

The Experimental Gravitonics

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Now we can suppose that the XXI century will be the century of Gravitation, like the XX century was the century of Electricity and Atomic energy, and the IXX was the century of steam engine.

This thought started to take more and more minds of engineers and scientists and to move them to activity in this direction. In a general sense all "gravitation research program" has three main goals: a) real system for communication by means of gravitation waves; b) real gravitation propulsion drives for space ships; c) real transformations of the space gravitation energy in electrical energy.

So, to work in this new area of science the minimum real equations are necessary to describe the physical mechanics of the processes.

We clarified this question and now we can state: ***Gravitation is the problem, which can be solved in the limits of non-linear mechanics in the case of curve-linear motion... and nothing more!***

In a general view this problem could be solved by D'alambert but he did not completely solve the equation of motion for material point in 4-dimensional space.

We used another way and found new, approximate, analytical equations, which connect the gravitation of macro-object with rotation and magnetism with gravitation. The equations were checked in series of experiments, from mechanical to quantum and they proved their validity.

Short Review of the Approximate Dynamic Theory of the Gravitation Source

Next dynamical equations are obtained for process of generation of the gravitation power by different methods:

1. Process of magnetisation –demagnetisation of the ferromagnetic material:

$$W = \frac{BHV}{\alpha} = \frac{B^2V}{\mu\alpha}$$

$$W_r = \frac{1}{\alpha} \frac{d}{dt}(BHV) = \frac{1}{\alpha} \frac{d}{dt} \frac{B^2V}{\mu}$$

where W is gravitation energy of magnetised ferromagnetic; B is magnetic induction; H is intensity of the magnetic field; V is volume; $\alpha = 1/137$ is fine

structure constant; W_r is the power of gravitation radiation.

2. Another method is the rotation of the gyroscope:

$$W = 2k\gamma_0\omega^{3/2} \frac{m^2}{r}$$

$$W_r = 2k\gamma_0 \frac{d}{dt}(\omega^{3/2} \frac{m^2}{r})$$

In comparison with "Theory of Field" by Landau and Livtshitz, the value of gravitation power, which is radiated by spherical gyroscope:

$$W_r = \frac{m^2 r^4 \omega^6}{90c^5}$$

where W is gravitation energy, K is parameter of form, γ_0 is absolute world gravitation constant that is equal to the fine structure constant, ω is frequency of rotation of the gyroscope, m is mass of the gyroscope, r is radius of the gyroscope, W_r is radiated gravitational power, c is speed of light in vacuum.

3. The precession of the gyroscope

$$W = \xi [L, \Omega] = \xi \left[\left(\frac{dL}{dt} \right) \right]$$

where ξ is gravitational-mechanical ratio:

$$\xi = \frac{4\gamma_0 m}{r^3 \omega^{1/2}} = \frac{W}{E_k}$$

The radiated gravitation power is

$$W_r = \frac{4\gamma_0 m}{r^3} \frac{d}{dt} \left(\frac{1}{\omega^{1/2}} [L, \Omega] \right)$$

where L is the moment of quantity of motion of gyroscope, Ω is the frequency of the precession.

4. The precession of magnetisation

$$\frac{dM}{dt} = -\gamma [\overline{M}, \overline{H}] - \frac{\alpha\gamma}{M_0} \left[\overline{M} \left[\overline{M}, \overline{H} \right] \right] - \frac{8\pi\gamma}{\tau_r f} (\overline{M} \cdot \overline{H}) \frac{M}{M_0}$$

where the energy

$$\frac{8\pi\gamma}{\tau_r f} (\overline{M} \cdot \overline{H}) = \Delta W$$

is gravitation energy which is re-radiated in the direction M during the process of the non-linear ferromagnetic resonance; M is magnetisation; M_0 is saturation magnetisation; γ is gyromagnetic ratio; τ_r is the time of the relaxation of the ferromagnetic; f is the frequency of the Larmor precession.

