j} \rightarrow \frac{\partial^2}{\partial x^2} \bar{\Phi} + \frac{1}{c^2 S} \frac{\partial^2}{\partial t^2} \bar{\Phi} = \frac{1}{\eta} \text{rot } \bar{j}$$

. Have received the wave equation with a stream of a magnetic induction, not resorting to change of the form of record of equations.

There is a problem of reception of the wave equation for a stream of electric intensity with the right part of a rotor of volumetric density of an electric charge. We shall have in this case all set of the mathematical description of an electromagnetic wave. It is possible to suspect, that in this case there is no volumetric density of an electric charge, and there is the circular (vortical) current determined by movement of some charge

$$j = \frac{dq_x}{dt}$$

on a circle. For radiation with small frequencies in the decision of the wave equation the spherical wave is formed. However with growth of frequency the spherical or flat wave front cannot be formed by virtue of restriction of speed of transfer electric and magnetic strengths on a surface of front by speed of light. So, for example, for frequency of $2.4 \cdot 10^{20} \text{ Hz}$ the period of fluctuation will be about $4 \cdot 10^{-21} \text{ s}$. If the surface of front is formed not faster, than with speed of light radius of a surface for the specified period will make only $4 \cdot 10^{-21} \cdot 3 \cdot 10^8 = 1.2 \cdot 10^{-12} \text{ m}$ that is comparable to the values of atoms. At high energy the front of a wave is so small, that it is easy for accepting for propagation of a particle. For the value of the front, equal double dipole distance, there will correspond frequency of gamma-radiation of 10^{25} Hz . The specified estimations correspond to definition of length of a wave of radiation, i.e. the formula $\lambda = r = c / \nu$ is used. Thus, the length of a wave actually still testifies and to the values of wave front.

As magnetic values are strongly connected to electric values in electromagnetic radiation we shall receive the second wave equation concerning electric intensity:

$$\frac{\partial^2}{\partial x^2} \bar{E} + \frac{1}{c^2 s} \frac{\partial^2}{\partial t^2} \bar{E} = \frac{1}{se_o} \Phi_o \text{rot} \frac{d\bar{e}_o}{dt}$$

. Here ratio between E and B (Φ) and definition of an elementary

$$\Phi_o = e_o \sqrt{\frac{\xi}{\eta}} = 4,80320404 \cdot 10^{-18}$$

stream of magnetic induction is

Weber are used. We shall pay attention,

that the relation of quantum of a stream of a magnetic induction [*the Physical encyclopedia*, 1998] to the elementary stream of a magnetic induction received by us it is equal calibration **430,511**! Above in this para-

graph we already met this number. The official quantum of a magnetic stream follows from $\Phi_e = \pi \alpha^{-1} \Phi_o$. Thus, our definition of quantum of a stream of a magnetic induction **coincides** with the standard definition.

Some incorrectness has been used at a choice of value of a charge $q_x = e_o$. We while do not know existence of the elementary charge that is distinct from a charge of electron (except for fractional charges of quarks, which hardly are in a free condition). As the closed surface the area S accepts a surface of sphere with radius of length of the wave, determining spherical front of a wave $s = \pi \lambda^2$.

$$w = \frac{1}{2} \left(\frac{E^2}{\xi} + \frac{H^2}{\eta} \right) \cdot V = \frac{E^2}{\xi} V = \frac{H^2}{\eta} V$$

Volumetric energy of an electromagnetic wave is

. As the value for

$$V = \frac{4}{3} \pi \lambda^3$$

calculation of volume it is possible to take length of a wave and then

tum $w = h\nu$.

. Energy of gamma - quan-

However all estimations, made proceeding from such scoping, result in insufficiently intelligible results. First, it is necessary to take, probably, for a basis $\lambda = \lambda_{rb} \alpha$ for check of serviceability of reception on frequency of "red border". Second representation of volume, as sphere has no necessary substantiation. In the latter case it is more logical to accept the cylinder directed along propagation of a wave. We have $V_{rb} = \pi (\lambda_{rb} \alpha)^2 d_{rb}$. Electric intensity for red border $E_{rb} = b \Delta r_{rb} / e_o = 7,329367465 \cdot 10^{20} \text{ V/m}$. Energy of a birth of pair elec-

tron and a positron is determined above as $w_{rb} = \frac{1}{\xi} E_{rb}^2 V_{rb} = 1,63742243 \cdot 10^{-13} = 2m_e c^2$. From here we find the volume of deformation caused by a photon - a wave and we make an estimation of deformation as

lengths of the cylinder $d_{rb} = \frac{V_{rb}}{\pi (\lambda_{rb} \alpha)^2} = 1,11975547 \cdot 10^{-17}$ of m , that slightly exceeds strength of structure of photon ether. The estimation is within the framework of acceptability. So, we shall receive an end result of

an estimation of energy of scale - quantum $w = h\nu = \frac{\pi d}{\xi} (\alpha \lambda E)^2 = \pi \eta d (\alpha E / \nu)^2$.

Occurrence, finally, a magnetic constant of environment speaks that scale - quantum and its propagation is connected to a magnetic continuum and restriction of propagation of an electromagnetic wave in value of a constant lattice of a photon ether disappears. The impulse of an electromagnetic wave will be

$p = \frac{w}{c} = \sqrt{\frac{\eta}{\xi}} \pi d (\alpha E / \nu)^2$. On value it coincides with an impulse of a photon. This is one more remarkable coincidence with physics. Important correct understanding of that fact, that at a photon as at an electromagnetic wave, is not having a mass [the Okun, etc., 1999]. Any conversations that photons are drawn by gravity to objects, are deprived the physical basis. However, completely to exclude time formation in a magnetic continuum of a vortex $rot \bar{\Phi}$ at its maximal amplitude during passage of an electromagnetic wave it is impossible. Such vortex gives rise temporarily to mass which can be accepted for virtual mass of a photon.

Why the continuum is named magnetic? The above-stated formulas of the given paragraph compel it to make. We shall make a result still an additional substantiation below. We shall define magnetic mass of a

charge as $m_e = \sqrt{\frac{\xi}{\eta}} e_o = 29.9792458 \text{ OM} \cdot q$. It is necessary to tell that the essence of magnetic mass can appear not having physical sense. Definition of the magnetic moment of mass of an elementary charge

$m_e = \alpha \frac{h}{2\pi e_o} = \sqrt{\frac{\xi}{\eta}} e_o = 4.8032068 \cdot 10^{-18}, B\sigma$ is curious. The magnetic mass appears in known Coulomb

formula: $F = \eta \frac{M_1 M_2}{r^2}$. It remains while "transcendental object" for extensive and independent research of a problem of magnetic mass and a magnetic continuum is necessary. We shall make a result in some formulas of magnetism known now. Intensity of a magnetic field of the constant magnet, expressed through magnetic

mass $H = \eta \frac{M}{R^2}, a / m$.

$f_e = \xi \frac{e_o^2}{R^2} = f_m = \eta \frac{M_e^2}{R^2}$ - Incorporated law of Coulomb for charges and magnetic "mass". The solvation of

the equation gives $M_e = \sqrt{\frac{\xi}{\eta}} e_o$, where $r_q = \sqrt{\frac{\xi}{\eta}} = 29.979244785 \text{ } M^2 \kappa^2 c^{-3} a^{-2}$ - electric resistance. Elementary magnetic "mass" is equal to the electric resistance increased on an elementary charge that corresponds

$M_e = r_q e_o = 4.80321 \cdot 10^{-18}, Wb$ - **the elementary stream of a magnetic induction which are starting with an elementary charge of its electric structure.** We shall represent $\Phi_e = M_e = 4.80321 \cdot 10^{-18}, Wb$ in the accepted physical designations for a stream of a magnetic induction.

As if positive (positron) and negative (electron) elementary charges exist, those, probably, there are positive and negative streams of a magnetic induction. Being expressed by language of physical mathematics, in the environment there is a source (positron) and a drain (electron) the magnetic environment which value is equal above to the certain elementary stream of a magnetic induction. In a source and in a drain the stream of a magnetic induction becomes isolated, that causes force of Coulomb attraction. And, on the contrary, counter streams of a magnetic induction form Coulomb forces of pushing away. So receives natural interpretation " short-range interaction " forces in the Nature. Generalizing this conclusion, it is possible to ascertain, that any interaction, maybe, to be carried out only in environment in which cooperating objects are placed. The concept of "field" or «an exchange particle» at interactions is there is an abstraction convenient for understanding which are not having real sense.

Let's compare the received number to the relation of length of a wave of the scale - quantum that is giving rise a pair of electron-positron, with a constant of a crystal lattice of electric structure:

$$\textcircled{c} \quad n = \frac{c}{v_{rb}} / 2r_e = 1,204366612 \cdot 10^{-12} / 2 \cdot 1,3987632 \cdot 10^{-15} = \mathbf{430,51126} !$$

Those are one more of surprising concurrences. But it is surprising only from the point of view, that formula of

$$h v_{rb} = \xi \frac{e_o^2}{r_e}$$

Coulomb is fair and for a microcosm: Using the given formula for limiting gamma - quantum, we shall receive quantum of a magnetic stream.

The phenomenon extra current in short circuits - disconnections is extremely similar to the phenomenon of inertia of usual substance. Really, braking or dispersal electrons already for a long time contact inertial properties of such particles as electron, which is natural carrier of a current in all our electric devices. This property of electron in due time was used for definition of its mass. As a measure of inertia the factor of a self-induction can serve in the extra current phenomena.

The moment of inertia for an elementary coil is $K_e = L_e \cdot e_o^2 = 7,085948 \cdot 10^{-59}, \kappa^2 M^2$. Then frequency of fluctuations of an elementary magnetic circular stream as $\omega^2 = b / K_e = 1,6302968 \cdot 10^{77}$; $f_e = 1,339736 \cdot 10^{30}, Hz$ follows. Mass of a ring $m_e = K_e / \pi r_e^2 = 1,152821 \cdot 10^{-29}, \kappa^2$. Its density is $p = m_e / \pi r_e^2 = 1,875536, \kappa^2 M^{-2}$. Speed of an elastic

longitudinal wave is $V_p = \sqrt{\frac{b}{p}} = 2,4818162 \cdot 10^9, Mc^{-1}$, i.e. almost in 10 times more velocity of light (in 8,28 times).

Here is not avoiding an opportunity of presence of factor in this formula. Pay attention, that dimension of factor of elasticity of electric structure is $[kg \cdot s^{-2}]$ and to this dimension there corresponds dimension of the inductance increased on a square of a charge which allows to define speed of propagation of deformation.

Found out properties of a continuum together with its rigid depole electric structure make a uniform basis for gravitation, electromagnetic waves and other electromagnetic properties of a matter. The electric charge, inert and gravitating mass defines streams of a magnetic induction or, on the contrary, streams of a magnetic induction define mass of bodies, an electric charge.

Limiting force of magnetic interaction in structure:

$$\textcircled{c} \quad f = b \Delta r_{rb} = \eta \frac{\Phi_e^2}{(r_e)^2}, \quad \Delta r_{rb} = \frac{\eta}{b} \cdot \left(\frac{\Phi_e}{r_e}\right)^2 = 1.0206735 \cdot 10^{-17} \quad . \text{ This result is completely natural, as here electric Coulomb law is replaced with its magnetic analogue.}$$

The mistake of physics admitted in the base of this science.

All of us know, that E - electric intensity, H - intensity of a magnetic field. $i+j$ - currents of conductivity and displacement. Between them connection:

$E \sim i+j \sim H$, occurrence E causes a current $i+j$ which in turn forms H , that the variable magnetic pressure all over again causes an electric current, the current creates intensity E .

If $a=c$ for the mathematics is possible to write, that $a=c$ and at all to overlook about. But the physics not is mathematics! If behind the letter the physical phenomena exist to do that operation **is impossible**.

$E \sim i+j \sim H$; $dE/dt \sim d(i+j)/dt \sim dH/dt$; and on the contrary, $dH/dt \sim d(i+j)/dt \sim dE/dt$; - Maxwell equations.

If we, as mathematics, shall remove $i+j$, i.e. actually we ignore physics of the phenomena of electromagnetism. But the fundamental conclusion is made of this mathematical reception $dH/dt \sim dE/dt$, that, the electromagnetic wave can be propagating in **emptiness**.

The serious conclusion about an opportunity of electromagnetic waves (EMW) in EMPTINESS has followed! Where the current was gone? It is to be kept on all laws of physics for all electromagnetic machines. A conclusion, for existence of a current in the environment there should be CHARGES and therefore, the CURRENT. Most likely there should be a current of displacement j.

THE NATURE OF GRAVITATION

The nature of gravitation remains to one of the central problems of a science. Opening of the true reason of gravitation will bring in appreciable changes to physics. The underwritten hypothesis does not correspond to modern physical notions. Newton in the mathematical form has stated laws of gravitation and forces of inertia. Einstein has made the following step - has presented gravitation as a curvature of empty space about gravitating masses, and inertia as an equivalent of gravitation. At Newton acceleration is absolute in sense of surrounding space concerning which acceleration is defined. In a question on absolute or relative character of acceleration, Einstein has given due theories of the Mah on which property of inertia is set by all set of masses in the universe. There is a paradox of the Mah - the rotating lonely object without the universe should not test centrifugal forces.

Is conventional, that the theory of a curvature of empty space - time is self-sufficient and a problem of the nature of gravitation does not exist at all. However such position even from the philosophical point of view is not

convincing. The matter is that the physics of XX century has continued methodology of previous centuries - to allow answers to a question **as**? And to not bring an attention to the question **why**?, including last question more likely religious, than physical. Consequence from this only one - answers on **why** are left to clericals. The big Explosion generated from a mathematical point all matter of the universe, under force only to the God. The physical vacuum accepted in theories plays an exclusive role in all interactions, except for gravitation, for which gravitons as quanta of an exchange field, have not received final development. In the environment there are virtual particles with which help exchange forces are carried out photons in electromagnetic interaction, mesons at nuclear forces and gluons in nucleons.

The vacuum also should be responsible for forces of gravitation. The hypothesis will be, that ENVIRONMENT has structure from masses charged dipoles. One of charges of dipoles should have the small superiority over a charge of the second component of a dipole may be insignificant. Then it is possible to represent the primitive circuit of gravitation and antigravitation in the universe so:

(+ -body1 +) (- + - - ENVIRONMENT - + - +-) (+body2- +)

- an Coulomb attraction (gravitation) at the presence of material bodies,
- (----ENVIRONMENT - - --) - Coulomb self-pushing away (antigravitation), in absence of bodies or at large spaces. It gives expansion of the Universe. The inequality is evidently shown zero of the sum of charges: (-) it is more (+).

As the reason of gravitation and pushing away in the universe is a Coulomb charge of space "vacuum" the numerical value of a *lambda*-member is carried out with the big accuracy, under Einstein's theory [Дэвис П., 1989].

