International Journal of Advanced Research in Physical Science (IJARPS)
Volume 6, Issue 7, 2019, PP 23-26
ISSN No. (Online) 2349-7882
www.arcjournals.org

The Effect of the Form and Violation of Equivalence Principle

Stanislav Konstantinov*

Department of Physical Electronics, Herzen State Pedagogical University of Russia, St. Petersburg, RSC "Energy", Russian Federation.

Corresponding Author:** ***Stanislav Konstantinov, *Department of Physical Electronics, Herzen State Pedagogical University of Russia, St. Petersburg, RSC "Energy", Russian Federation.*

Abstract: *Experiments to slow the movement of an hourglass violation of the equivalence principle inside the pyramid and the figure in the shape of an octahedron (truncated octahedral container) can be interpreted as a violation of the Einstein equivalence principle. The violation of gravity is explained by the excitation and spin polarization of torsion vortices of dark matter. The figures of a certain form act as resonators of gravitational oscillations, a certain frequency.*

Keywords: *gravitational mass; inert mass; dark matter; torsion vortices; oscillator.*

PACS: *04.20.-q, 04.50.-h, 06.20.Jr*

1. Introduction

The history of the pyramids dates back thousands of years, but their role as cosmic energy resonators capable of amplifying electromagnetic and gravitational fields becomes clear to scientists only today. The geometry theory of Einstein that until recently dominated in science was based on the equivalence principle, in which he postulated that gravitational acceleration is indistinguishable from acceleration caused by mechanical forces [1]. As a result, the gravitational mass became in A. Einstein under any conditions equal to the inertial mass. This meant that the inertial mass m_i, which appears in Newton's second law $F = m_i \cdot a$, cannot differ from the gravitational mass mg associated with the force of the gravitational field $F = m \cdot g$. In contrast to A. Einstein's "geometric" concept of gravity, the "field" concept of gravity allows one to describe gravitational interactions of bodies like electric and magnetic interactions. In this case, the gravitational fields must have properties similar to, but not identical to, the properties of electromagnetic fields. The "field" concept of gravity does not contradict other experimentally grounded approaches in describing the phenomenon of gravity and inertia, in particular, for example, to some models related to quantum vacuum (dark matter). Proceeding from this, physicists in their experiments began to consider the reaction of gravity to the acceleration of the body g, caused by the action of external non-gravitational forces [2]. Further in the article, experiments with an hourglass and oscillators are given which disprove the principle of equivalence and opening the way for the creation of technical systems for overcoming gravity and the application of the new principle of body motion control.

2. Experiments to Slow the Movement of an Hour Glass Inside the Pyramid and the Figure in the Shape of an Octahedron

In nature, in the process of evolution, living organisms created the most optimal resonators for the successful life in terrestrial conditions. This is the shape honeycomb the bees and geometry

of termite mounds, and much more. In human civilizations, pyramids can serve as the moststriking example of energy resonators. They possess a set of amazing and diverse properties. So was patented way to maintain the sharpness of razors. The cardboard model of the pyramid of Cheops, 10 cm high, places the razor blade at a height of 1/3 to 1/5 from the base (if the square at the base of the pyramid is taken as a unit, the pyramid height is 0.63 and the side edge is 0.95). Unexplained changes occur in blade metal and can be used up to 200 times. The researchers noticed that the hourglass placed in the pyramid slows down. Italian physicists conducted a detailed study of the effect of slowing the hourglass, housed inside an octahedron shape made of aluminum [3]. The authors of the article write: "Over all series of the total 255 hours of measurements, the fluctuation level of the hourglass durations inside and outside the truncated octahedron did not exceed 0.2 %. The relative difference of