5. The equation of the gravitation detector

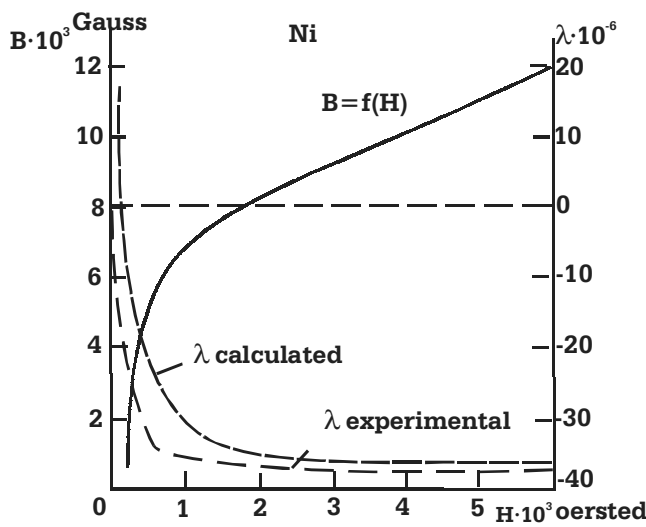
$$\pm \Delta\omega = \frac{90r}{\omega^{1/2}m^2} \alpha \Delta W$$

where $\Delta\omega$ is the reaction of the gyroscope (i.e. change of its own frequency of the rotation); α is the parameter of connection with external impulse of gravitational radiation; ΔW is impulse of gravitational radiation.

Experimental verification of the equations

The Magnetostriction equation:

$$\lambda_i = \frac{\alpha^k}{(BH)_s} H^2 \frac{d\mu}{dH} = \sigma_s H^2 \frac{d\mu}{dH}$$



and experiments Fig.1 (for Ni and Fe) allow us to state: the gravitation nature of the magnetostriction phenomenon is a compression of the matter in its own gravitation field.

Gravitation-optical effects can be produced on a laboratory table!

a) Gravitational curvature (the deviation) of a laser beam can be described by the formula

$$\theta_g = \frac{\Delta l \text{ grad} \phi}{c^2} = \frac{1,4 \cdot 10^{-5}}{(BH)_s} \text{grad}_z(BH)$$

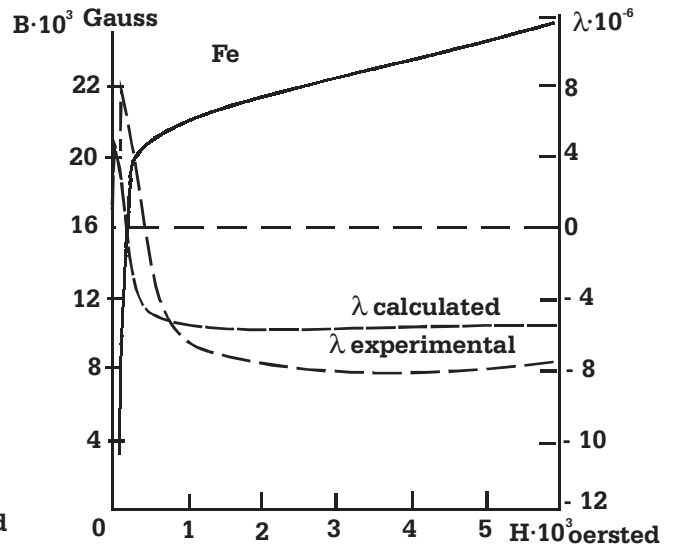


Fig 1

which is proved by the experiment, Fig. 2.

b) Gravitational shift of the laser beam frequency is described by the formula:

$$\pm \frac{\Delta\nu}{\nu} = \frac{1,4 \cdot 10^{-5} \Delta l}{(BH)_s} \text{grad}_z(BH)$$

that was also proved in the experiments.

c) Also some calculation was made by the author to find the quadratic gravitation-optical effect described by the formula:

$$\pm \frac{\Delta\nu}{\nu} = \frac{1}{2} \left[\frac{1,4 \cdot 10^{-5} \Delta l}{(BH)_s} \text{grad}_z(BH) \right]^2$$

d) **Real operating system of the gravitation propulsion drive was created and tested.** From results of this work the speed of propagation for gravitation wave was calculated as 9×10^{20} [cm/sec]