Let's address to gravitational charging polarization of dipoles. We shall state a hypothesis of equivalence of laws of Newton and Coulomb, that is we shall pass to the uniform law of Newton and Coulomb through the formula of dependence gravitational Coulomb charge for mass of any body (the formula of Newton and Coulomb). The gravitational electric charge of any mass pays off under the formula:

$$Q = \rho M, \text{ где } \rho = \sqrt{\frac{G}{\xi}} = 8,616486835 \cdot 10^{-11} \text{ Кл/кг.} \quad (16)$$

It is necessary to pay attention that formally it is impossible to transfer the concepts accepted in physics con-

nected to usual substance, to the structured environment. Intensity is $E = \xi \frac{Q}{R^2}$ and potential is $U = \xi \frac{Q}{R}$. For example, calculation of acceleration of a gravity for the Earth in terms of electric forces gives

$$g_{earth} = \sqrt{G\xi} \frac{Q}{R_{earth}^2} = 9,82 \text{ m/s}^2 \text{ and electric intensity of the Earth is equal to the environment}$$

1,1402·10¹⁰ V/m. Have received in value of intensity absurdity from the point of view of usual substance. However electron electric intensity 1.8367·10²⁰ V/m and a proton 6.3998·10²⁶ V/m surprise nobody. Environment is dielectric with the connected elementary charges and with midjet distances 1,4·10⁻¹⁵ m at which "breakdown" comes only at a voltage 7.3468·10²⁰ V/m. This environment, microparticles of which macrobodies will "be shaped". Distances between particles on 3-4 orders (α^{-2}) exceed the specified distance. Environment exists everywhere, whether it be dielectric or a conductor. Therefore habitual concepts of screening or an electric voltage appreciable for us here are completely unsuitable. It is impossible, for example, having arranged a conductor between gravitating bodies to shield action of gravitation. It is impossible, having arranged electrodes in space to take off or use an electric voltage. Carriers of electricity in a matter and in the environment are different. Interaction of bodies with environment is carried out at a level electrons and nucleus of substances. Gravitation also begins with a level electrons and nucleus of substance, being integrated, finally, in masses of macrobodies. The formula (5) is result of action electrons on environment. For a proton de-

formation will be $1.8771 \cdot 10^{-14} m$, that on 3 order surpasses dimension of a dipole. And only near to the Bohr orbit environment remains not destroyed. Thus, electron it is surrounded with the deformed environment which value only in 2 times is less, than deformation on border of a black hole, and the proton is surrounded with "fur coat" from plasma of charges of the destroyed environment.

For structure does not operate the Debye shield law of charges, Irnschow theorem of instability of system of free charges is fair in that part, that the difference of charges is the reason of expansion of the Universe. Charges are connected in dipoles, cooperate through streams of a magnetic induction of a magnit-mass continuum and do not fall under the theorem. Calculation of factor (16) is carried out on the basis of microparameters under the formula:

$$\rho = e_0 \sqrt{\frac{2\pi G}{ch\alpha}} = 8,61648635 \cdot 10^{-11} [Kl / \kappa z] \quad (17)$$

Where $e_0 = 1,60217733 \cdot 10^{-19} Q$ - a charge of electron, $G = 6,67259 \cdot 10^{-11} [m^3 kg^{-1} c^{-2}]$ - a gravitational constant, $c = 2,99792458 \cdot 10^8$ - speed of light, $h = 6,6260755 \cdot 10^{-34}$ - Planck's constant. The conclusion of the formula (17) begins from known definition of a "running" gravitational constant an alpha

$\alpha_g = \frac{Gm^2}{\hbar c}$ where as mass it is possible to take mass of electron, proton. At a conclusion of the formula (17) mass is reduced.

Using the formula (13), (15) and $g = G \frac{M}{R^2}$ for acceleration of a gravity we have:

$$g = 4\pi\sqrt{G\xi} S(\Delta r_g)^2 m/s^2. \quad (20)$$

Longitudinal deformation of dipoles from gravitating object defines acceleration of a gravity and on the contrary, acceleration of a gravity defines deformation of structure. We shall calculate the maximal acceleration on (20):

$$g_{\max} = 6,3409 \cdot 10^{10} m/s^2. \quad (21)$$

Force of electroelastic deformation will be determined by the maximal acceleration and unknown mass m_x :

$$b\Delta r_{rb} = b \sqrt{\frac{g_{\max}}{4\pi S \sqrt{G\xi}}} = g_{\max} m_x \quad (22)$$

From the equation we find unknown mass and we find out, that $m_x = \sqrt{\alpha} m_{pl} = 1,859459 \cdot 10^{-9} kg$, where m_{pl} - Planck's mass (plancon). We shall determine the possible value (radius) of this mass. The equation

$g_{\max} = G \frac{m_x}{r_x^2}$ gives $r_x = \sqrt{G \frac{m_x}{g_{\max}}} = 1,398688 \cdot 10^{-15} m$. Have received, probably, the minimal values of "black hole", a gravity possessing limiting acceleration, with mass $1,859459 \cdot 10^{-9} kg$ and, probably, with the maximal density, achievable in the nature, $1,621875 \cdot 10^{35} kg/m^3$. We receive $e_0 = \rho m_x = 1,602177 \cdot 10^{-19} Q$ - value of a charge of electron. Inadvertently found out connection of values $m_x = \sqrt{\alpha} m_{pl}$, ρ , e_0 and m_x with the account (16) is surprising and indirectly testifies for the benefit of a hypothesis.

The formula (16) appears informal association of Newton with Coulomb. The mass m_x gives an occasion to define the mechanism of gravitation through presence of a gravitational charge. We shall calculate how many pairs of electrons and the positrons forming dipoles, are in this mass *the*

$$n_{-+} = \frac{m_x}{m_e} = 2.041257 \cdot 10^{21}$$

pieces. From here we receive value of a charge on which the charge of elec-

$$\Delta e_o = \frac{e_o}{n_{-+}} = 7.84896966 \cdot 10^{-41}$$

tron surpasses a charge of positron

Q. This value of a difference falls at

21 sign on value of the electron charge. It corresponds to the minimal gravitational charge of electron mass or

$$e_g = \rho m_{e-+} = 7,84897 \cdot 10^{-41} \quad Q.$$

In conclusion of the given unit it is necessary to show, as it is possible to express the law of gravitation

through formulas of Newton and Coulomb. Under Coulomb formula: $F_q = \xi \frac{q_1 q_2}{R^2}$, where, accordingly

$q_1 = \rho M_1$ u $q_2 = \rho M_2$. At substitution formula of Coulomb will be transformed to the formula of Newton. Here as a matter of fact varies nothing. The formula of Newton is interesting for expressing through polariza-

tion: $F_N = \xi (4\pi R)^2 \sigma_{12} \sigma_{21}$, where $\sigma_{12} = \rho \frac{M_1}{4\pi R^2}$, $\sigma_{21} = \rho \frac{M_2}{4\pi R^2}$ accordingly polarization from the first

mass in a point of the second mass and, on the contrary, polarization in a point of the first mass from the

second mass. It is possible to enter mutual polarization of two bodies $\Sigma(1/R^4) = \sigma_{12} \sigma_{21}$ and then the for-

mula of Newton in electric terms will be $F_N = \xi (4\pi R)^2 \Sigma(1/R^4)$. It is shown that mutual polarization is func-
tion of the fourth degree of return value of distance between bodies.

Gravitational, inertial, electric and magnetic interactions with the space environment result in its deformations.

Acceleration of gravity sets deformation:

$$\Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}} = 1.2703 \cdot 10^{-22} \text{ m} \quad (23)$$

where $E_\sigma = \sqrt{G\xi} = 0.77440463 [a^{-1} M^3 c^{-3}]$. In the formula (23) with a view of economy of a place value of acceleration of gravity for the Earth - 9.82 is already substituted. The received value of deformation gives representation about its real values. Acceleration of any mass results in deformation of environment:

$$f = ma = 4\pi E_\sigma S (\Delta r_a)^2, \text{ } \kappa_2 M / c^2 \quad (24)$$

Acceleration creates polarization $\sigma_a = S^* (\Delta r_a)^2$. The formula (24) related to acceleration "á", gives

$$(\Delta r_a)^2 = \frac{a}{4\pi E_\sigma S} \quad \sigma_a = S \frac{a}{4\pi E_\sigma S} = \frac{a}{4\pi E_\sigma} \quad \text{From here we receive corresponding polarization}$$

acceleration expressed through deformation $a = 4\pi E_\sigma \sigma_a$. Force of inertia $f = 4\pi E_\sigma \sigma_a m$ is defined by po-
larization around of a body of mass moving with acceleration "m".

The above-stated definition of inertia concerns only to "external" display an inertia магнито-mass continuum that is integrally connected with electron-positron structure. Basically, this continuum also is a source of iner-
tia which is shown by the phenomena of a self-induction and inertness magnetic strength in extra current. We shall write out dependence of deformation of the structure solved concerning a stream of a magnetic induc-
tion:

$$f = b \Delta r = \eta \frac{\Phi^2}{(r_e)^2} = m a, \quad \Delta r = \frac{\eta}{b} \cdot \left(\frac{\Phi}{r_e}\right)^2 = m a / b$$

. Force of inertia is determined by a square of a stream of a magnetic induction in a magnit-mass continuum. This stream arises at the accelerated movement of mass. At positive acceleration stream Φ grows on amplitude and, on the contrary, at negative acceleration stream Φ should decrease. In both cases the stream resists to any change and is connected to electric de-

$$\Phi = r_e \sqrt{\frac{1}{\eta} b \Delta r} = r_e \sqrt{\frac{1}{\eta} m a}$$

formation under the formula

What is the mass?

Classical definition of mass sounds so:

1. The mass is a measure of inertia of substance.
2. The mass is a measure of gravitation of substance.
3. The mass is a measure of rest or rectilinear uniform movement.

Last definition is the most conditional. For detection of a condition of rest or rectilinear uniform movement of mass it is necessary to apply force on it to change with the help of acceleration (item(point) 1) this condition. A hypothesis about the nature of gravitation and the theory of physical "vacuum" allow to specify concept of mass, not changing radically its well-known definitions. Force of resistance **of one dipole** of structure is equal $\overline{f} = m \overline{a} = b \overline{\Delta r}_a$ to the accelerated movement of mass. From definition of force of inertia we receive

$$m = \frac{b \overline{\Delta r}_a}{\overline{a}}$$

expression for mass: . The mass is equal to force of the elastic deformation determined in factor of elasticity and value of deformation, divided on acceleration.

However, the same mass creates around of itself sphere of the deformation determined by its gravitational ef-

fect: $g = G \frac{m}{R_m^2}$. Accordingly acceleration of gravity causes deformation: $\Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}}$. Comparing to deformation from usual acceleration, it is possible to assert, that the inert mass and the gravitating mass **are strictly speaking not equivalent**, that does not coincide with known position of GR theory. The basic difference will be that inertial acceleration represents a vector directed on a direction of force. Gravitational acceleration has a radial direction and consequently not a vector, and a scalar having a gradient, proportional to return value of a square of distance. For acceleration of gravity of mass *of* M we have:

$M = R_M^2 4\pi E_\sigma S (\Delta r_g)^2$. So, for example, for the Earth it is received its mass at substitution of all values of $5.984239 \cdot 10^{24} \text{ kg}$.

Have received result that opens to us new value of the environment of existence of a matter. If the factor of elasticity or parameters of structure there will be a change the mass suddenly will change. Increasing deformation in the location of mass, it is possible to reduce mass and, on the contrary, compensating deformation dawn to its zero value, it is possible to increase mass indefinitely. In last formula the index is deliberately removed at value of deformation, believing, that the source of deformation can be any kind. Here everywhere it is accepted, that deformation concerns only to one dipole. Above we have received connection of mass and a stream of a magnetic induction.

$$m = \frac{\eta}{a} \cdot \left(\frac{\Phi}{r_e}\right)^2$$

Therefore we have more natural definition of mass $m = k \cdot \Phi^2 / a$; $k = 5.111091 \cdot 10^{36} [a^2 c^2 \kappa \mathcal{M}^{-3}]$. We shall substitute in the formula numerical values of known parameters $m = k \cdot \Phi^2 / a$; $k = 5.111091 \cdot 10^{36} [a^2 c^2 \kappa \mathcal{M}^{-3}]$. The factor k reminds us a square of the charge increased on density. But as in the formula there is simultaneously a mass and acceleration anything certain to get from that is impossible, except for dependence of force of inertia on

$$f = ma = \eta \cdot \left(\frac{\Phi}{r_e}\right)^2$$

parameters of environment

For transition to macro-objects it is necessary to take into consideration structure cluster as it was revealed at the initial stage of research of environment. For this purpose it is enough to enter factor for thin structure of

$$m = \alpha^{-1} \frac{b \Delta r_a}{a}$$

radiation: a . The mass is formed of elementary particles: electronov and positrons. It will be shown below.

In connection with such treatment of mass and acceleration some additional properties of "black holes" open. The gravitating mass of "a black hole" has limiting value of acceleration from a gravity that destroys electric structure on «horizon of events». Therefore inertial properties of "a black hole» disappear. It can move with any speed and, especially, in rotary movement, creating along an axis of rotation strong magnetic intensity. Thus there are streams of the charged particles and antiparticles along power(force) lines of magnetic intensity. They are observable as so-called jets. Presence of jets testifies to the big speed of rotation of "a black hole".

Thus, force of inertia is defined as elastic resistance of environment to any acceleration of a mass body. The inhabitancy of substance sets such fundamental properties of substance as gravitation and inertia. It allows, changing value of deformation to influence working force of gravitation; reducing value of inertial deformation, it is possible "to liquidate" inertia.

The technology of influence on environment opens a way to avoid of inertia to ways of movement in the environment and to converting of elastic energy of environment in energy of substance. Means of influence for structure of environment are well known. For example, the Moon creates in libration area the deformation of environment equal on value and opposite on direction of deformation from the Earth. At this area there is a deformation background only from other planets and the Sun, the attraction of bodies by the Moon and the Earth is absent. The electric intensity created in the environment, also influences its deformation. Electrostatic intensity is capable to compensate a gravity; for example, electric intensity in the environment, equal $1,1402 \cdot 10^{10} B/M$, is capable to compensate force of gravitation of the Earth. Practically such way of influence on environment is unreal. The desirable result is received in experience [Roschin, Godin, 2000] with application of a variable magnetic pressure in the environment at rotary movement. According to Maxwell formula

$E_z = \ell \frac{dB_x}{dt}$, the derivative on time for a magnetic induction gives electric intensity in the environment, capable to compensate deformation of environment and to operate mass of skilled mass. For simplicity of estimated calculations it is possible to take the formula $E_z = V \cdot B_x = V \cdot \eta^{-1} \cdot H$, where V - linear speed of rotation of a rotor in the converter.

$$\Delta r_E = \frac{e_o E_z}{b} = \frac{e_o \eta^{-1} H}{b} V$$

This electric intensity causes deformation m . It is enough, that the given deformation was subtracted from gravitational deformation of environment, and force of an attraction to the Earth will

decrease: $\Delta r_{g-} = \Delta r_g - \Delta r_E$. This effect was observed at work of the converter. As in a rotor a discretely located magnet the average effects of reduction of gravity in value about 35 % is observed. Actually, during some moments of time influence of a variable magnetic induction in concrete area of environment varies at

rotation of a rotor from limiting, resulting to occurrence real electrons and positrons, up to zero and normal force of gravitation of the Earth. 35 % of change of force of gravitation on the average turn out, and annihilation of electrons and the positrons arising at break of dipoles, generates observable ellipsoid of radiations around of a rotor. The reason of the light phenomena can be a variable magnetic field.

