



Photo: Sergei M. Godin (left) and Alexander V. Frolov (right), St. Petersburg, August 2001

Some Practical Results From the Theory of Medium, where Matter Exists



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In this article the author develops a discussion about the theoretical basis of the Searl's effect. The descriptions of experiments made by Roschin and Godin are presented in this book. Small converter is also discussed.

Abstract

Medium, where matter exists is an objective reality of Nature. It has a structure which consists of electrical mass-less dipoles. This medium is responsible for gravitation, inertia and propagation of light. We can influence this medium and thus control gravitation and forces of inertia that can be used for the movement without inertia and transformation of elastic energy of this medium to the energy of matter.

Void is only void and nothing more. Void cannot have any physical properties. For example, vacuum has physical parameters, i.e. dielectric and magnetic penetrability. That's why vacuum cannot be void or empty space of the Universe. Let's consider the problem of medium (vacuum) in details. At first let's remove a

Alexander V. Frolov: I have to say about my personal opinion on this experimental work. It is a very strange project. I am not sure if these are 100% true experimental results due to absence of real prototype at the present time (Only the description of 7KWt system was published. It was built in 1992, according to S. M. Godin). From the other hand, the theory of this energy converter and its description by S. M. Godin and V. V. Roshchin is in good correlation with other theories on inner structure of physical vacuum. Faraday Lab Ltd will develop this research direction and we hope to present our own experimental results in future.

blunder of physics presented by Coulomb's formula. It lies in the fact that permittivities of medium were put to the denominator of formulas for electric and magnetic forces. Let's introduce their inverse values:

$$\nu = \frac{1}{\mu} = 1.0000000028 \cdot 10^7 [a^2 kg^{-1} m^{-1} s^2]$$

It is a magnetic constant of vacuum equal to inverse value of magnetic permittivity.

$$\xi = \frac{1}{\epsilon} = 8.98755179 \cdot 10^9 [a^{-2} m^3 kg s^{-4}] \text{ is a dielectric}$$

constant of vacuum equal to inverse value of dielectric permittivity. Newton's and Coulomb's formulas get an identical view. Speed of light gets more logical idea

$$c = \sqrt{\xi \nu}$$

While writing this formula it is obvious that numerical expression of speed of light is defined by the square root from the numerical value of dielectric constant of medium. Order of values of electrical and magnetic constants of medium defines its absolute value. According to Maxwell's formulas charges are the carries of electricity and there are no carries of magnetism in spite of ideas by Dirac and his followers in theoretical physics. According to Maxwell only electrical currents produce all magnetic phenomena. In medium Maxwell's displacement currents define them. Thus, with the propagation of light (ElectroMagnetic Waves) in medium the main carrier of energy is an elementary electrical charge. Movement of this charge creates the displacement current. Displacement current in its turn creates a magnetic intensity, which creates the decrement of currents in the magnetic "field" and thus limits speed of light.

Experimental physics presents necessary data for the studying of medium. We mean data on photoeffects in medium, on nuclei and nucleons [1]. Let's remind the values of energies of gamma-quanta: 1 MeV, 137 MeV, 1836 MeV, 3672 MeV ($2m_e c^2$, $137 \cdot 2m_e c^2$, $1836 \cdot 2m_e c^2$, $1836 \cdot 4m_e c^2$). This series of energy gives valuable

information for the physical ideas about the structure of medium and matter [2].

Quantum of radiation of ν frequency deforms the structure of cosmic medium. Being within the size of r_e between its elements, quantum of radiation creates a deformation Δr_e . With this the energy of deformation will be $e_0 E \Delta r_e$, where e_0 is a charge of electron, positron, E is an electrical intensity of the structure. Energy of quantum of radiation is equal to the energy of deformation:

$$h\nu = e_0 E \Delta r_e, \quad (1)$$

where h is a Plank's constant. Deformation depends on time. Quantum of radiation is an electromagnetic phenomenon with the variable amplitude $r_e \sin \omega t$:

$$dr = d[r_e \sin \omega t] = \omega r_e dt \cos \omega t. \quad (2)$$

Let's define the intensity of electrical field, where N is some coefficient of proportionality:

$$E = N \xi \frac{e_0}{r_e^2}. \quad (3)$$

Let's put the obtained expressions, amplitude from (2) and intensity from (3) to (1):

$$h = 2\pi N e_0^2 \xi \frac{1}{r_e / dt} \quad (4)$$

We can assume that $r_e / dt = c$ is a speed of light. Let's find an unknown quantity:

$$N = \frac{h}{2\pi e_0^2 r_q} = 137,036 = \alpha^{-1}, \quad (5)$$

where $r_q = \sqrt{\xi / \nu}$. As a result we have a number of inverse fine structure constant.

