

# On the Great Constant 137.036

Dr. Anatoli V. Rykov

In the first half of XX century English astrophysicist Eddington stated that if physics find out a sense of a fine structure constant **137.036**, then many secrets of Nature would be discovered. Some incomplete examples of the manifestation of this constant are given below. As Ether does not admitted by traditional physics, these examples can cause criticism from its side.

## Electromagnetic radiation in Ether

The portion of electromagnetic radiation named photon of frequency  $\nu$ , deforms structure of Ether. Being in Ether with the size  $r_e$  between its elements, photon makes deformation  $\Delta r$ . Thus the energy of deformation will be  $e_o E \Delta r_e$ , where  $e_o$  is the electron or positron charge,  $E$  is the intensity of an electrical field. Energy of photon is equal to energy of deformation, where  $h$  is the Plank constant:

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

This deformation depends on time. Photon is an electromagnetic phenomenon with the amplitude  $r \sin(2\pi\nu t)$ :

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

Let's determine the intensity of an electrical field, where  $N$  is a certain factor of proportionality:

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

Let's substitute the received ratio (amplitude from (2) and intensity from (3) to (1):

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

It is possible to assume that  $r_e / dt = c = \sqrt{\nu \xi}$  is the speed of light.

Let us note that this assumption seems to be natural, but not obvious. Let's determine the unknown number:

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

Where  $r_q = \sqrt{\xi / \nu}$ ,

$$\nu = \frac{1}{\mu} = 1,0000000028 \cdot 10^7 [a^2 kg^{-1} M^{-1} s^2]$$

is a magnetic constant of vacuum, which is equal to reversed magnetic permeability,

$$\xi = \frac{1}{\varepsilon} = 8,98755179 \cdot 10^9 [a^{-2} M^3 kg s^{-4}]$$

is an electrical constant of vacuum equal to reversed dielectric permittivity. Thus, interaction of electromagnetic radiation (photon) with Ether is related with the number **137.036**. It, probably, characterizes some cluster of ether, which is related to photon. Let's receive the known formula for a Plank constant from (5):

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

All components, included in the Plank constant, completely concern to structure of Ether. The conclusion is the following: the so-called «ultra-violet catastrophe», which has put under doubt a correctness of classical physics, is a completely far-fetched problem from the point of view of existence of Ether. It is simply solved by ability of ether to perceive and to transfer radiation only as quantum.

We should construct elements of structure of vacuum on the well-known experimental fact. There is an equation of photon energy for the frequency « of red border »  $h\nu_{rb}$  and energy of pair

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

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

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

Therefore, we have the distance between virtual electron and positron charges forming a bond charge or dipole of Ether.

The «red» border of its «destruction» at the photoelectric effect is determined from:

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

The dipole deformation is less than the given value and it should have an electroelastic property. When the value of deformation increases, it leads to destruction of dipole and a pair of free electron and positron will appear. A remarkable consequence from the formula (9) is:

$$\Delta r_{rb} = 1,020672 \cdot 10^{-17} = r_e / 137.036 \quad (10)$$

Again we have received a constant **137.036**. Now it is related with deformation properbonds of Ether structure.

Nature gives us some help: a certain hierarchy in a structure of matter is observed during consideration of the growth of masses of fundamental particles  $2 \cdot 137.036 m_e$ ,  $2 \cdot 137.036 \cdot 7 m_e$  and  $2 \cdot 1836 m_e$ . Masses of pair of electron - positron will form masses of pions, proton, antiproton, and neutron. Number 1836.125 is a mass number of a proton. Number 1838.6 is a mass number of a neutron. It is easy to notice that a structural element is the mass  $2m_e$ . Let's multiply it on  $137.036 \cdot 2m_e = 274.0720 \cdot m_e$  and we will get a value, which is very close to the pion mass  $m_{\pi(+ -)} = 273.2 \cdot m_e$ . Such concurrence does not seem senseless. Pions represent particles formed from electron and positron. In  $\pi_0$  -pion the integer of 264.2 are masses of electron and positron. The integer determines a zero-charged pion «0», and the minus 9.872 can be accepted as a mass equivalent to energy neutral pion connection. In  $\pi_+$ ,  $\pi_-$  pions contain the odd number of electron and positron masses 273. The nature again prompts, that  $\pi_+$  pion consists of one superfluous positron, and  $\pi_-$  consists of one superfluous electron. It is clear that pions represent a single unit (indivisible quantum systems capable to virtual and real existence according to their short time of life). The lack of mass charging pions up to number 274.072 can be treated as a defect of mass of bond or energy of bond  $\Delta m_{\pi(+ -)} = 0.8720 \cdot m_e$ . It is possible to assume two variants of mass defect for pion «0»:

$\Delta m_{\pi 0} = 1.8 \cdot m_e$  or  $\Delta m_{\pi 0} = 9.872 \cdot m_e$ . These variants can be distinguished by the time of pion life «0». The greatest time of particle life, at which mass defect is maximal. As pion «0» has time of life less, than at charged pion, it is necessary to accept the first variant, i.e.  $\Delta m_{\pi 0} = 1.8 \cdot m_e$ .

It is possible to assume, that the protons and antiprotons can be formed from mesons and pions. For example, the particle with mass equal to 1836,12 electronic masses (proton) can contain 3 pairs charged pions, one positive pion and 7 neutral pions. Structure of a proton or antiproton contains charged mesons, participating in strong nuclear interactions. Superfluous mass in 1836 electronic masses makes mass defect equal to bond energy. It corresponds to the huge energy providing large stability of protons. You can see the role of number **137.036** on the given examples of a structure of matter.

The De Broglie's formula  $\lambda = \frac{h}{mV}$  is used for calculation

of a wavelength of a particle movement. It is shown above that the Plank's constant depends on parameters of Ether and the constant **137.036**. Particle, moving in Ether structure, produces transverse fluctuations with frequency  $\nu = c / \lambda$ . Thus, the given frequency or given length of a wave will be formed only with the movement of particle in Ether. Particle moves by spiral trajectory

with a step of the screw  $\lambda = \frac{h}{mV}$  and it is the reason

for the particle diffraction phenomena. The amplitude of a wave can be determined by the formula

$$A = \frac{e_0^4 137.036}{(vm)^2 \Delta r_e}. \text{ This amplitude depends not on the}$$

speed of a particle, but on structural elements of Ether (dipole charge, the number **137.036** and deformation limit), on mass of a particle and, especially, on the Ether magnetic constant. We shall receive amplitude equal to  $1,066134 \cdot 10^{-10}$  (m) for electron, for a proton it will be  $3,162334 \cdot 10^{-17}$  (m). A large difference in amplitudes is due to a square law dependence of amplitude on mass of particles. It can be checked in experiment on diffraction of electron and proton beams. The amplitude of particle's trajectory is formed in open Ether. Hence, at the presence of a nucleus of atom or other particle (changing parameters of Ether structure) the amplitude of trajectory can be different.

Ether structure and the constant 137.036 also define Compton length of the electron wave:

$$2\pi(r_e + \Delta r_e) \cdot 2 \cdot 137.036 = h / m_e c = 2.42626 \cdot 10^{-12} \text{ (m)}$$

### Generality of ether of three different levels

The interactions of electromagnetic radiation with Ether can appear on three levels, those are space, meson and

nuclear level. Length of a «red border» wave  $\lambda_{rb} = \frac{c}{\nu_{rb}}$  of a photo effect in the space Ether is an additional tool to research structure of Ether. There is a formulation

$$\frac{1}{2\pi 137.036 r} \left( \frac{c}{\nu_{rb}} \right) \equiv 1. \text{ Index } i=e,\pi,p \text{ corresponds to three Ether levels in the generalizing table of its structural elements. The "red border" frequencies are equal to } \nu_{irb} = w_i / h.$$

Table 1

$i$	$w_i = h\nu, J$	$2m_i c^2, J$	$w_i - 2m_i c^2, J$	$r_i, m$	$\Delta r_i, m$
e	$1,649459 \cdot 10^{-13}$	$1.637422 \cdot 10^{-13}$	$1,203700 \cdot 10^{-15}$	$1,398688 \cdot 10^{-15}$	$1,020672 \cdot 10^{-17}$
$\pi$	$4,487716 \cdot 10^{-11}$	$4.473438 \cdot 10^{-11}$	$1,427800 \cdot 10^{-13}$	$5,140876 \cdot 10^{-18}$	$1,635613 \cdot 10^{-20}$
p	$6,013007 \cdot 10^{-10}$	$3,010701 \cdot 10^{-10}$	$3,010701 \cdot 10^{-10}$	$3,836815 \cdot 10^{-19}$	$3,836815 \cdot 10^{-19}$

The main conclusion is: electromagnetic phenomena at all three levels of Ether are equivalent and they are determined by the number **137.036** and speed of light (dielectric and magnetic Ether constants).