Simultaneously to the specified effects of a luminescence and change of gravity there is a reduction of inertia of a rotor. In the closed system of magnetic intensity will be a component which action compensates deformation of the environment of an accelerating origin. Reduction of inertia will cause effect of the accelerated rotation of a rotor in independence of the applied external rotary moment is similar to rotation of the figure skater on skates. This phenomenon was observed at revolutions of a rotor more than 550 *rev/min*. And automatically could proceed beyond all bounds. Experimenters supposed rotation of a rotor and feedback of the developed electric power in a circuit of the external consumer for a while till 15 minutes and energy up to 6 *KW*. Time was limited deliberately owing to the safety precautions which conditions are still unknown. Around of working installation cylindrical areas of the raised magnetic intensity with temperature on 10 degrees below air were observed. This effect can be explained by adiabatic heat drop by decrease in atmospheric pressure owing to reduction of gravity. Start was carried out up to 80 times and each time all effects of work of the converter repeated. From the point of view of physics "emptiness" existence of similar "eternal" engines simply nonsense by virtue of the law of conservation of energy.

Presence of an inhabitancy of substance guarantees performance of this law: elastic energy of structure of environment is converted in energy of substance with strict performance of the law of conservation of energy.

Introduction in consideration of the environment objectively existing in the Nature, not only is capable to solve problems of knowledge of the Nature, but also gives opportunities for movements without inertia, the organizations of antigravitation and a source of unlimited energy.

HYPOTHESIS ABOUT THE NATURAL REASONS OF STATIONARY ORBITS OF ATOM OF HYDROGEN

In the world there is plenty of reviewed and not reviewed publications about the nature of gravitation. The nature of gravitation remains a secret for physicists. There was a situation when detection of this nature will be key achievement of a science that will present many sides of the physical phenomena in a new kind. A. Einstein theory is attempt of modelling of gravitation and inertia as the real geometrical mechanism. In comparison with I. Newton theory the step in the necessary direction is made. However there is a break between independent concepts of space – time and the substance possessing spatial and time characteristics. This break is stimulus for continuous searches of true nature of gravitation and inertia. The hypothesis stated by the author about the nature of gravitation [Rykov A.V., 2001] appeared be so fruitful, that has allowed to consider from new positions the device of electronic environments of atoms by the example of the elementary atom - hydrogen.

Model of atom of hydrogen on N.Bohr

Let's address to sources of the beginnings of the Quantum Mechanics, the put by N.Bohr (1885-1962) in the form of model of atom of hydrogen that has received brilliant confirmation in spectral researches of radiation of hydrogen. We shall briefly remind substantive provisions of work of N.Bora.

Energy E electron in atom, proceeding from **classical** physics, develops from:

kinetic energy T and potential electric energy U : $E = T + U$. We shall note, that the classical physics by which the set of "sins" now is attributed has intruded area of a microcosm. Potential energy $U = (-e_0)V$; a charge of a nucleus Ze_0 ;

$$\frac{mv^2}{r} = \frac{Ze_0^2}{r^2}; \quad E = T + U = \frac{mv^2}{2} - \frac{Ze_0^2}{r};$$

For circular movement:

Full energy is negative. The allowed radiuses:

$$U = \xi(-e_0)V[kg \cdot m^2 s^{-2}], \quad mv^2 = \xi \frac{Ze_0^2}{r}[kg \cdot m^2 \cdot s^{-2}]; \quad r = \xi \frac{Ze_0^2}{mv^2}[m]; \quad r = \frac{M^2}{\xi Ze_0^2 m}[m];$$

$$r = n^2 \frac{h^2}{4\pi^2 \xi Ze_0^2 m_e}[m]; \quad r_1 = \frac{h^2}{4\pi^2 \xi e_0^2 m_e} = 5,29177245 \cdot 10^{-11}[m]$$

– Radius of the first orbit in atom of

hydrogen, $n = 1, 2, 3, \dots$ – the quantum numbers corresponding to numbers of stationary orbits at hydrogen.

Everywhere in formulas there was an electric constant, $\xi = 8,98755179 \cdot 10^9 [m^3 kg \cdot a^{-2} s^{-4}]$ which is return value of habitual electric permeability of environment.

So, the model of atom has come to the contradiction with existing then classical physics.

1. According to classics, electron, moving with centripetal acceleration, is obliged to radiate electromagnetic energy.
2. In atom there are stationary circular orbits on which there is no radiation electrons, and they do not fall on a nucleus as a result of power consumption.

The conclusion is made that the Quantum Mechanics given birth thus contradicts classical physics in the micro world. There was a strange situation as a result of which the barrier in the physics studying the uniform and indivisible Nature has appeared. The quantum Mechanics finds rules of the device of a microcosm and does not answer such questions, - what prevents radiation of electrons, taking place on stationary orbits? Radiation or absorption of electromagnetic waves by electrons in atoms occurs only at their transitions between stationary orbits.

Let's look, what the environment of existence of substance gives classical physics and Quantum Mechanics - the environment having electric structure, shipped in a magnetic (mass) continuum. This environment answers the mechanical model used by ingenious Maxwell at a conclusion of the formulas, trouble-free working till this moment. The important element of understanding of essence of inertia is as resistance of dipole environments to the accelerated movement

$$f = b \Delta r_a \sim ma, \quad \text{where} \quad b = \xi \frac{e_0^2}{\Delta r_{rb} r_e^2} = 1,155406 \cdot 10^{19} [kg \cdot s^{-2}]$$

electric elasticity of a dipole of structure, Δr_a – deformation of a dipole of structure under action of force of inertia of mass m and acceleration a . The sign on proportionality \sim is used from understanding of that the body cooperates not with one dipole of structure, and with the some of the cluster or the domain of structure. To remove the seeming contradiction between classical physicists and QM, the logic conclusion is necessary: in stationary electron orbits move **without inertia**. Is not present centrifugal and there are no centripetal the forces creating classical acceleration. There are such orbits or ways of movement of particles (electrons) in structure which resistances to the accelerated movement are not. In this respect circular movement of electron, possessing a charge (electric intensity) and own magnetic moment, and also the magnetic moment of rotary movement, similarly to rotation of the generator of Roschin & Godin [Roschin, 2000] in which all specified elements exist. On experience of the generator there was a reduction of inertia and mass of a rotor.

Let's pass to parameters of environment. The most important is that Planck's constant is completely determined by key parameters of structure of environment: $h = 2\pi e_0^2 \alpha^{-1} \sqrt{\xi/\eta} [J \cdot s]$. The magnetic constant $\eta = 1 \cdot 10^7 [m^{-1} kg \cdot a^2 s^2]$ as return value of magnetic permeability and a constant of thin structure

$\alpha^{-1} = 137,035999$ here have appeared. Substitution \hbar in the formula for the first orbit of hydrogen gives

$$r_1 = \frac{1}{\eta} \frac{e_0^2 \alpha^{-2}}{m_e}$$

. The orbit depends on an elementary charge of structure of environment, its magnetic constant and the most fundamental value of our universe - thin structure constant. It is possible to replace mass

$$m_e = \frac{1}{\eta} \frac{e_0^2}{2(r_e + \Delta r_{rb})};$$

with other parameters of environment (the formula (40)) in result we shall receive, that $r_1 = 2\alpha^{-2}(r_e + \Delta r_{rb}) = 5,29177245 \cdot 10^{-11} [m]$. The radius of the first orbit is defined only by values of constant of thin structure and the basic metric characteristics of environment. Obviously, there is concurrence $R_e = 2(r_e + \Delta r_{rb})$, however there can be deviations of value Δr from Δr_{rb} as their full identity is not established. The remark on concurrence of classical radius with conclusions from energy equality a photon and a electron-positron has above been given.

Under what conditions resistance of environment to acceleration is equal to zero? Probably only one: in a condition of inertia $f = b\Delta r_a \sim ma$ there is no acceleration and $\Delta r_a = 0$. It means, that movement of particles in general and electrons in particular can occur so, that the particle does not cooperate with a lattice, moving strictly on an existing exact circle or sphere of charges of one sign (for electrons "-"). Thus there is no neither gravitation, nor an inertia. Gravitation and inertia arise only at movement of particles and macro bodies with crossing electronic structure. For the particles moving from a charge to a charge of an identical sign, the curvilinear trajectory as against movement of particles on the elected circular trajectories is generally characteristic. Circular trajectories settle down on the sphere that is taking place through charges of dipoles of one sign. A problem of a finding of spheres in a lattice solved on the basis of usual geometry in space. Curvilinear ways of particles associate with De Brogl waves $\lambda = \hbar / mV$ and the most simple form of a trajectory there will be a spiral movement with the small amplitude determined by a constant of a lattice $2 \cdot 1,39876 \cdot 10^{-15} m$.

Naturally, as well as in case of N.Bohr's model for which works of Sommerfeld have followed, Dirac, Lamb, Schroedinger, updated the model according to experiences on spectroscopy, in the given hypothesis more detailed specifications are necessary.

Conclusions

1. Is not present and should not be contradictions in classical physics and in its modern kind. The nature is uniform for all sections of a science. This unity is based on an inhabitancy of substance.
2. The structure satisfies to conditions of QM in its sources and gives the decision of such problems as mechanisms of gravitation and inertia.

Further detailed calculation of working forces and angular speed of rotation is resulted. Here is very interesting theoretical theme, which connects a magnetic stream (under our assumption) with existence of a magnito-mass continuum.

Dependence of speed of light on gravitational acceleration

On modern notions, the substance of the universe exists and develops in the environment by which in different concepts the various role is allocated. Researches of physical vacuum proceed during many last dec-

ades, starting from «Dirak Sea» and finishing the inflationary theory. On the basis of a hypothesis of the nature of environment, some researcher in attempt of its experimental substantiation is considered.

Any theory is fair in the event if its consequences prove to be true on experience. So was with many known theories, including with the theory of a relativity of A.Einstein. It was a duly and necessary stage in physics and is confirmed with numerous experiments. Its essential element was representation of gravitation as a curvature of space which can be described by various metricss (geometry of space) [Глинер, 2002]. Interpretation of gravitation as curvature of space at all of its appeal and conformity to astronomical observations cannot be accepted as the further development of physics.

Refraction of rays of light (EMW)

Speed of light is not a constant in a space. It makes the basic difference of the theory of environment from theories of relativity (GR). There are skilled facts of a deviation of rays of light by Sun, the phenomena of gravitational lenses, red displacement in radiation of massive objects (stars). These phenomena are well stacked in curvature of space. On the basis of astronomical supervision and the theory of structure [Rykov, 2001] the following formula for dependence of speed of light on acceleration of a gravity is offered:

$$c_g = c_o \sqrt{1 - \left(\frac{\alpha^{-1}}{r}\right)^2 \frac{g}{4\pi E_\sigma S}}, \quad (25)$$

Where $\alpha^{-1} = 137,0359895$ – return value of a constant of thin structure of radiation,

$r = 1,39876 \cdot 10^{-15} m$ – dipole distance of electric components of structure,

$g, m/s^2$ – local acceleration of a gravity,

$E_\sigma = 0,77440463 [a^{-1} M^3 c^{-3}]$ - Specific electric polarization,

$S = 6,25450914 \cdot 10^{43} [a c M^{-4}]$ - Deformation under polarization.

The formula (25) follows from the following reasons. Maximum permissible deformation of electric structure:

$$\Delta r_{rb} = \alpha \cdot r_e. \quad (25a)$$

At achievement and excess of limiting deformation the environment responsible for gravitation and propagation of an electromagnetic wave (light) collapses and disappears both gravitation, and an opportunity of light for propagation. Formal consequence of it can be falling of speed of light up to zero. Therefore expression

$1 - \left(\frac{\Delta r}{\Delta r_{rb}}\right)^2$ in which for a basis the relation of deformation to its limiting value is accepted, can be accepted for factor of reduction, both gravitation, and speed of light. Square-law dependence follows from

$c = \sqrt{\xi \eta}; \quad \Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}}$. The square root for speed of light and gravitation corresponds to square-law dependence of deformations. Having substituted (25a) and the resulted ratio, we shall receive the formula (25).

Knowing the speed of light measured in conditions of the Earth as **2.99792458 (000000) · 10⁸ km/s**, under the formula (25) we shall define speed in a free space **c₀ = 2.997924580114694 · 10⁸ km/s**. It differs from terrestrial speed of light a little and is determined on it to within 9 signs after a point. At the further specification of terrestrial speed there will be a change of the specified value for a free space. From the wave theory of light after Fresnel and Huygens it is known, that the factor of refraction at transition from the environment with a

speed \mathbf{C}_0 on environment with a speed \mathbf{C}_e is equal $n = \frac{c_o}{c_e} = \frac{\sin(i_o)}{\sin(90^\circ + i_e)} = \frac{1}{\cos(i_e)}$. The angle of falling of a beam to a normal of a surface of the Sun is equal $i_o = 90^\circ$ in our case. For an estimation of value of a deviation of light by the Sun it is possible to consider two models of propagation of light.

- 1) Model of refraction of light at transition from "empty" havespace into another havespace with acceleration of gravity on the Sun $273,4 \text{ m/s}^2$. Naturally, this elementary model will give obviously incorrect result, namely: according to the resulted factor of refraction the angle is determined as

$$i_e = \arccos\left(\frac{c_e}{c_o}\right) = \arccos\left(\sqrt{1 - \frac{\alpha^{-2}}{r^2} \frac{g}{4\pi E_\sigma S}}\right) * 2,062648 \cdot 10^5 = 13,53''$$

angular seconds.

More exact model it is necessary to expect in the differential–integrated way, proceeding from function of propagation of a beam, in a field increasing and falling down under the law $1/R^2$ gravitational potential of the Sun. The help has come completely from the unexpected side - from seismology. In seismology the problem of definition of a beam of elastic waves from a source on a surface and its angle of an exit down to an opposite surface of the Earth is solved. The angle of an exit will be analogue in required value of a deviation of a beam by the Sun from a source or on the sphere including an orbit of the Earth, or at a great distance from the Sun.

- 1) In seismology there is a simple formula for definition of a angle of an exit of a seismic wave [Саваренский, Кирнос, 1955] through constant parameter of a unique and concrete beam

$$p = \frac{R_o}{V(R)} \cos(i) = \text{const}$$

, where R_o - radius of the Earth, $V(R)$ - function of speed of elastic waves depending on distance (radius from the center of the Earth), i - a angle of an exit. The parameter has dimension of time. We shall transform the seismological formula for space distances and speeds of light:

$$i = \arccos\left(\frac{c_o}{R} \sqrt{1 - \frac{\alpha^{-2}}{r_e^2} \frac{g_{sun}}{4\pi E_\sigma S}}\right) \cdot \text{const} \cdot 2,062648 \cdot 10^5$$

(26)

angle/s.

Here g_{sun} - acceleration from a gravity on the Sun, R - variable radius of sphere in which center there is a Sun, determined **along** a beam up to a light source which is taking place in immediate proximity from the Sun. There is a question on a constant in this formula. It can be resolved only on the basis of world fundamental constants. Otherwise its value will look as frank adjustment. The skilled value of an angle of a deviation [Clifford, 2002] is known.