We have got a known formula for Plank's constant from (5):

$$h = 2\pi e_0^2 r_q \alpha^{-1}. \quad (6)$$

The number N is connected with an elementary charge by the formula (3). It points out the possibility of its interpretation as a number of elementary charges in some cluster of medium, which interacts with the radiation.

Is it possible to get Free Energy from vacuum? How is it possible? Dr. Rykov has the answer: "If we compensate a value of inertial deformation, we can "eliminate" inertia or give "negative" properties to it." But it is clear that this "negative inertia" will accelerate any motion or any rotor!

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There are important conclusions that speed of light, electrical and magnetic constants of vacuum describe the structure of medium, Plank's constant is a characteristic of medium. Let's find the elements of medium structure from a well-known experimental fact.

Gamma-quantum of energy $w \geq 1 MeV = 1.6 \cdot 10^{-13}$ J interacting with medium changes a "virtual" electron-positron pair to the real electron-positron pair. There is an equation of quantum energy for the "red boundary" $h\nu_{rb}$ and energy of pair:

$$w = \xi \frac{e_0^2}{r} = 2\pi \alpha^{-1} e_0^2 r_q \nu_{rb} = 1,6493 \cdot 10^{-13} \text{ J}, \quad (7)$$

From (7) we find a size of structural element:

$$r_e = \frac{\alpha^{-1} \xi}{2\pi r_q \nu_{rb}} = 1,398688 \cdot 10^{-15} \text{ m}. \quad (8)$$

Let's define a marginal value of deformation of medium dipole. With this value gamma-quantum creates a real electron-positron pair. The marginal deformation of dipole, which is the "red boundary" of its "destruction" (for photoeffect) is calculated from the wave process $r_e \sin \omega_{rb} (t - r_e / c)$ and from amplitude of its static deformation as $\Delta r_e = 2\pi \nu_{rb} r_e^2 c^{-1}$. The last formula and $h = 2\pi e_0^2 \xi c^{-1} \alpha^{-1}$ taking into account the adopted designation of dielectric and magnetic constants give:

$$\Delta r_{rb} = \frac{h \nu_{rb} r_e^2 \alpha}{e_0^2 \xi} = 1,020672 \cdot 10^{-17} \text{ m} \quad (9)$$

Deformation of dipole lower than the given value has an electroelastic character and with a higher value of deformation the destruction of dipole occurs and creation of electron-positron pair appears. The required quantity of energy is the evidence that it is mainly spent for the creation of mass of particles: $2m_e c^2 = 1.6374 \cdot 10^{-13}$ J, full energy of photoeffect $w = 1.6493 \cdot 10^{-13} = 1.6374 \cdot 10^{-13} + 1.1949 \cdot 10^{-15}$ J, energy of $1.1949 \cdot 10^{-15}$ J is consumed to the break of dipole. That's why it is reasonable to consider that medium was formed by the massless charges. A remarkable consequence from the formula (9) determining the limit of dipole strength is

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

Following a classic approach to the structure, let's notice that the force of electrical elastic deformation and coefficient of elasticity b is defined from:

$$f = b \Delta r_{rb} = \xi \frac{e_0^2}{r_e^2},$$

$$b = \xi \frac{e_0^2}{\Delta r_{rb} r_e^2} = 1,155406 \cdot 10^{19} \text{ [kg/s}^2\text{]}. \quad (11)$$

Gravitational, inertial, electrical and magnetic interactions with the cosmic medium lead to its deformation. Gravity acceleration gives deformation:

$$\Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}} = 1.2703 \cdot 10^{-22} \text{ [m]}, \quad (12)$$

where $E_\sigma = \sqrt{\lambda \xi} = 0.7744 [a^{-1} m^3 c^{-3}]$,

$$S = \alpha^{-2} \frac{e_0}{4\pi r^4}; S = 6.255854 \cdot 10^{43} [\text{km}^{-4}].$$