the durations inside and outside the octahedron did not fall below 1.2%. The average relative difference was 1.67% that corresponds to an equivalent gravity reduction of -0.324 g inside the octahedron. Outside the octahedron, this amount of gravity reduction would correspond to an altitude of 100 km over sea level. Only inside the described truncated octahedral container we observed a stable significant deviation in the duration of the hourglass, regardless of the location and time. In containers of different shape and size, even made of the same 1/16 aluminum sheet, the measured deviations did not exceed the average fluctuation level of the hourglass duration. Currently we have no explanation for the extraordinariness of the octahedral (pyramidal) shape." [3]. In my opinion, the reason for the slowing of the hourglass in the octahedron lies in the presence of torsion vortices of dark matter. It can be assumed that the formation of torsion vortices in octahedron-shaped resonators is associated with the disturbance of dark matter and its spin polarization. The author of the torsion theory of the physical vacuum G. Shipov writes: "Torsion radiation looks like massless vortices of inertia, which as their only physical feature have a spin. A direction of vortex rotation determines its charge. Herewith having the same name charges attract each other, while unlike repel" [4]. In their experiments, Shipov and Akimov not only registered torsion fields generated within material objects of various shapes, but could also predict their appearance. This effect was called Shipov "The effect of the form". Above the cone, they fixed the right torsion field, and under the base of the cone, the left torsion field. For short cylinders (diameter is more than half of the side), the right field comes out of the end, and the left field is from the side. For long cylinders (diameter is much smaller than the side), on the contrary: the left torsion field comes from the end, and the right side from the sides. It does not matter what material the object is made of. The reason is in the torsion fields. The reason is in a quantum vacuum. The super fluid medium of dark matter is involved in all interactions (gravitational, electromagnetic and others). It is these interactions the quantum vacuum that can lead to a change in the weight of particles in an hourglass and their deceleration. Similar to the interaction of particles in superfluid ^{3}He-B, torsion vortices in a quantum vacuum (dark matter) should also interact. In ^{3}He-B, magnetization of the vortex cores takes place along the axis of the vortex, that is, there is a spin polarization of the superfluid liquid in the vortex core. This phenomenon indicates that the Barnett effect acts in superfluid ^{3}He-B (the moment of momentum of the paired atoms of ^{3}He-B, forming a vortex, is transmitted to the spins of these atoms). This process is particularly significant in the core of the vortex. The existence of the Barnett effect in superfluid ^{3}He-B is confirmed experimentally: vortices with oppositely directed spins constituting their atoms are characterized by the opposite direction of circulation of the velocity vector of the liquid. By analogy, spin polarization takes place in the cores of torsion vortices, that is, the orientation of the spins of torsion vortices in one direction, which is confirmed by Shipov and Akimov's experiments. Experiments on magnetic resonance, conducted with rotating cores of vortices, allowed to establish that in the case of superfluid ^{3}He-B, the Einstein-de Haas effect takes place: this is the rotation of the fluid volume during magnetization. Since the magnetization of atoms ^{3}He also means their spin polarization, the Einstein – de Haas effect is the rotation of the fluid volume at dS / dt, where S is the total spin of the selected volume of liquid. A similar effect should be observed in the excited quantum vacuum inside the pyramid-shaped figures, where the torsion vortices of superfluid dark matter in the Earth's magnetic field form large domains. In the core of the domain, due to the orientation of torsion vortices in one direction, a phase transition occurs, which leads to a change in the inertial properties as compared with the inertial properties of the superfluid dark environment in the rest of the volume, with sufficient mass to create an additional gravitational field [5]. This leads to a change in the value of the acceleration of gravity Δg_0 and slowing down the hourglass, located inside the pyramidal shapes. Independent measurements of the oscillations of the acceleration of gravity of the Earth, made using gravimeters inside pyramidal shapes, will help a final conclusion about the reasons for the slowing of the hourglass in the pyramids.

3. Experimental Body Weight Dependence on the Speed of Rotation of the Rotors and the Oscillation Frequency of Mechanical Oscillators

Professor A.L. Dmitriev conducted measurements of the instantaneous value of the free fall acceleration of a closed container with the rotor of a vacuum mechanical gyroscope fixed in it [6]. A mechanical rotor is a system of micro particles that form a solid body moving rapidly along a circular trajectory. A simple method for estimating the acceleration increments of gravity $\Delta \mathbf{g}_0$ is based on weighing the rotor of a mechanical gyroscope with a horizontally oriented axis of rotation. The rotational movement of the massive rotor is accompanied by centripetal accelerations of the constituent material particles, while the role of external non-gravitational forces acting on the rotor

particles is played by elastic forces. The high-precision weighing of rotors with a large kinetic moment is complicated by the influence of the gyroscopic effect due to the daily rotation of the Earth. This interference is eliminated when weighing a pair of coaxial rotors with oppositely directed and equal in size vectors of kinetic moments. The total kinetic moment of the container being weighed with the rotors installed in it is zero, which eliminates the influence of the gyroscopic effect. Dmitriev proposed a formula the weight **P** of a horizontally oriented rotor in the form of a cylinder with an inner radius $\mathbf{R_1}$ and an outer $\mathbf{R_2}$ is :

$$P = mg_0\left[1-(\alpha_p-\alpha_c)\frac{2\left(R_2^3-R_1^3\right)}{3\pi g_0\left(R_2^2-R_1^2\right)}\omega^2\right] \quad , \tag{1}$$

where

m - is the mass of the rotor ,

ω - is the angular velocity of its rotation,

α_p, α_c - is the dimensionless coefficients. They characterize the degree of influence of external non-gravitational, for example, elastic, forces on gravity [6]