On the basis of this value it is determined, that $\text{const} = \Delta t_{const} (g / g_{sun}) / (\pi \cdot 137,0359)^2$, where g - acceleration from a gravity of any compact object. Really fundamental parameters of our universe here appear: π - the characteristic of space, 137,0359 - property of radiation in "vacuum" (Lamb, splitting of lines of hydrogen under influence of fluctuations of "vacuum"). The ratio of any mass and its values and mass, the values of the sun g / g_{sun} enables bindings of a constant to any object known in the Nature. $\Delta t_{const} = 1$ [s] - The dimensional factor agreeing dimension of a constant.

On fig. 2 it is resulted a angle of a deviation of a ray of light by the Sun depending on distance up to its source. Have received full conformity with the exact skilled data. It is curious, that at moving a source inside of the sphere adequate to a trajectory of the Earth, the angle of a deviation of a beam the Sun decreases under the schedule of figure. The bottom point of the schedule corresponds to EMW source on surfaces of the Sun and a angle of a deviation will be about 1.25 angular seconds. It can be considered as a prediction of the theory.

Difference of seismology and space will be, that in the Earth speed of elastic waves grows, then as at approach of a ray of light to the Sun speed of light decreases. The opportunity of overlapping of so diverse theories for the Earth and Space serves as good argument for the benefit of the physical approach to an inhabitancy of substance in the universe. This result testifies, at least, to consistency of the suggested concept.

Formation in space so-called «gravitational lenses» also speaks about dependence of speed of light on gravitation. If in the Earth beams of elastic waves miss and focused only in case of presence of layers with small speed in space always there is focussing of EMW under influence of gravitation. Acceleration of gravity on heavy space object reduces speed of light as shown in fig. 3.

Radiation of electromagnetic waves with smaller speed and its exit in a free space is accompanied by increase in speed

that results in increase frequency of waves according to the formula $\Delta(\lambda \nu) = c_o - c_g$. There is well-known in astrophysics an observable red displacement radiation of object (star). On the schedule that is designed under the formula (25), it is visible, that zero speed of light falls at acceleration $6,341 \cdot 10^{10} \text{ m/s}^2$. Such acceleration of gravity «the black hole» should possess, light from which cannot leave it because of delay of time, and owing to zero speed of light. The given concept, as well as the nature of refraction of light in a gravitational field, does not coincide with GR.

By the way, Schwarzschild decision gives radius of a black hole $R_{bh} = 2 \frac{G}{c^2} M_{bh}$. Here speed of light is a constant, not dependent on gravitation that looks as inconsistency in the theory. Formula of Schwarzschild is not applicable for calculation gravitie accelerations and in this pint plan denies gravitation of Newton. Really, across Newton equality

$g = G \frac{M}{R^2}$ is carried out. Attempt to apply to GR gives $g_{bh} = \frac{c^2}{2R_{bh}}$ this formula and results in independence of acceleration of mass of a black hole (depends only on the values). There is a contradiction which, probably, rank as action of the law of Newton only in "weak" gravitational fields and to relativistic "amendment" of the theory of Newton. Decision

of Schwarzschild: $g = \frac{GM}{R^2 \sqrt{1 - \frac{2GM}{c^2 R}}}$. Here is $R_g = 2 \frac{MG}{c^2}$ – Schwarzschild radius or gravitational radius. Devia-

tions of a ray of light of the Sun. $i = 4 \frac{MG}{c^2 R} \cdot 2,062648 \cdot 10^5 = 1.74369''$, where R - the aim distance equal our case to radius of the Sun.

The formula (26) gives: $i = 1.7459081''$. **The difference makes 0.002217''**. The formula (26) gives dependence of a angle of a deviation on distance up to the observer, GR formula gives dependence on radius of the Sun. Our formula takes into account curvature of a beam on a line the Sun - the Earth according to the nature of gravitation, and it predicts a angle of a deviation on any distance of a source and the observer from gravity object. Thus, the theory of environment is confirmed with the oserved data. it shows more ample opportunities in interpretation of astronomical observation for its basis lays in **physics** of the phenomenon of gravitation. GR base is based, first of all, upon geometry of space which is adapted to the law of Newton, on model of space - time. **Very indicative fact, that the theory of elastic waves in seismology has given «a angle of an exit» the beam past at a surface of the Sun, to the Earth not less exact result, than GR. Hence, the physics of this phenomenon is obvious. Word is behind physics of the nature of gravitation.**

SAGNAC M.G. EFFECT

In A.Einstein theories speed of light in space is accepted "certain" and not dependent on speed of a source. It is considered, according to this postulate that speed of light in space is constant, and speed of current of time varies. However a number of experiences allows to make the conclusion, that it not so. In this sense well-known experience was extremely important .

In 1912 Garres, and then Sagnac (1913) have executed so-called "vortical" experience which idea consist that the ray of light is divided on two beams, one of which goes in a direction of rotation of installation, another - in an opposite direction.

In experience Garres rays of light move inside a ring made of transparent crystals; in experience of Sagnac - in air. When the device is motionless, time spent on detour of the closed way, in inverse proportion "c". When the device rotates, time spent on detour of the same contour, in inverse proportion to value $c + v$ for a ray of light moving in one direction, and value $c - v$ for a ray of light moving in an opposite direction.

Effect has been named as "effect of Sagnac ". Now this effect is widely used in laser gyroscopes in which in general there is no the mechanical units used in technically complex mechanical gyroscopes.

There are many explanations of effect of Sagnac, starting from radio theories and finishing GR theories (SR - GR). In opinion of the author the most simple and promising way in an explanation of experiences Michelson, Sagnac and others, is the hypothesis about dependence of speed of light on anyone ускорений, including from gravitational ускорений.

In experience of Sagnac, as well as in exact modern laser gyroscopes, any turn or rotation of the device gives angular acceleration to the environment of propagation of light (laser beams). This acceleration results in change of speed of light in a direction that sets a sign on acceleration. We shall remind the formula of dependence of speed of light from acceleration:

$$c_a = c_o \sqrt{1 - \left(\frac{\alpha^{-1}}{r}\right)^2 \frac{a}{4\pi E_o S}}$$

Where:

$$c_o = 2,99792458 \cdot 10^8 \text{ Km/s} - \text{known speed of light,}$$

$$a - \text{Acceleration, } m/s^2,$$

$$\alpha^{-1} = 137,0359895 - \text{Return value of constant thin structure of radiation,}$$

$$r = 1,39876 \cdot 10^{-15} \text{ m} - \text{dipole distance electric components of structure of vacuum,}$$

$$E_o = 0,77440463 [a^{-1} M^3 c^{-3}] - \text{Specific electric polarization of vacuum,}$$

$$S = 6,25450914 \cdot 10^{43} [a.c.M^{-4}] - \text{Deformation polarization of vacuum.}$$

Under the formula it is possible to carry out calculation of concrete devices of laser gyroscopes, setting radius and resolution of the device.

Abnormal acceleration of space craft

Processing of results Doppler displacement of radiowaves frequency under communication of NASA with space vehicles such as "Pioneer - 10" has found out inexplicable acceleration of an attraction to the Sun in value about $8,74 \cdot 10^{-8} \pm 1,33 \cdot 10^{-8} \text{ sm} / s^2$. The collective of authors [Anderson, 2002] at data processing observation data could not find an explanation of this puzzle by exhaustive search the most improbable reasons, and including relativistic effects. There is dependence of Doppler frequency displacement from the relation of

$$\Delta v = v_o \frac{V}{c}$$

speed of the device to speed of light c . It is obvious, that if to accept dependence of speed of light on gravitation a source of inexplicable additional displacement can be increase in speed of light in a free space concerning the speed of light determined on the Earth. Values of speeds are above resulted. Definition of a deviation of a ray of light by the Sun on the basis of the theory of structure has given the value of a angle confirmed with numerous astronomical experiences. The physical explanation of existence of "gravitational lenses", red displacement of radiation of massive objects in space is received. To the environment responsible for gravitation according to a hypothesis, the physical substantiation is given.

In GR and in the theory of environment there are identical experimental confirmations.

1. GR is more likely the geometrical theory added with the law of gravitation of Newton.
2. The theory of environment has in the basis **only** physical parities which have allowed to open gravitation as polarization at the presence of masss which test an attraction structure under laws of induction Fradei.
3. GR has exhausted itself in opportunities of development of physics, the theory of environment has opened an opportunity of research of "vacuum" as the natural environment and opens ways for progress of physics and the technologies connected to its properties.

THE SUMMARY TABLE OF THE MAIN PARAMETERS OF ENVIRONMENT

Parities that can be attributed to definition of the basic and derivative constants of environment have above been received. It is convenient to present them in the table that will help to survey the results received at the given stage with the concentrated kind.

Table 3

parameter	formula	analog	parameter	dimensionality
α^{-1}	constant of thin structure		137.03599976	–
ξ	Coulomb	$\odot \alpha c \hbar / e_0^2$	$8.98755179 \cdot 10^9$	$[a^{-2} m^3 kg s^{-4}]$
η	Coulomb	$\odot e_0^2 c / \hbar \alpha$	$1 \cdot 10^7$	$[a^2 m^{-1} kg^{-1} s^2]$
e_0	elementary charge	ρm_x	$1.602176462 \cdot 10^{-19}$	$[a s]$
ρ	$\sqrt{G/\xi}$	$\odot e_0 / m_x$	$8.6164135 \cdot 10^{-11}$	$[a s kg^{-1}]$
r_q	$\sqrt{\xi/\eta}$	$\odot \alpha \hbar / e_0^2$	29.97924	$[a^{-2} m^2 kg s^3]$
r_m	$\sqrt{G/\eta}$	$\odot \hbar / e_0 m_x$	$2.5826 \cdot 10^{-9}$	$[a^{-1} m^2 s^{-2}]$
k	Schwarzschild $\eta \xi / G$	$\odot m_x^2 c \alpha^{-1} \hbar^{-1}$	$1.3475 \cdot 10^{27}$	$[kg m^{-1}]$
c	$\sqrt{\eta \xi}$	c	$2.99792458 \cdot 10^8$	$[m s^{-1}]$
P	$\sqrt{\eta G}$	$\odot c \rho$	0.0258	$[a m kg^{-1}]$
E_σ	$\sqrt{G \xi}$	$\odot c \hbar \alpha / m_x e_0$	0.7744	$[a^{-1} m^3 c^{-3}]$
G	Newton	$\odot \hbar c / \alpha^{-1} m_x^2$	$6.6725905 \cdot 10^{-11}$	$[m^3 kg^{-1} s^{-2}]$
m_x	Planck	$\odot m_{Pl} \sqrt{\alpha}$	$1.859448 \cdot 10^{-9}$	$[kg]$
r_e	Size of depole		$1.3987632 \cdot 10^{-15}$	$[m]$
Δr_{rb}	Limit of stretching of depole		$1.020672 \cdot 10^{-17}$	$[m]$
b	elasticity of depole		$1.1552198 \cdot 10^{19}$	$[kg/s^2]$
S	polarisation		$6.25450914 \cdot 10^{43}$	$[a \cdot s \cdot m^{-4}]$
h	Planck konstant	$h = 2\pi e_0^2 \alpha^{-1} r_q$	$6.62606876 \cdot 10^{-34}$	$[J \cdot s]$

In table 3 are included not only the values determined in the given work, but also the data of 1998 CODATA. Therefore there can be some divergences in their values that can be the basis for more careful research of structure.

To us it seems obvious, that such constants as a constant of thin structure, electric and magnetic to permeability, the elementary charge, electron mass and Planck's mass or m_x are the most fundamental in our

world. Other constants make **derivative** values of the main parameters of the universe. It is natural, that the table can undergo both some specifications, and additions.

For limiting deformation when $\Delta r_g = \alpha \cdot r$, speed of light is equal to zero. This property the mass of "a black hole" possesses, and limiting deformation will correspond to "horizon of events". Excess of limiting deformation will lead to an intensive birth of pairs electron - positron, on the accepted terminology - to evaporation of "a black hole", theoretically open in 1974 [Shklovsky, 1977]. Annihilation of particles pairs of substance and antistubstance it is accompanied by rigid radiation, as it is observed in the centers of galaxies. Besides "red" displacement will be observed at radiation from a source on the heavy object, known as "delay" of time in A.Einstein's theory. "Red" displacement arises at transition of a ray of light from the environment with

low speed in a space with usual value of speed under the formula $\Delta \lambda = \lambda_c - \lambda_{cg} = \frac{1}{v}(c - c_g)$, where $c_g = c_{dr}$.

SEARCH OF SPEED OF PROPAGATION OF GRAVITATION

In the previous publications some time brought an attention to the question on speed of propagation or action of gravitation. But while and physically enough proven formula of definition of this speed is not received well. A priori clearly, that for representation of the universe of its basic components uniform and possessing interaction (planets, stars, galaxies, a congestion of galaxies, etc.) Speed of light is insufficient for transfer of gravitational interaction. Otherwise not only all universe, but even inside our galaxy would be full chaos. However it is not visible even in conditions of observation of phantoms instead of real objects inside a galaxy - light from the center of a galaxy goes up to Solar system about 50000 years. For this time real position of all objects will considerably change. A conclusion - that the universe was uniform system about which in general it would be possible to discuss cosmological problems, almost instant transfer of gravitational interaction is necessary. For a presence an estimation of speed of gravitation we shall write down essential circumstances or conditions for a presence of the decision.

There is an elasticity of environment. It should enter into analytical expression for calculation of speed of gravitation approximately how it is already known, at definition of speed of volumetric waves in firm, liquid and gaseous environments. For similar environments elasticity is included into numerator of a radicand.

1. Gravitation is distributed as "front" of polarization.
2. Probably, the formula should include such values, as acceleration of gravity, mass of a source of gravitation.
3. If speed of light depends on a deformation condition of environment also speed of propagation of gravitation should depend on its condition also. However, deformation is generated by gravitation and it can call into question validity of below resulted parities.

Let's build for speed of gravitation a circuit from the formulas, having necessary dimension $[km/s]$:

$$V_g = \sqrt{b \frac{G}{4\pi E_\sigma \sigma}} = \sqrt{b \frac{G}{4\pi \sigma \sqrt{\xi} G}} = \sqrt{b \sqrt{\frac{G}{\xi}} \frac{1}{4\pi \sigma}} = \sqrt{b \rho \frac{1}{4\pi \sigma}} = \sqrt{b \rho \frac{R^2}{Q}}.$$

Speed of gravitation is defined by elasticity, the constant gravitation, acceleration of a gravity working in the given space from object with mass of M and practically all entrance values are clear from above stated. Thus, speed of gravitation in the given interpretation is defined by elasticity of structure, polarization from some object with mass of $M(Q)$ and distance from object. Not showing simple substitutions, we have still such parities:

$$V_g = \sqrt{b \frac{G}{g}} = \sqrt{b \frac{R^2}{M}}$$

Depends on distance from object "radiating" gravitation. Strange value which, probably, is connected to expansion of sphere of polarization, with reduction of deformation. Thus speed of propagation of "front" of gravitation grows according to the law described by formulas. Results of the account for speed of the gravitation that has been given birth in mass of the Sun are resulted on fig. 4.

It is visible, that on distances in 1 light year speed of gravitation surpasses speed of light, and for 10 light years speed of gravitation already in 750 times more speeds of light.