We have already put a value of acceleration of gravity for the Earth $g=9.82$ into the formula (12). The obtained value of deformation gives an idea of its real values. Acceleration of any mass leads to the deformation of medium:

$$f=ma=16\pi\alpha^{-1}b\cdot\Delta r_a. \quad (13)$$

Thus, the force of inertia is defined as an elastic resistance of medium for any acceleration of the mass of the body. The medium of substance gives such fundamental properties of substance like gravitation and inertia. It is difficult to overestimate the practical significance of the obtained ratios (12) and (13).

Consequences:

1. Changing the value of deformation we can change the acting force of gravity.
2. If we compensate a value of inertial deformation, we can "eliminate" inertia or give "negative" properties to it.

It gives chances to develop the technology of antigravitation, i.e. movement without inertia and new sources of unlimited energy...

Technology of influence on medium opens the way to the ways of movement without inertia in medium and converting of elastic energy of medium to the energy of matter. Means of influence on the structure of medium are well known. For example, the Moon creates a deformation of medium in the area of libration. This deformation is equal by its value and opposite by direction of deformation produced by the Earth in medium. There is a deformational background only from other planets and Sun in this area. An attraction of bodies by the Moon and the Earth is absent. Electrical intensity created in medium also influences its deformation. Electrostatic intensity is able to compensate gravity. For example, electrical intensity in medium equal to $1,1402 \cdot 10^{10} \text{ V/m}$ is able to compensate gravity of the Earth. This method of influence on medium is practically unreal.

A wishful result was obtained in the experiment [3,4], which used the alternating magnetic tension in medium during the rotation. According to Maxwell's formula $E_z = \text{IdB}_x/\text{dt}$, i.e. the derivative by time for the magnetic

induction gives an electrical intensity in medium, which is able to compensate the deformation of medium and control the gravity of experimental mass. To be simple in evaluation calculations we can take a formula $E_z = \text{V} \cdot \text{B}_x = \text{V} \cdot \text{v} \cdot \text{H}$, where V is a linear speed of rotation of rotor in the converter [3,4]. This electrical intensity causes a deformation $\Delta r_e = e_0 E_z / b = (e_0 \text{v H} / b) \text{V}$ (m). If we subtract the given deformation from the gravitational deformation of medium $\Delta r_{\text{new}} = \Delta r_g - \Delta r_e$, then the attraction force to the Earth will decrease. This effect was observed during the work of energy converter [3,4]. As the magnets situated discretely were rotated in the rotor, than the average effect of decrease of the gravity force of about 35% was observed. Really, in different moments of time the influence of variable magnetic induction on the concrete area of medium vary. Maximal influence leads to the appearance of real electrons and positrons from vacuum. Zero influence corresponds to the normal gravity of the Earth. On average we get 35% gravity change. Annihilation of electrons and positrons appearing with the break of dipoles creates an observed ellipsoid of ionization around the rotor.

At the same time with the given effects of lighting and change of gravity the decrease of inertia of the rotor occurs. In the closed system of magnetic intensity an accelerating component can be found, which can act to compensate the deformation of medium (13). Decrease of inertia will cause the effect of accelerated rotation of the rotor independently from the applied external rotating momentum (like a figure skater, clasping his hands to the body, begins to rotate quicker). This phenomenon was observed with rotation of the rotor more than 550 rpm. Experimenters allowed the rotation of the rotor and efficiency of the electric energy output to the goal of external consumer for the period up to 15 minutes and power of 6 KWatt. Time was limited wittingly for the purpose of safety measures, terms of these measures are unknown yet. Startings were made up to 80 times and every time all effects of the work of converter repeated. From the point of view of "physics of void", existence of such perpetual motion machine is a nonsense according to the law of conservation of energy. Presence of medium, where matter exists, guarantees the fulfillment of this law. Elastic energy of structure of medium transforms into energy of matter strictly following the law of conservation of energy.

Introduction to the consideration of medium, which evenly exists in Nature is able to solve the problems of cognition of Nature as well as It gives chances to develop the technology of antigravitation, i.e. movement without inertia and new sources of unlimited energy.

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