**Ratio of speed of light  $2.99792458 \cdot 10^8$  to speed of the movement of electron on the first orbit of atom of hydrogen  $2.187691 \cdot 10^6$  is equal to 137.036.**

**Gravitational constant of Ether of the Universe also depends on Ether basic parameters and number 137.036:**

$$G = \xi e_o^2 \cdot 137.036 / m_{Pl}^2 = 6.6726 \times 10^{-11},$$

where Plank's mass is a denominator.

**Inertial force of the mass  $m$  and its acceleration  $a$  are also determined by parameters of Ether and the constant 137.036**

$$f = ma = 15.5\pi \cdot 137.036 \cdot b \cdot \Delta r_a,$$

where  $b = 1.155065 \cdot 10^{19} (\text{kg/s}^2)$  is **an elasticity of Ether structure**. This formula shows how it is possible to transform elastic energy of Ether to energy of substance at acceleration of mass.

*Editor's: Theory by N.A. Kozyrev considers the cause-effect relations from positions of the concept of active properties of time. In this concept the speed of the course of time is defined as a ratio of*

*distance between the cause and the effect to the period of the time delay between them. For our space it is equal to the product of the speed of light and Zommerfield's fine structure constant, i.e. the speed of the course of time is 137 times smaller than the speed of light. Let's note, that it is not the speed of motion in space, but the "rotation speed of the cause-effect connection". To my mind, there is a clear analogy between this four-dimensional rotation and the so-called torsion technologies. In his work Dr. Shipov presents the mathematics of four-dimensional rotations and firstly introduces the notion of torsion fields. Besides, Dr. Spartak M. Polyakov in his work noted the features of the internal structure of photon. On the assumption of this structure, minimal prolongation of any electromagnetic quantum is equal to the product of the wavelength and ratio between the fine structure constant and the speed of light. So, the internal structure of photon according to Polyakov reflects the features of inner structure of space, according to Kozyrev. This link between two theories had not been discussed before. The work by Rykov about fine structure constant is another theory, which can be used to create a new scientific paradigm of Ether. In my view, there is some analogy between Rykov's notion of "elasticity of Ether structure" and Kozyrev's "hardness of cause-effect connection".*

*Alexander V.Frolov*

## There are no Secrets in Inertialess Motion and Antigravitation

Dr. Anatoli Rykov

Actually the way to open this secret was shown by the article "Structure of vacuum and community of interactions" and the publication "Principles of ether theory" [1]. The main thing to be done successfully in these works was to find the structure of ether. It was formed by massless elementary charges (+) and (-), analogs of electron and positron. The basic distance or arm of dipoles formed by charges is equal to  $1,398688 \cdot 10^{-15} \text{ m}$  and a limit of electroelastic deformation was determined according to photoeffect in vacuum (ether) and it is equal to  $1,020672 \cdot 10^{-17} \text{ m}$ .

Interaction of usual substance and ether takes place through the forces of gravity and inertia, through electromagnetic tensions. Deformation of ether from acceleration of forces is given by the equation:

$$\Delta r_g = \sqrt{\frac{g}{4\pi E_\sigma S}} = 1,2703 \cdot 10^{-22} [\text{m}]$$

To make the formula shorter the value of gravity acceleration was already substituted as acceleration of Earth  $9.82 \text{ m/c}^2$ . Direction of deformation coincides with the slope of the bob to the Earth. **To decrease gravity we should only decrease the value of deformation in this direction.** We can do it by electrical or magnetic effect around the body that we want to have antigravitational properties. Classical way to affect the value of above-mentioned deformation by another body is to place another cosmic body (for example, the Moon). **In the point of libration between the Earth and the Moon there is ether with zero deformation and accordingly the forces of gravity regarding the Earth and the Moon are absent in this point. The cause of it is evident. The Moon creates deformation of ether in this point, which is equal by the value and inverse by the sign of deformation of ether from the Earth.**

What is inertia from the point of view of ether structure? It is determined by the ratio:  $f = ma = 16\pi\alpha^{-1}b \cdot \Delta r_a$ , where  $m$  is mass of the body,  $a$  is acceleration of the body,