On fig. 5 more small-scale characteristic of dependence of speed of gravitation from distance in the astronomical units expressed in distance the Sun - ground and accepted as unit is shown. In the given example speed of gravitation is less than speed of light also reaches(achieves) one centesimal at distances about(near) 800 a.e. We shall result some concrete figures for lines of space objects. So in a gravitational field of a black hole speed of gravitation will make only 0,11 km/s, speed of gravitation near to the Earth will be 9000 km/s, for the Moon - 22000 km/s. With reduction of mass of a space body speed of gravitation grows, making impression, that small bodies "do not want" to lose gravitational communication(connection) in the universe. For the universe effective speed of gravitation will be defined(determined) by a parity(ratio) of a matter and the values of space as inhabitancies of a matter. In process of growth of a matter of the universe there will be a loss by substance of gravitational dependence and growth of chaos.

However all these conclusions will be fair only in case of correct definition of the suggested dependence of speed from gravitation. For the benefit of the received formulas their exclusive simplicity can speak only.

If to recollect (see the paragraph «the Electromagnetic wave»), that and $\Phi = B \cdot S$ conduct Maxwell equation

$$\text{rot } \vec{B} = \frac{1}{c^2} \left(\frac{\vec{j}}{\epsilon_0} + \frac{\partial \vec{E}}{\partial t} \right)$$

to a wave expressed through a radial stream of a magnetic induction,

$$\frac{\partial^2 \vec{\Phi}}{\partial x^2} + \frac{1}{c^2 S} \frac{\partial^2 \vec{\Phi}}{\partial t^2} = \frac{1}{\eta} \text{rot } \vec{j}$$

the expression, $c^2 S$ which is connected to speed of propagation of wave front pays to itself. Not forgetting, that on dimension this value differs from dimension of speed, it is possible to tell: speed of propagation of a wave of radial character is proportional to the area of a spherical surface.

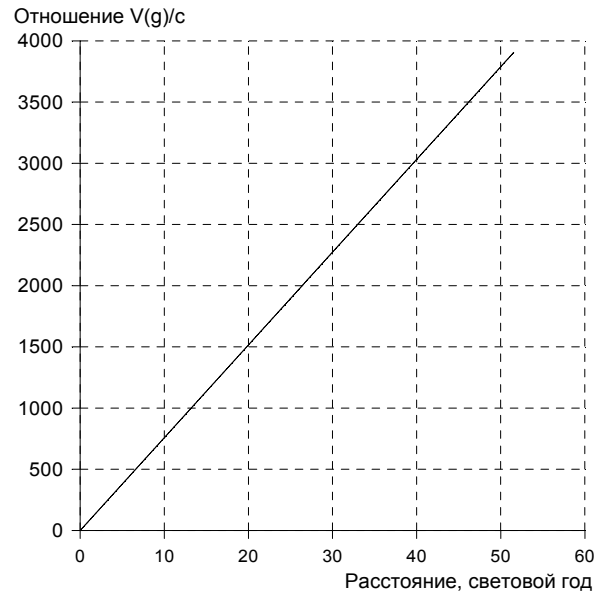


Fig.4. Dependence of Gravitation speed from space distances

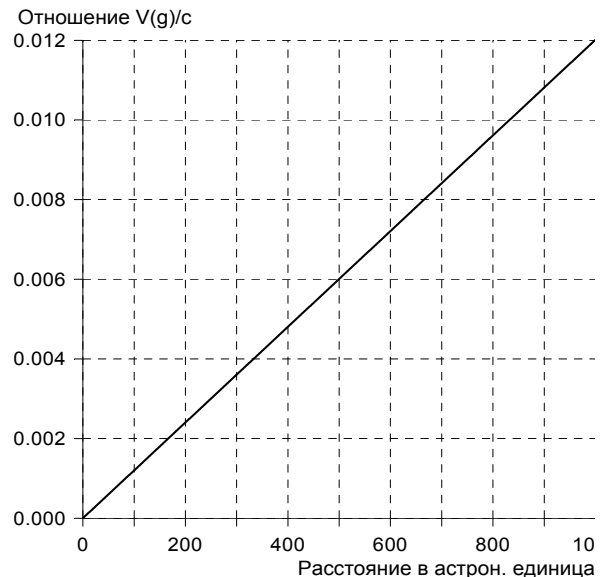


Fig. 5. Dependence of relative speed Gravitation from the distance expressed

$$V_g = c \sqrt{\frac{S}{S_o}}$$

Let's enter relative value of this area and we shall receive speed of gravitation Have deliberately designated the received speed as speed of propagation of polarization or speed of gravitation. On our hypothesis static polarization is indistinguishable from static gravitation. Have received dependence of speed

of gravitation on radius of its propagation $V_g = cR/R_{37}$. It is necessary to define only, that is R_o . And then we

gravitation on radius of its propagation $V_g = cR / R_o$. It is necessary to define only, that is R_o . And then we shall receive one more substantiation for definition of speed of gravitation on the previous method

$R_o = c \sqrt{\frac{M}{b}}$. For each mass there should be value R_o . For Solar system $R_o = 1,2433 \cdot 10^{14} m$. Wave equation has led to to definition of speed of gravitation in view of structure.

Let's plan a way of the final decision of a problem of speed of gravitation. In last attempt to solve this problem nevertheless there is a seen defect: gravitation is distributed in conditions of influence most to itself. Gravitation creates deformation (dependence of deformation on acceleration of a gravity) and the same deformation limits speed of its propagation. The situation seems a little artificial though in physics already there are precedents. So R. Fejnman considered a problem of influence of a electron charge on itself electron [Фейнман, 1964]. It would be possible to reconcile to it. We offer a direct way of theoretical definition of speed of gravitation, proceeding already existing representations in mechanics of solid environments. Speed of propagation of traversal and longitudinal waves in environments is determined by factor of elasticity of environment (modules of shift and volumetric deformation), density of environment. Particularly speed is determined by a root square of the relation of factor of elasticity and density.

In our case elasticity is known, and the density is not determined. However the difference of charges (+) and (-) a dipole of electric structure which is responsible for gravitation is known. Connection of a charge and mass is known also. It is necessary to find only the certain mass equivalent to a difference of a charge, and to relate this mass to a surface of the sphere surrounding a dipole or an elementary cell from dipoles. Some uncertainty of a problem consists in it: what to take for an elementary surface? However the mistake in an estimation of speed of gravitation will be insignificant at definition of radius of sphere as simply dipole distances, to us already known. The maximal mistake in such choice will make distinction in 2-4 times. Not showing all short sequence of calculations, we shall write an end result:

$$V_g = \sqrt{4\pi r_e^2 \frac{\rho b}{\Delta e_{+-}}} = 1,9021 \cdot 10^{15} m/s.$$

Speed of gravitation exceeds speed of light almost on 7 orders. Propagation on prospective radius of our universe of gravitation will need time about 2000 instead of 12,7 billion years in case of light speed. It is an appreciable difference in time that is capable to organize our universe in the connected system instead of full chaos.

$$\sigma_u = \frac{Q_u}{4\pi R_u^2} = 4.6187 \cdot 10^{-11}$$

Polarization on "surface" of the universe

and corresponding average deformation will be

$$\Delta r_u = \sqrt{\frac{\sigma_u}{S}} = 8.5941 \cdot 10^{-28}$$

m.

The frequency determined from the formula (8), and

$$v_u = \frac{e_o^2 \xi \Delta r_u}{hr^2 \alpha} = 2.0956 \cdot 10^{10} Hz; \lambda_u = 1,43 cm$$

lengths of a wave are equal accordingly

. It is known

that the spectrum of relic radiation is made in a range of lengths of waves 0.1-8 sm. The received length of a

wave is necessary approximately on the middle of the specified range, and frequency v_u approximately only in 4 times is less than frequency under Bolzman formula for temperature 2.7K. «Relic» radiation has ceased to exist is torn off an epoch of its origin, and has turned to modern activity of the universe. It is possible to show also, that so-called "relic" radiation is an obvious attribute of existence of space "vacuum". Its polarization is used for a presence of space constant gravitation. We shall write the formula

$$g_u = \gamma \frac{M_u}{R_u^2} = 4\pi E_\sigma \sigma_u \quad G = \xi \left(\frac{\sigma_u}{\sigma_M} \right)^2 = 6.77259 \cdot 10^{-11}$$

. From equality we find, that

, where

$\sigma_M = \frac{M_u}{4\pi R_u^2}$ - superficial density of mass of the universe. In a result have received, that $G = \xi \rho^2$ (see table 3). It means, that the constant of gravitation does not depend on the values of our universe at its set electric charge. It is kept according to the law of preservation of a charge.

Let's take in the scalar form the formula of Ampere:

$$F_m = \frac{2}{\eta} I^2 \frac{\Delta r}{r} \quad (27)$$

Here F_m - force of interaction of two parallel identical currents of displacement I on distance between them, equal to distance r . Currents are formed by traversal deformation Δr at electromagnetic influence. η - a magnetic constant. In the formula (42) with the purpose of simplification the phase between movements of two next charges is not taken into account. The current of displacement is determined so:

$$I = \frac{\Delta q}{\Delta t} = q \frac{1}{r} \frac{\Delta r}{\Delta t} = q \frac{1}{r} V \quad (28)$$

Where V - a certain speed of the deformation directed perpendicularly to propagation of electromagnetic interaction. At electromagnetic interaction magnetic and electric forces are equal:

$$\frac{2}{\eta} e_o^2 \frac{\Delta r}{r} V^2 = \xi \frac{e_o^2}{r^2}, \quad V = \sqrt{\eta \xi} \sqrt{\frac{r}{2\Delta r}} = c \sqrt{\frac{r}{2h_o v}} \quad (29)$$

Have received that speed of longitudinal deformation much more orders can exceed speed of propagation of electromagnetic indignation and at "zero" frequencies aspires to infinity. Speed of deformation "restrains" a magnetic component of a signal that is reduced in process of growth of frequency under the known law of dependence of a magnetic field from speed of movement of charges. Gravitation speaks electrostatic "field" which is transferred as a longitudinal signal.

Otherwise cannot be, as any cross-section propagation of electric "field" there and then becomes an electromagnetic wave. At a longitudinal signal between the connected charges there is a longitudinal movement of front of polarization which is not accompanied by occurrence of a magnetic field between charges of an identical sign in parallel moving in one direction. Magnetic intensity in this case should cover moving charges, as a current in a conductor. As electrostatic "field" or gravitational "field" act as central and frequently in general spherical magnetic intensity appears for гравитирующего object or the object charged by a static electricity, completely compensated, and in this case completely is absent it damped action. It means really huge speed (if not instant!) of propagations of a longitudinal wave. In case of instant speed of action of gravitation our universe appears uniform system in which its any part "realizes" itself in full unity with the whole. Only so it is capable to exist and develop.

With the help of the theory of the physical vacuum submitted as the elastic environment, in article [Dubrovskij V.A., 1985] speed of gravitation is determined as 10^9 s. Differently, speed of a gravitational wave in billion times exceeds speed of light.

Indemnification of an attraction by the Earth with the help of a magnetic force

Stream of a magnetic induction through a surface around of one charge of a dipole from macroscopical a magnetic induction:

$$\Phi_B = 4\pi(r_e)^2 137.036 \cdot B = 3.3692448 \cdot 10^{-27} B$$

$$\text{Or other variant is } \Phi_B = 4\pi(r_e)^2 \cdot B = 2.4586567 \cdot 10^{-29} B$$

Deformation of structure depending on value of a magnetic induction will be:

$$\Delta r_m = \frac{\eta}{b} \frac{\Phi_e \Phi_B}{(\Delta r_{rb})^2} = \frac{\eta}{b} \frac{4\pi(r_e)^2 \Phi_e B}{(\Delta r_{rb})^2} = 4\pi\alpha^{-2} \Phi_e \frac{\eta}{b} B = 9.809364 \cdot 10^{-25} B$$

– For one charging dipole.

For a cluster $\Delta r_m = 1.344236 \cdot 10^{-22} B$ m.

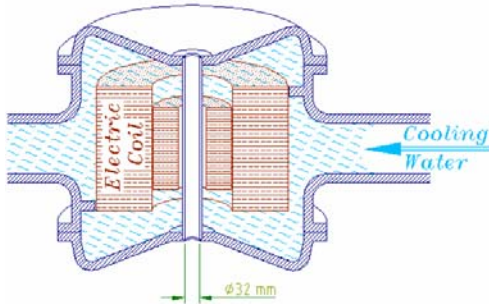


Fig. 6. The circuit of the solenoid in which vertical channel the magnetic field was carried out.

Deformation of a dipole defines a condition of gravitational "field" from gravitating object or from acceleration (acceleration of a gravity including). Therefore, with the help of a magnetic induction it is possible to operate forces of inertia and gravitation.

Similar experiences were carried out on an extent of XX century, but with other purpose - to find out influence of strong magnetic fields on various substances, including on alive organisms. Distinction of substances has consisted in their magnetic properties determining ферромагнетики, paramagnetics and diamagnetics. We shall make the reference to the most modern works. A series of experiences is carried out to Laboratories of strong magnetic fields of Amsterdam on installation which circuit is resulted on fig. 6.

It is copied from work [Berry, Geim, 1997]. In the solenoid cooled by a water stream, the constant electric current force

up to ten thousand amperes went.

Necessary for indemnification of a gravity of the Earth the magnetic induction was estimated under formulas: the mass of a subject is equal $f = pVg$, where p - density, V - volume, $g=9,8 \text{ m/s}^2$; force of influence on a

subject on the part of a magnetic field $f = \eta VB^2$. Those subjects hang up in a magnetic field. Estimation of distances, that for rise of subjects from pair - and diamagnetics are sufficient magnetic induction from 1 up to 10 *tesla*. Installation allowed receive a magnetic induction up to 20 *tesla*. Windings of the coil ate a voltage 300 *V* at a current 20000 A. Number of coils is only 128. Inside the magnetic channel "levitation" of various subjects (a drop of water, a live frog, berries, etc.) has been received. Appeared, that similar force magnetic fields do not break in the appreciable image organic substances. For example, the frog without seen infringements continues to live among the girlfriends. Probably, it is the most surprising result of experiences, not including the fact of the levitation.

On fig. 7 which also it is copied from [Berry, Geim, 1997], the picture of levitation is given to a drop of the water adjoining with a surface of a drop on a wall of a cavity with a magnetic field. As well as it is necessary in absence of gravitation, the drop has the spherical form is similar to a drop in masslessness.

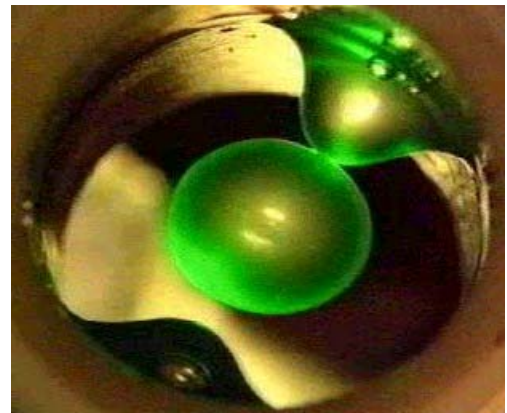


Fig.7. Levitation of a drop in the channel with a diameter 35 mm.