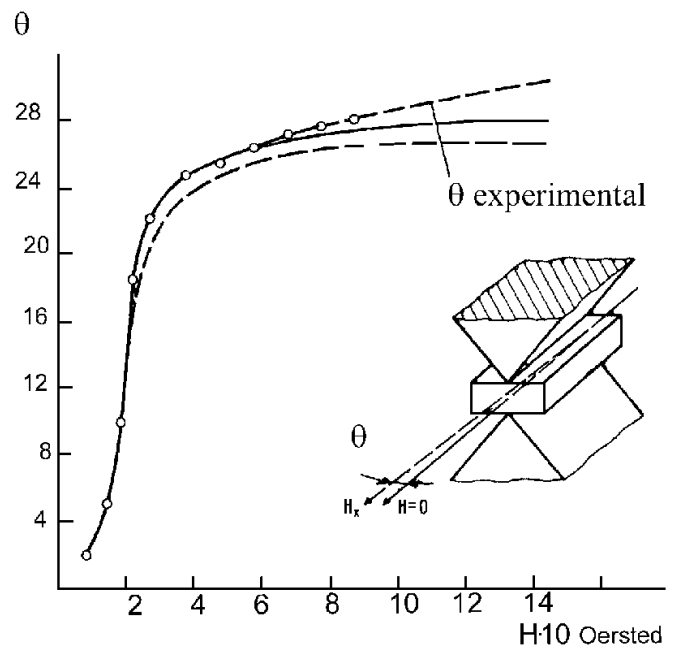


Fig.2

Fig.3 is the photo of the system. Its weight is equal to 32 kg, the vertical size is about 600 cm and diameter is about 370 cm. Consumed power is about 650 Wt.

Authors created the long-term program of the research work named as "Poisk-1". Also the POISK-2 program was created. It includes research into the gravitational spectrums of the solid body, medico-biological research, gravitational astronomy, earth and sun diagnostics, research into the interaction between gravitational radiation and matter, influence on the crystalline structure, influence on radioactive decay and many other topics.

The main results were published in our book "Introduction in Experimental Gravitonics", 1991, published in Russian. It was described why the "light barrier" is penetrable and the energy relations and the mechanism of "C-barrier" penetration were shown. Authors created and developed the microstructure models of the photon and electron. The "uniquants" put forward as the elements of the inner structure of electron and photon. The authors determined the "uniquanta parameters", described linear polarisation for photon, circularity polarised non-rotating photon and the circularity polarised rotating photon. Spin, magnetic moment of a unquantum, gravitational mass, equivalent charge and radius of a unquantum are postulated. Tangential velocity of unquantum rotation, unquantum magnetic field, gravitational constant of the unquantum, gravitational field of the unquantum are described.

There is "Quadruple generator of directed gravitational radiation" known as "Yoilka" (Fig.3). It can produce a swing of mass or swing of gyroscopes, precession of masses and precession of gyroscopes was studied by

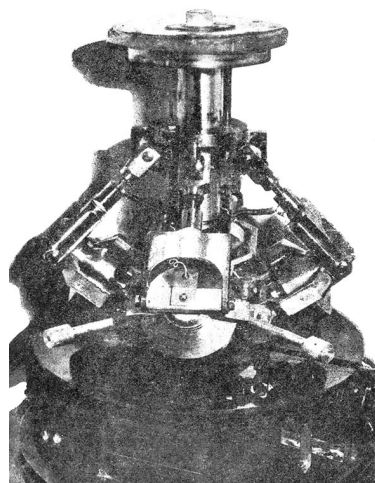


Fig.3 Four gyroscopes of the "Yoilka"

the authors. Experimental verification of new gravitational equations and research into the effects of shock rotation and effect of shock braking of the rotating gyroscope was produced. The authors reported the experimental results on creation of the propulsion force and explained the mathematical model of the generators in their laboratory.

To make the experimental verification of the ***natural relation between magnetism and gravitation***, corollaries from the microstructure model of electron, gravitational interpretation of magnetostriction were proposed. In the experiment some change of the trajectory of optical laser beam was obtained after that this beam passed through the magnetostriction substance. Also the authors proved some calculations from their experiments with homogeneously-magnetised ferromagnetic material, which were known before as "gravitational frequency shift" of optical beam.

Antigravitational Wing

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One of the main barriers for humankind on the way to the development of cosmic space is gravity. Using modern rocket-space technologies we should spent a lot of efforts to overcome the forces of gravitation. Present spacecraft consume a lot of fuel, that's why now the development of cosmic space is very expensive and non-effective.

Humankind has come close to the problem of control of gravitation, and now it is not a scientific fantasy, but working hypotheses. A lot of natural phenomena are laid in the basis of these hypotheses and character of them is really an antigravitational one. Serious scientific

works, theoretical and experimental researches are devoted to the problem of antigravitation; international scientific conferences on antigravitational research are held regularly. But the nature of antigravitational phenomena is still unknown; there was no theory to answer all these questions.

Actually in April 2001 researchers of Komsomolsk-on-Amur State Technical University offered to public attention a theoretical explanation of nature of antigravitational phenomena, which have huge opportunities to become a basis for further studying of antigravitation. Potential model of antigravitational interaction of the bodies by Dmitry V. Ponomarev and Roman V. Shibeko is based on the general theory of relativity by Albert Einstein and fully complies the frames of relativist kinematics, i.e. it is not in contrary with the modern theory of gravitation and laws of conservation. That's why it is headily spreading and it finds more support in various regions of Russia and abroad.