Authors so make comments on result: « According to the general laws of physics, the magnetic subject as against diamagnetic cannot rise. Equations Максвелла do not allow it. It is known that Earnshaw's Theorem speaks, that stability of the lifted magnet in a magnetic field of other magnet is impossible. Really, all attempts of stabilization of position of the magnet which is pushed away upwards by other magnet, come to the end with its overturning and a strong attraction heteronymic poles (except for a case of stabilization of levitated magnet by fast rotation - a comment of the author).

We have found a way to deceive character (nature) and we "shall break" Earnshaw's Theorem. As the Raising of the Magnet in tips of your fingers "is described in recent article", we stabilize a raising of a magnet, using the weak forces of diamagnetism created, apparently, by not magnetic materials such as graphite, bismuth or even human fingers. In experience achieve fine balance between magnetic and gravitational forces».

The phenomenon of influence of magnetic intensity on ferromagnetic is qualitative speaks in physics so. By virtue of features of external electronic environments of ferromagnetic atoms, each atom already is individual magnet. The group of such atoms forms the magnetic domain which magnet also is, but already in macro

scales. If an external magnetic field to make orientation of domains in mainly one direction as all sample ferromagnetic becomes a constant magnet. Thus not all domains are guided in one direction. If it managed to be made, constant magnets have got a unprecedented magnetic induction and would possess fantastic abilities at interactions with all such substances, both paramagnetics, and diamagnetics.

Diamagnetics which elementary example is the atom of hydrogen, have statistically "chaotic" orientation of planes of rotation electrons around of nucleus of substance. The word "chaotic" is taken in inverted commas for the reason that actually orientation of movement electrons is defined by structure concerning which atoms change continuously position owing to thermal movement of atoms, and also owing to continuous interaction of charges of atom (electrons and positive nucleus) with environments. Last interaction is known in a science as to fluctuation of "vacuum". And only big enough magnetic intensity in 100-1000 times is stronger than existing constant magnets it is possible to give the organized orientation of rotation of electrons diamagnetics which defines interaction of substance of diamagnetic with an external magnetic field. By rule after Lenz the received organized magnetic induction of substance is directed against a working external field. We receive force of pushing away between poles of a magnet and the induced poles of magnetic in a diamagnetic subject. There is a phenomenon of levitation. The explanation of this phenomenon in physics is those. There is no only an explanation of the magnetic field as a stream of a magnetic induction.

The nature of a magnetic continuum brings a physical basis for correct understanding of the phenomena of electromagnetism in general and the resulted example of levitation.

Let's allocate one of the mainest conclusions following from the nature of gravitation and inertia. Contrary to representations in physics both to our household and habitual concepts it appears, that such fundamental properties of substance as gravitation and inertia cannot be attributed to material essence. Its these properties are defined by way of existence of bodies in the environment of the universe. **Without environment there can be neither gravitation, nor inertia. Therefore definition of mass as measures of inertia or a mass has the limited application. Fundamental position is that the mass and environment in which there is this mass, are not separable from each other.**

Probably, this conclusion is the main thing in the physical paradigm stated above.

ONCE AGAIN ABOUT THE NATURE OF MASS

And one more surprising result will turn out, if instead of r_e , in the formula to substitute

$r_e + \Delta r_e = 1.409034 \cdot 10^{-15} \text{ m}$, we shall receive length of one step in cluster of pi-meson, equal $2.426310743 \cdot 10^{-12} \text{ m}$. Compare with Compton length of a electron wave $2.42631058 \cdot 10^{-12} \text{ m}$. The minimal distinction only in the eighth sign!. It is possible to note that there is a new parity: $2\pi(r_e + \Delta r_e) \cdot 274.072 = h / m_e c$. It is the unique formula slightly opening secret of mass and an electric charge. From it we find, that the mass is determined by the excited structure and a square of an elementary charge:

$$m_e = \frac{1}{\eta} \frac{e_o^2}{2(r_e + \Delta r_e)}, \quad (40)$$

Where $\eta = 1,000000000026 \cdot 10^7 [a^2 \cdot m^{-1} \cdot \kappa^2 \cdot c^2]$ is a magnetic constant. Pay attention, that the magnetic constant is usually connected to vortical character of movement in the researched phenomenon.

So "act" of a birth of mass of a particle from the excited structure simply looks. Substitution of values gives value of mass electrona:

$$m_e = 9.109876 \cdot 10^{-31} \text{ Kg} - \text{discrepancy in the fourth sign on } 0.5,$$

Having the formula (40) and knowing more exact values of masses of particles, it is possible to obtain more exact given structures, than what are received from a photoeffect. The main result of the deduced formula - the structure precisely reflects the device of the Nature, and the mass of charged particles is set by a square of an elementary charge. As elementary electron charges and a positron differ at 21-22 sign on this value

elementary masses of substance and antistubstance should differ at 42-44 sign. It is possible, that masses of neutrino and antineutrino are formed by a difference of elementary masses of substance and antistubstance. We shall define possible masses of electronic, meson and nucleon neutrino. We shall substitute in the formula (40) difference of elementary charges of electron and a positron, corresponding depole distances and we shall receive: $m_{ev} = 8.7446 \cdot 10^{-73}$, $m_{\pi v} = 2.3892 \cdot 10^{-70}$, $m_{pv} = 1.6057 \cdot 10^{-69}$ kg. These values sharply differ from existing estimations. The impulse of the biggest neutrino is equal $4.8137 \cdot 10^{-61}$ kg·m/c., energy $1.4431 \cdot 10^{-52}$ J.

The two in a denominator of the formula (40) can be born in the left part of equality, and it will designate, that at excitation of "vacuum" masses of a particle and an antiparticle simultaneously are born. Environment is resulted in excitation in gamma - quants of the necessary frequency, limiting by acceleration of mass and acceleration of gravity and, probably, other electric and magnetic influences. Here for the first time in the text the magnetic constant of environment that entitles to assert position about a huge role of magnetism in a birth of substance has appeared. The formula reminds force of the Ampere between two parallel currents.

If to take into account, that the dipole can rotate around of the center of charges thus two are formed quasiparallel current of displacement from charges (+) and (-) . This formula is worthy formulas of Newton and Coulomb:

$$rf = G \frac{m^2}{r}; rf = \xi \frac{e_o^2}{r}; 2m = \frac{1}{\eta} \frac{e_o^2}{r + \Delta r}; 2mc^2 = \xi \frac{e_o^2}{r + \Delta r} \quad (41)$$

Still very important circumstance - first two formulas are written with dimension of energy. Then the mass in the third formula as is equivalent to energy. The particle - antiparticle has enough energy of the excited condition of environment for a birth of pair, for this purpose it is not required to additional energy. In the fourth formula we have Coulomb energy of the excited environment. it is directly connected to the third formula and can be used for a conclusion of the formula (40). The circle has become isolated, which has proved a conclusion of the formula (40) on basis of Compton length of a wave. The experimental work which has been lead (which has been carried out) by employees of institute Kurchatova [Уручкоев, etc., 2000], can be considered from the point of view of a birth of substance by the excited environment. In a vessel from the polythene, filled distilled water, carried out explosions of a titanic foil by high-voltage charge of capasitors with a big capacity. In the limited space and for limited time of the order mcs plenty of energy of an electric current was delivered. As a result of explosion in liquid chemical elements that are strangers in materials of installation have been found out, and outside of a vessel the strange luminescence that faded in time of ms was fixed. Most likely, concentration of energy in a vessel was sufficient, that there was a destruction of structure and a birth of pairs a electron-positron, pimezons and pairs a proton - antiprotons. Some part of them annihilated and has turned to radiation, and the some part has served as a building material for a birth of elements, atypical for the materials applied in experience.

$$R = \xi \frac{e_o^2}{mc^2}$$

It was above-mentioned classical radius of particles. It is determined under the formula . Sometimes confuse classical radius to effective section. It has physical sense as the external area of a particle interreact with other particles. So, the radius of a proton and a neutron is accepted at a level of 10^{-15} m. The more speed of relative movement, the less effective section. For electron, a peon and a proton we shall receive accordingly classical radiuses:

$$2.8179406713 \cdot 10^{-15}, 1.0314570539 \cdot 10^{-17}, 1.5347257648 \cdot 10^{-18} \text{ m.}$$

For electron we have received a divergence with official tabulated value only in 7-th sign. Therefore the resulted formula of calculation of classical radius of particles is quite comprehensible, though the reason of a divergence, probably, is made in accuracy of definition of value of a dielectric constant of environment. From

$$m_i = \frac{1}{\eta} \frac{e_o^2}{R_i}$$

the formula we have definition of masss of particles through an elementary charge . Comparing it with the formula (35), we shall receive $R_i = 2(r_i + \Delta r_i)$ - the double distance of a dipole at its stretching up to limiting value. Undoubtedly, that the mass has precise connection with a square of an elementary charge (or with product e_- and e_+ in case of structure and the value of particles. Probably, that the information stated

here will help to reveal secret of mass and a charge. The problem of a charge and mass of microparticles represents the main unresolved problem of the future of physics and the newest technologies in the field of power and opportunities inertialess movements. We shall make modest attempt to define speed of rotation of the whirlwinds forming charges of particles. The magnetic moments electron and a proton are known. On notion of the author they can be generated by rotation of charging environments of these particles.

$$H = \frac{i}{2r} = \frac{e_o}{8\pi r} f$$

Intensity of a magnetic field is equal the center of a rotating current, where f - frequency of

$$\mu = \frac{1}{\eta} VH$$

rotation of an elementary charge. The magnetic moment will be η , where from left to right return value of a magnetic constant, electric volume of a particle. Using the resulted formulas, it is possible to calcu-

$$f_i = \frac{6\mu_i v}{r_i^2 e_o}$$

late frequencies of rotation of charged environment electron and a proton under the formula. For electron $f=4.3787 \cdot 10^{32}$ cycle/s, for a proton $f=1.4763 \cdot 10^{39}$ cycle/s, for a dipole $f=2 \cdot 4.3787 \cdot 10^{32}$ cycle/s. More plausible results turn out from the following definition of the magnetic moment: $\mu = \xi H r f^{-2}$. Substituting

$$f_i = \xi \frac{e_o}{8\pi \mu_i}$$

value of magnetic intensity on an axis of a circular current, we receive. Frequency of rotation of a charging whirlwind does not depend on its value, depends only on the dielectric constant environment, an elementary charge and its magnetic moment. The magnetic moment is a variable determining frequency of rotation of a whirlwind. It seems to more logical, than dependence of frequency on his(its) values. The following results of calculations are received: For electron $f=6.170792 \cdot 10^{12}$ cycle/s, for a proton

$f=4.061682 \cdot 10^{15}$ cycle/s. We shall count up circular kinetic energy of a virtual charge, having put, that its radius coincides with the value of a dipole. Obviously, that this assumption is unauthorized. Energy is $w = 0,5 m V^2$. The dipole has no mass, but we have connection of mass with a charge $m_x = e_o / \rho$.

In a result we have the formula for rotary energy of a charge of dipole

$w = 0,5 e_o (2\pi r f)^2 / \rho = 2,734249 \cdot 10^{-12} \text{ J}$. Under Boltzman formula we shall receive temperature of

$1,3 \cdot 10^{11}$ degrees on Calvin's scale. This temperature is only analogue of potential energy of environment.

Let's understand with a question of movement electron with speed V structure of photon "vacuum". According to the formula (11), electron creates around of itself area of the deformed structure on the certain value. In process of increase in speed of electron movement and in view of that speed of "tracking" of structure is lim-

ited to speed of light under Einstein's theory, we shall write the equation of elastic force (15): $f = b \Delta r_{ee}$,

where $\Delta r_{ee} = 5,06711 \cdot 10^{-18} \text{ m}$ - deformation of environment by a electron charge (11). Clearly, that at electron speed, close by the speed of light, the positive charge which has stayed after flight of a dipole will not have time to return to an initial condition, and the neutral charge located ahead on a course of electron, will not have time to be developed to electron by a positive charge and to neutralize the brake effect, stayed behind. And at $V = c$ the brake effect will be maximal. We take a impulse of a particle and, having divided it

$$\frac{mV}{\Delta t}$$

for the period of flight, we shall receive "alive" force of advance electron: Δt . At equality of this force to force of braking on the part of photon "vacuum" electron will lose the energy of movement.

Let's receive the following expression for the description of this phenomenon:

$\frac{mV}{\Delta t} = \frac{mV^2}{r} = b \Delta r_{ee} \frac{V}{c}; V_{\max} = \frac{b r \Delta r_{ee}}{m_e c} = 2.99829 \cdot 10^8 \text{ km/s}, \Delta t = \frac{r}{V}$ - time of flight of a particle between charges of a dipole. Have received possible speed limit for electron a little with excess of speed of light. The divergence in speeds of light and electron can be related to inexact knowledge of entering values.

At speed that is little bit less than speed of light, electron completely will lose its's impulse from braking action of structure of photon "vacuum". The phenomena of growth of mass at increase in its speed in general are not present, and there is a dynamic interaction of particles with environment of movement. However, there is an objection against this argument: at braking relativistic (speed of movement is close to speed of light) particles it is observed allocation of the energy equivalent to growth of mass. However, the carried out estimation can not coincide with experiences on accelerators. The question on transformation insignificant acceleration masses in negative shock acceleration below will be considered. It should result in growth of energy of impact due to attraction of energy of environment.

. At the further expense of energy for dispersal electrons speed grows is insignificant, and additional energy goes on break with the help of dipoles electron-positron and occurrence at annihilation appearing electrons and positrons of radiation of gamma - quanta. Such radiation is really observed in accelerators, but speaks radiation by electron at their braking or their cyclic angular acceleration. In case of neutral particles the phenomenon to be described a little bit more difficultly those particles receive own polarization on the part of the

charged structure. We shall check up the formula for a proton. We have $r_p = 1.5347 \cdot 10^{-18} m$ - classical radius of a proton. We shall calculate dynamic deformation under the formula:

$$\Delta r_p = \alpha \frac{r^2}{r_p} = 9.3036 \cdot 10^{-15}$$

m also we shall substitute all known values in the formula of calculation of

$$V_{\max} = \frac{br\Delta r_p}{m_p c} = 2.9977 \cdot 10^8$$

speed limit ©

km/s . In result have received, that full braking of a proton

comes at its speed close by speed of light. Here there is a question: how to be? In fact deformation in case of a proton exceeds durability almost on three order! It is necessary to search for the answer in two directions: or in dynamics the big deformation does not result in destruction of a dipole, or it already in a statics has collapsed also a proton up to radius $9.3036 \cdot 10^{-15} m$ is shrouded in charges of virtual electrons. Last case is preferable.

Dependence of time of a life of particles on speed of their movement it is possible to model as follows. It seems obvious, that time of a life of any particle is determined by the internal and external reasons. Structure and its polarization at the presence of a particle cause the external reasons. It is possible only to guess the internal reasons.

Polarization of an environment generates strong Coulomb forces, tearing a particle on radial directions. For a motionless particle they will be maximal and time of a life of a particle will be minimal because the external reasons. At movement of particles with speed V as we saw in a problem of growth of resistance of environment with increase in this speed, polarization decreases ahead and sideways of particles and remains only behind. Differently, radial Coulomb forces aspire to zero at aspiration of speed of a particle to speed of light and the external factor reducing time of its life, will considerably decrease. The model can be expressed

mathematically: $t_V = \frac{1}{1 - V/c} t_o$, where t_o - a part of time of a life of a motionless particle, t_V - a part of time of its life at the speed equal to speed of light. The formula is very similar on Lorentzian delay of time

$$t_V = \frac{1}{\sqrt{1 - (V/c)^2}} t_o$$

The model of atom of hydrogen can be presented from a condition, that in an orbit electrona one De Brogle wave is placed. It corresponds to the first "allowed" nuclear orbit and then speed of electron movement will be determined by the formula

$$\textcircled{c} \quad V = \frac{h}{m_e \lambda} = \frac{h}{m_e 2\pi a_0} = 2.187691 \cdot 10^6$$

Km/s , where $a_0 = 5.29177249 \cdot 10^{-11} m$ - radius of the N.Bohr.

The relation of speed of light to speed of electron movement in the first orbit of atom of hydrogen equal © $2.99792458 \cdot 10^8 / 2.187691 \cdot 10^6 = 137.0360$. We shall divide radius of the N.Bohr minus deformation by a proton (effective radius of a proton) into the quantum of structure received from the formula (26):

$$\frac{a_o - 9,3036 \cdot 10^{-15}}{2r_e \alpha^{-1}} = 138,019$$

. In radius of the N.Bohr the integer of structural elements is stacked. We shall determine, how many quanta of length of structure are stacked in a circle of the first Bohr orbit. We

use formulas $K = \frac{2\pi a_o}{h/(m_e c)} = 137,0360$ and $K = \frac{2\pi a_o}{2\pi(r_e + \Delta r_e) \cdot 2 \cdot 137,036} = 137,0433$. The diver-

gence of results is defined by accuracy of calculated of elements of structure. The conclusion from here can follow, that **existence of the electronic orbits "allowed" by quantum mechanics in atom is defined not only an integer of De Brogl waves, but also an integer of quanta of structure.**

On basis GR and quantum theories in physics scripts of development of the universe from the moment of the Big Explosion are developed. The theoretical physics most corresponding to a modern condition it is considered to be the inflationary theory of occurrence of the universe. In its basis notion about the "false" physical vacuum, deprived is necessary to a matter. The special quantum condition of the vacuum, deprived matters, has led to to explosion and a birth subsequently to a matter. That accuracy from which there was an act of a birth of the universe is most surprising: « ... If at the moment of time, corresponding 1c, ... speed of expansion would differ from the real value more than on 10^{-18} , it would appear enough for full destruction of thin balance ». However, the main feature of an explosive birth of the universe consists in a freakish combination of antigravity and gravitation. « It is uneasy to show, that effects of space pushing away can be related on the account of usual gravitation if as a source of a gravitational field to choose environment with unusual properties, space pushing away is similar to behaviour of environment with negative pressure » [Gliner E.B., 2002]. This position is extremely important not only in questions of cosmology, astrophysics, but also in general in physics. In work [Rykov A.V., 2001] space pushing away, or antigravitation, has received the natural interpretation based on the incorporated law of Newton - Coulomb. The major hypothetical property of environment is its weak electric charge, due to which there is a gravitation at the presence of a matter and antigravitation (negative pressure, Coulomb pushing away) in absence of a matter or in case of its division into large space distances. There is nothing surprising that the act of the Big Explosion has been executed with huge accuracy of balance of gravitation and antigravitation. Source of gravitation and antigravitation is one.

SUBTRACTION OF FORCES OF INERTIA AND GRAVITATION

Gravitational, inertial, electric and magnetic interactions with the space environment result in its deformations. Acceleration of gravity sets deformation:

$$\Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}} = 1.2703 \cdot 10^{-22}, \text{ m} \quad (50)$$

In the formula (50) with a view of economy of a place value of acceleration of a gravity for the Earth - 9.82 is already substituted. The received value of deformation gives notion about its real values. Acceleration of any mass results in deformation of environment:

$$f = ma = \pi \alpha^{-1} b \cdot \Delta r_a \quad (51)$$

Thus, force of inertia is determined as elastic resistance of environment to any acceleration of mass of a body. The inhabitancy of substance sets such fundamental properties of substance as gravitation and inertia. It allows, changing value of deformation to influence working force of gravitation; reducing value of inertial deformation, it is possible "to liquidate" inertia or to give to it "negative" properties.

The technology of influence on environment opens a way to inertialess movement in the environment and converting of elastic energy of environment to energy of substance. Means of influence for structure of environment are well known. For example, the Moon creates in the field of equality of forces of an attraction on the part of the Earth and the Moon deformation of the environment equal on value and opposite on direction of deformation from the Earth. At this area there is a deformation background only from other planets and the Sun, the attraction of bodies the Moon and the Earth is absent. The electric intensity created in the environment, also influences its deformation. Electrostatic intensity is capable to compensate a gravity; for example, electric intensity in the environment, equal $1,1402 \cdot 10^{10} \text{ V/m}$, is capable to compensate force of gravitation of the Earth. Practically such way of influence on environment is unreal. The desirable result is received in experience [Roschin, Times, 2000] with application of a variable magnetic pressure in the environment at rotary movement.

$$E_z = \ell \frac{dB_x}{dt}$$

According to Maxwell formula, the derivative on time for a magnetic induction gives electric intensity in the environment, capable to compensate deformation and to operate mass of skilled mass. For simplicity of estimated calculations it is possible to take the formula $E_z = V \cdot B_x = V \cdot v \cdot H$, where V - linear speed of rotation of a rotor in the converter. This electric intensity causes deformation

$$\Delta r_E = \frac{e_o E_z}{b} = \frac{e_o v H}{b} V \quad m.$$

There is enough, that the given deformation was subtracted from gravitational

deformation of environment, and force of an attraction to the Earth will decrease: $\Delta r_{g-} = \Delta r_g - \Delta r_E$. This effect was observed at work of the converter. In a rotor discretely located magnets rotated. Therefore, the average effect of reduction of gravity was observed. During some moments of time, influence of a variable magnetic induction in concrete area of environment varies at rotation of a rotor from limiting, resulting to occurrence real electrons and positrons, up to zero and normal force of gravitation of the Earth. On the average 35 % of change of force of gravitation turn out, and annihilation of electrons and the positrons arising at break of dipoles, generates observable ellipsoid of radiations around of a rotor.

Simultaneously to the specified effects of a luminescence and change of gravity there is a reduction of inertia of a rotor. In the closed system of magnetic intensity will be a component which action compensates deformation of the environment of an accelerating origin. Reduction of inertia will cause effect of the accelerated rotation of a rotor in independence of the applied external rotary moment. This phenomenon was observed at revolutions of a rotor more than 550 rev/min. Experimenters supposed rotation of a rotor and feedback of the developed electric power in a circuit of the external consumer for a while till 15 minutes and capacity up to 6 KWatt. Time was limited deliberately owing to the safety precautions which conditions are still unknown. Start were carried out up to 80 times, and each time all effects of work of the converter repeated. From the point of view of "hollow" physics existence of similar "eternal" engines simply nonsense by virtue of the law of conservation of energy. Presence of an inhabitancy of substance guarantees performance of this law: Elastic energy of structure of environment is converted in energy of substance with strict performance of the law of conservation of energy.

Introduction in consideration of the environment objectively existing in the Nature, not only is capable to solve problems of knowledge of the Nature, but also gives opportunities for without inertial movement, the organization of antigravitation and a source of unlimited energy.

THE REFERENCES

The most fundamental parameters of the universe

$\alpha = 0.00729735308(33)$ - A constant of thin structure.

$\alpha^{-1} = 137.0359895(61)$ - Its return value.

$\xi = \frac{1}{\varepsilon_o} = 8,98755179 \cdot 10^9 [a^{-2} \cdot m^3 \cdot \kappa^2 \cdot c^{-4}]$
- The dielectric constant equal to return value of a dielectric constant.

$\eta = \frac{1}{\mu_o} = 1,0000000028 \cdot 10^7 [a^2 \cdot m^{-1} \cdot \kappa^2 \cdot c^2]$
- The magnetic constant equal to return value of magnetic permeability,

$e_o = 1.60217733(49) \cdot 10^{-19} Q$, - an elementary charge.

Derivative parameters

$h = 2\pi e_o^2 \alpha^{-1} \sqrt{\frac{\xi}{\eta}} = 6.62606876(52) \cdot 10^{-34} [Дж \cdot c]$
- Planck's constant.

$m_e = 9.1093897(54) \cdot 10^{-31} Kg$ - mass of electron.

$r_e = \xi \frac{e_o^2}{m_e c^2} = \alpha^2 a_o = 2.81794092(38) \cdot 10^{-15}$
 m - the classical radius of electron follows from equality its electric and mass (nuclear) энергий.

$\lambda_e = h / m_e c = 2.42631058(22) \cdot 10^{-12} \approx 2.42643612972 \cdot 10^{-12}$ m - Kompton length of a wave for electrona.

$m_p = 1.6726231(10) \cdot 10^{-27}$ - Kg - mass of a proton.

$r_p = \xi \frac{e_o^2}{m_p c^2} = 1.5346985 \cdot 10^{-18}$
 m - classical radius of a proton.

$m_n = 1.001378404(9) \cdot 10^{-27}$ - Kg - mass of a neutron.

$a_o = \alpha / 4\pi R_\infty = 5.29177249(24) \cdot 10^{-11}$ m - radius of the Bohr radius.

$R_\infty = m_e \alpha^2 c / 2h = \eta m_e / 4\pi e_o^2 \alpha^{-3} = 1.0973731551775 \cdot 10^7 \approx 1.0973731534(23) \cdot 10^7$ - constant of Ridberg.

$$c = \sqrt{\eta \xi} = 2.99792458 \cdot 10^8 \approx 2.9979245804389 \cdot 10^8 \text{ Km/s.}$$

$$G = \hbar c / \alpha^{-1} m_x^2 = 6.67259(87) \cdot 10^{-11} \approx 6.67260644 \cdot 10^{-11} [\text{M}^3 \text{K}^2 \text{s}^{-1} \text{C}^{-2}] \text{ - A gravitational constant,}$$

$$m_x = \sqrt{\alpha} m_{Pl} = 1.85944583 \cdot 10^{-9} \text{ Kg. } m_y = m_x \sqrt{\alpha} = 1.5884005 \cdot 10^{-10} \text{ Kg.}$$

$$m_{Pl} = 2.1767114 \cdot 10^{-8} \text{ Kg - plankeon.}$$

$$\ell_{Pl} = \frac{e_o^2}{\eta m_y} = 1.61605 \cdot 10^{-35} \text{ m.}$$

The structure is deformed at electric intensity:

$$E_{\max} = b \Delta r_{rb} / e_o = 7.35936346 \cdot 10^{20} \text{ V/m - a limiting voltage of "breakdown".}$$

$$\Delta r = \sqrt{a / 4\pi E_\sigma S} \text{ - Dependence of deformation on acceleration, } a \text{ - acceleration. A conclusion of the formula-}$$

$$\sigma = Q / 4\pi R^2 = \rho M / 4\pi R^2 = \rho g / 4\pi G = g / 4\pi E_\sigma, \quad \sigma = S(\Delta r)^2, \quad \Delta r = \sqrt{g / 4\pi E_\sigma S},$$

$$\sigma_e = \frac{e_o}{4\pi r_e^2}, \quad \sigma_B = \frac{e_o}{4\pi r_B^2}, \quad \frac{\sigma_B}{\sigma_e} = \left(\frac{r_B}{r_e}\right)^2 = \alpha^{-4}, \quad \sigma_{\Delta r} = \alpha^{-2} \frac{e_o}{4\pi r_e^4} (\Delta r)^2 = S(\Delta r)^2$$

$$\sqrt{\Delta r_e / \Delta r_B} = \alpha^{-1}$$

$$\Delta r = \frac{\sqrt{M}}{R} \sqrt{\rho / 4\pi S} \text{ - Dependence of deformation on mass of a body of } M \text{ and its radius.}$$

$$w_\Delta = b(\Delta r)^2 = \frac{b\rho}{4\pi R^2 S} M \text{ - Gravitational energy of deformation of one dipole from mass of } M \text{ on distance } R.$$

$$w_a = \frac{b}{4\pi E_\sigma S} a \text{ - Energy of deformation of one dipole at acceleration } a.$$

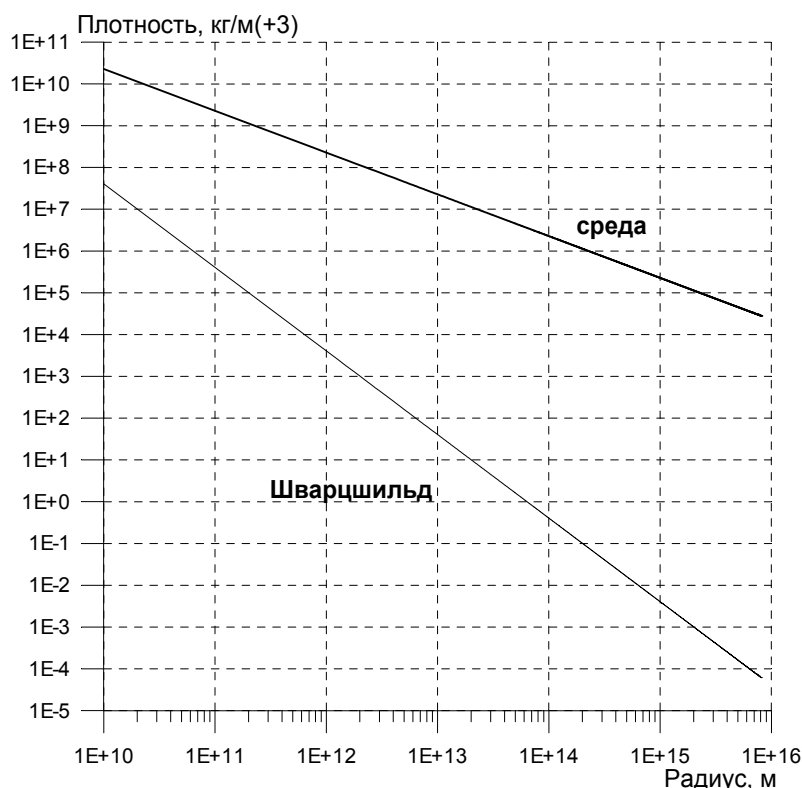
$$\Delta r = \sqrt{g / 4\pi E_\sigma S}, \quad f = b \Delta r = b \sqrt{g / 4\pi E_\sigma S} = mg, \quad g_{\max} = 4\pi E_\sigma S (\Delta r_{rb})^2 = 6.340858 \cdot 10^{10} \text{ m/s}^2,$$

$$m_x = \frac{b \Delta r_{rb}}{g_{\max}} = 1.859459 \cdot 10^{-9} \text{ kg.}$$

RIDDLE OF "BLACK HOLES"

Let's recollect sense of words of M.Lomonosov: "the Nature does not suffer excesses". As we saw earlier under the text «Environment and substance» excess in application of forces of interactions by the Nature is eliminated by the offered theory. There were a variety of forms of display of forces of electromagnetism. The

riddle of "black holes" will be, that is not known, that occurs to substance inside black holes, and also is not clear, whether exists step as black holes at quantitative growth of volume of black holes. In other words: whether all black holes are identical on the properties in dependence on their values? We shall tell small black holes with mass about several solar masses possess the same properties as black holes in the centers of Galaxies?



The aforesaid results in an opportunity of existence of a hypothesis of connection photon, meson and nucleon environments. These environments and their name look is a little bit artificial. Though are supported with known power ratio at transformation of gamma - quanta into pairs electron+positron, mesons different polarity, протон+antiproton, based on the observation data. The hypothesis consists that these environments can be connected to a final stage of evolution of stars of the universe in the main sequence. The photon environment is an environment of a life of all space objects and their interactions. Meson environment can concern to the gravitational collapse connected to white dwarfs. Nucleon environment is born in neutron stars which final phase comes to a condition of black holes.

Let's pay attention to even very important circumstance. According to a statement of a hypothesis about the nature of gravitation, she(it) is generated by a weak charge of the environment, having depole structure with char-

acteristic distance $r_e = 1,398763188 \cdot 10^{-15} m$. Already now physics asked a question: as far as gravitational forces of Newton for micro world are fair? On what distances gravitation ceases to be Newtonian, and coulomb forces become prevailing [Randall, R.Sundrum, 1999]?

The standard physics while only puts similar problems or tries to solve the given question on the basis of the accepted paradigm, coming to doubtful results.

Our hypothesis gives the answer to that question - gravitation for space objects is determined by structure of photon "vacuum". And it means that forces of gravitation should disappear or will change as approaching

mentioned above to depole distance. It is probable, that cluster with linear value $\pi \cdot 137 \cdot r_e$ represents last distance for existence habitual for us forces of gravitation. The further reduction of distance between objects or microparticles will be accompanied by disappearance of gravitation and its replacement by coulomb forces between the charged particles and alongside with electric polarization by neutral particles. Therefore at formation of the following degenerating class of space objects of force of gravitation are replaced on coulomb or nuclear forces adjusted for new treatment of all forces of interactions within the framework of the given work.

Black hole

« There is a limit for mass of a star which can be kept in balance by densely packed neutrons. This limit cannot be calculated precisely as the behaviour of substance at the density essentially exceeding density of a

nuclear matter, is insufficiently investigated. Estimations of mass of a star which cannot be stabilized for the account states of neutrons any more, give value $\sim 3M$.

Thus, if at explosion supernew the rest of mass $M > 3M$ it cannot exist as a steady neutron star is kept. Nuclear forces of pushing away on small distances are not capable to resist to the further gravitational compression of a star. There is a unusual object - a black hole. The basic property of a black hole will be, that any signals, cannot leave for its limits and achieve the external observer. The star of mass M , *конпактуясь* in a black hole, achieves sphere of radius R_g (spheres of Schwarzschild): $R_g = 2GM/c^2$,

(Formally it is possible to come to this ratio, believing in the known formula for the second space speed $v_{k2} = (2GM/R)^{1/2}$ limiting value of this speed equal to speed of light) ».

According to the chapter «the Nature of gravitation» for mass $3M$ we receive radius of black hole $R = 79.5$ kms. On GR $R = 8.91$ km. A difference is essential.

At achievement by object of the value of Schwarzschild sphere, its gravitational field becomes so strong what electromagnetic radiation cannot leave this object. Schwarzschild radius of the Sun is equal 3 km (**$R = 46$ km under the theory of structure**), the Earth - 1 sm (**79 m under the theory of structure of environment**).

Black hole of Schwarzschild concerns to unrotative objects and is the rest of a massive unrotative star. A rotating massive star collapse in a rotating black hole (Kerra black hole). The black hole can be found out only to indirect attributes, in particular, if it is part of double star system with a seen star. In this case the black hole will tighten gas of a star. This gas will be heated up, becoming a source of intensive x-ray radiation that can be registered.

Now there are no direct experimental confirmations of existence of black holes. There is some space objects which behaviour it is possible to explain presence of black holes. So there is an object a Swan XI representing double system with the period of rotation of $5.6 \cdot 24$ hours. Into structure of system enter the blue giant with mass $22M$ and the invisible source of pulsing x-ray radiation with mass $8M$ which probably is a black hole (object of such big mass cannot be a neutron star).

Alongside with the black holes formed at a collapse of stars, in the universe there can be the black holes that have arisen long before occurrence of the first stars owing to heterogeneity of the Big Explosion. The clots that have appeared at it of substance could be compressed up to a condition of black holes whereas other part of substance extended. The black holes formed at the earliest stage of the universe, name relic. Assume, that the value of some from them can be much less value of a proton. (**According to the given work**

the minimal black hole has mass $m_x = \sqrt{\alpha} m_{pl} = 1,859459 \cdot 10^{-9} \text{ kg}$).

In 1974 S. Hawking has shown, that black holes should let out particles. A source of these particles is process of formation of virtual pairs a particle - antiparticle. In usual fields these pairs annihilateon is so fast, that they do not manage to be observed. However in very strong fields a virtual particle and an antiparticle can be divided and become real. On border of a black hole powerful tidal forces operate. Under action of these forces some from the particles (antiparticles) included in virtual pairs, can take off for limits of a black hole. As many of them annihilating, the black hole should become a source of radiation. Energy, radiated in space by black hole, acts from its bowels. Therefore during such emission of particles, the mass and the values of a black hole should decrease.

The mechanism of "evaporation" of a black hole is those. Estimations show that rate of "evaporation" very slow. The black hole in mass in 10 solar masss will evaporate for 1069. Time of evaporation supermassive (billions masss of the Sun) black holes which can be in the center of the big galaxies, can make 10^{96} yars.

Modern representations about the black holes based on GR are those. They essentially miss representations

about structure of environment. Radius of Schwarzschild is determined by equality $R_s = 2 \frac{G}{\xi \eta} M_{bh}$, radius of

$$R_{bh} = \sqrt{G \frac{M_{bh}}{g_{\max}}}$$

a black hole for structure of environment is $\sqrt{G \frac{M_{bh}}{g_{\max}}}$, than distinction which consists in weaker dependence of radius of a black hole on mass in case of the accepted structure of environment is obvious to similar dependence in GR. On figure dependences of density of black holes for both models of gravitation are shown.

It is obvious that theory of GR is less plausible for the reason that with growth of the values of black holes the density quickly enough decreases and, for example, for a black hole in the centers of galaxies with radiuses about 10^{13} - 10^{14} m the density becomes insignificant, not capable to form «border of events». On the contrary, the model of gravitation with a source in structure gives realistic density at a level of 10^7 - 10^6 kg/m³. The point of "meeting" of values for *Schwarzschild* radius and for the theory of structure of environment is deter-

$$R_{com} = \frac{1}{2} k \frac{G}{g_{\max}} = 7.091 \cdot 10^5$$

mined by equation of density m .

And nevertheless, so-called very massive black holes have no any comparison with black holes in the centers of galaxies. In the literature there are judgements, that the centers of galaxies contain super massive black holes which masses are equivalent to billions of solar masses. Probably, these judgements have under themselves real ground. It is difficult to imagine, that the galaxy rotates around of the center which is not having sufficient for it over massive object. The nature has no excesses at realization of such space objects, as star-planetary systems, the whole galaxies, and systems of galaxies. Such space systems are obliged to have the powerful centres of gravity and to be organized according to very simple common principles.

Let's state idea on which it is possible to clear in the certain degree a history of development of our universe. Probably, at any stage there was super in the values of black hole that finally collected the rests previous of all of object of the universe. Most likely, its structure something reminded nucleon environment, but with that difference, that the mass of nucleons has merged in homogeneous mass as a grandiose uniform drop of a magnito-mass continuum. So-called dot singularity could not be model of a similar condition of a universe at all. The values of "drop" were dictated only by conditions of its temporarily stable existence. Probably, eventually, at which fine black holes of the last universe in a belly of a black final hole disappeared, «nucleon drop» gradually came nearer to border of stability that now cannot be determined. There has come hour "x" when there was a loss of stability, and there was in our understanding a Big Explosion. It has scattered the magnito-mass continuum in space which pieces began to evaporate according to S. Hawking, giving rise to particles and antiparticles. These particles, annihilating, have formed the photon environment, having generated gravitation, antigravitation and inertia in its modern kind, and pieces have given rise to galaxies.

Force that has blown up «drop» is known. It is Coulomb repulsion force of pushing away of the same electric or magnetic charge. Most likely, speech should go about a magnito-mass monofield. At growth of this charge in process of absorption for gravitational stability nucleon environments are broken by a black hole of remains of the former universe, a condition in process of reduction of distances between nucleons be relative depole

distances $r_n = 3,836819 \cdot 10^{-19}$ m. Gravitation in nucleon environment, thus, decreases. In what that the moment becomes less forces of pushing away, as results in the Big Explosion.

The density of potential energy of photon "vacuum" is equal $1.4388 \cdot 10^{31}$ Joules. it is equivalent to annihilation $1.6 \cdot 10^{14}$ kg of substance. To imagine such amount of the energy, made all in one cubic metre it is impossible. Probably, the absorbed mass of substance in a black hole of the universe loses the power value, and potential energy grows at absorption of usual black holes.

Naturally, here the hypothetical picture of a life, death and a birth of sequences of the universe that can be rather far from a reality or too simplified are given. The main thing - offered work would be incomplete without this picture.

THE TABLE OF THE ENTRANCE AND TARGET DATA FOR SEARCH OF A TAUTOLOGY

Table 5

Branch of power parities	Branch of power(force) parities
$m_e c^2 = \xi \frac{e_o^2}{r_c}$. The formula accepted for definition of classical radius electrona.	$G \frac{m_x^2}{R^2} = \xi \frac{e_o^2}{R^2} = \eta \frac{M_e^2}{R^2}$. The incorporated laws of Newton - Coulomb according to O.A.Hevisajda's idea (1893).
$h\nu_{rb} = \xi \frac{e_o^2}{r_e} \approx 1,6 \cdot 10^{-13} [J]$. The energy of gamma - quantum going for transformation of virtual particles in real electron and a positron.	$f = b \cdot \Delta r_{rb} = \xi \frac{e_o^2}{r_e^2}, b = \xi \frac{e_o^2}{r_e^2 \Delta r_{rb}}$. Elastic force of deformation of the structure, used for definition of factor of elasticity.
$h\nu_{rb} = f \cdot \Delta r_e = e_o E \Delta r_e$. Work (energy of gamma - quantum), creating limiting deformation of structure.	$e_o = m_x \sqrt{G/\xi} = \rho m_x, \rho = 8,6164187 \cdot 10^{-11}$. Charge of electron through factor of connection of a charge and mass.
$\Delta r_e = 2\pi\nu_{rb} \Delta t \cdot \cos(2\pi\nu_{rb} t)$. Limiting elastic deformation of structure.	$e_o = M_e \sqrt{\frac{\eta}{\xi}} = \frac{1}{r_q} M_e, \frac{1}{r_q} = 0,0333564$. Charge of electron through factor of connection of a charge and magnetic mass.
$E = 137,03598943 \cdot \xi \frac{e_o}{r_e^2}$. Definition of electric intensity of structure.	$m_x = M_e \sqrt{\eta/G} = \frac{1}{r_m} M, \frac{1}{r_m} = 3,871264 \cdot 10^8$. The unknown mass expressed through magnetic mass of electron (stream of a magnetic induction).
$h = 2\pi e_o^2 \alpha^{-1} \sqrt{\frac{\xi}{\eta}} n p u r_e / \Delta t = c$. Result - Planck's constant - a derivative of structure and its electro-magnetic constants.	$M_e = e_o \sqrt{\frac{\xi}{\eta}} = r_q e_o, r_q = 2,58313569 \cdot 10^{-9}$. Stream of a magnetic induction from an elementary charge (elementary magnetic mass - quantum of magnetic mass).
$r_e = \xi \frac{\alpha}{2\pi\nu_{rb} \sqrt{\xi/\eta}} = 1,398763188 \cdot 10^{-15} m$. Definition depole distances in structure. Length of a wave of gamma - quantum of red border in 430,51126 times more a constant crystal lattice $2r_e$.	$M_e = \Phi_e = 4,8032068 \cdot 10^{-18} Wb$. Quantum (1) magnetic masses - quantum of a stream of a magnetic induction. In physics it is accepted: $\Phi_o = h/2e_o = 2,067833636(80) \cdot 10^{-15} Wb$ Quantum of a magnetic stream. It in 430,51129 times more (1).
$\Delta r_e = \alpha \cdot r_e = 2\pi\nu_{rb} r_e \Delta t = 2\pi\nu_{rb} (r_e)^2 / c = 1,02069137 \cdot 10^{-17} [m]$. Definition of limiting deformation of structure.	$b = \xi \frac{e_o^2}{r_e^2 \cdot \Delta r_{rb}} = 1,155219829 \cdot 10^{19} [kg \cdot s^{-2}]$. Factor of elasticity of structure.
$\sigma = Q/4\pi R^2 = \rho M/4\pi R^2 = \rho g_M/4\pi G = g_M/4\pi E_\sigma$ $\sigma = S(\Delta r)^2 \rightarrow \Delta r_g = \sqrt{g/4\pi E_\sigma S}$	$f_{rb} = b \Delta r_{rb} = b \sqrt{g_{\max}/4\pi E_\sigma S} = g_{\max} m_x$ $m_x = \frac{b \Delta r_{rb}}{g_{\max}} = \frac{b}{4\pi E_\sigma S \cdot \Delta r_{rb}} = 1,859548 \cdot 10^{-9} kg$
$2\pi(r_e + \Delta r_e) \cdot 2\alpha^{-1} = h/m_e c$, m - Kompton length of electron.	$m_i = \frac{e_o^2}{2\eta(r_i + \Delta r_i)}$, kg - mass of the basic particles.
Against danger of a tautology the finding of dependence of speed of light from gravitation testifies on the basis of structure: $c_g = c_o \sqrt{1 - (\frac{\alpha^{-1}}{r})^2 \frac{g}{4\pi E_\sigma S}}$. It results in the formula of definition of a corner of a deviation of a light beam from parameters of Solar system and is completely confirmed with the observed data.	

The gravitational difference of elementary charges (-) and (+) is determined as $\Delta e_o = \rho m_e = 7,8490272 \cdot 10^{-41}$ Q. Or in mass m_x contains mass of electron

$$n_{-+} = \frac{m_x}{m_e} = 2,04124083 \cdot 10^{21}$$

. Then, coming back to a difference of elementary charges, we shall receive $\Delta e_o = e_o / n_{-+} = 7,8490363 \cdot 10^{-41}$ Q – concurrence to the previous value. A stream of a magnetic induction from a difference of charges (the difference of streams from a charge (-) and (+)) will make value $\Delta \Phi_e = \Delta e_o \sqrt{\xi / \eta} = 2,3530790677 \cdot 10^{-39}$ Web. The same value determined concerning elementary mass of an electron-positron gives the following value as $\Delta \Phi_m = m_e \sqrt{G / \eta} = 2,2530790677 \cdot 10^{-39}$ Web. Concurrence (or a tautology?) is full.

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