The experiment was performed by Professor Dmitriev using two high-quality evacuated rotors of aviation gyroscopes of the brand HMS-1 installed in a closed heat-insulated container weighing about 1609.845 g and dimensions of 70x70x145 mm. The estimation of the difference of interaction coefficients (α_p-α_c), which in order of magnitude turned out to be close to 10^{-7} (the inner and outer radii of the rotor were, respectively, 15 and 25 mm, the mass of the rotor was about 250 g).

For the oscillation of mechanical oscillators,, when the body mass **m** makes harmonic oscillations under the action of a periodic external force, Professor Dmitriev proposed a formula for determining the weight of the pendulum **P**, averaged over the oscillation period [6]:

$$P = mg_0\left[1-(\alpha_p-\alpha_c)\frac{A\omega^2}{\pi g_0}\right] \quad , \tag{2}$$

where

A - is the amplitude,

ω - is the circular frequency of oscillations.

The quadratic dependence **P** on ω indicates that the effect of the acceleration of external forces on body weight should be significant at high, for example ultrasonic, frequencies of body oscillations. Professor A.L. Dmitriev conducted measurements of the instantaneous value of the free-fall acceleration is fulfilled. At the same time, he found of the variation Δg of the average value of the free-fall acceleration is fulfilled, the sign of Δg being directly determined by the phase difference Θ of oscillations, the acceleration of gravity of the Earth and oscillator. This leads to a significant increase or a decrease in the average gravity acting on the mechanical oscillator from the side of the Earth's alternating gravitational field are possible. Professor AL Dmitriev believes that independent measurements of the high-frequency (the range of hundreds-thousands of Hz) spectra of fluctuations in the acceleration of gravity of the Earth, performed using superconducting gravimeters, will allow us to determine the regimes of matched oscillations of the oscillator, in which changes in its average weight can cause levitation or, on the contrary, a sharp increase in weight. This effect can be the basis for the creation of technical systems to overcome the force of gravity and a new principle of controlling the motion of bodies.

In this regard, I want to recall the historically reliable facts of the levitation of the Italian monk Giuseppe Desa (1603-1663) and the nun from Avila Sister Theresa (1520-1580). Falling into religious ecstasy, both of them repeatedly against their will broke away from the Earth and hovered at an altitude of several meters and above. At the same time, their bodies vibrated with a certain frequency representing an analog of a physical oscillator. Here I would like to note that the same effect today can cause technogenic catastrophes. It was noted experimentally that when the limiting speed of

rotation of the rotors of electric motors and turbines is reached, spontaneous acceleration of the disks occurs in a number of cases and, moving vertically along the axis of rotation, they break from the supports and fly out of the device. A similar accident occurred on August 17, 2009 at the Sayano-Shushenskaya hydroelectric power station. The turbine of the second hydroelectric unit suddenly began to rotate at a hypersonic speed, which led to the

destruction of the fixing bolts, the destruction of the room and the death of 75 people. Witness how Tibetan monks used vibrations from the drums and pipes to raise huge stones to build a monastery on the mountain. Witness this event was Swedish aircraft engineer Henry Kilson, who visited Tibet in the 1930, 20th century. Having pulled a stone about 1.5 meters in diameter the monks piled it into a 15-cm-deep pit. The stone was 100 meters away from the cliffa 400-meter-high. At 63 meters from the stone 19 musicians were standing and 200 monks, located on the radial lines. The angle between the lines was 5 degrees, and in the center of this construction lay a stone. The musicians had 13 large drums weighing 150 kg each. Between the drums six large metal pipes were placed in different places, also turned sockets to the stone. By special command, the whole orchestra began to play and the chorus of monks sang along in unison. After four minutes, when the sound reached its maximum, the boulder began to sway itself and suddenly went up a parabola right on top of a 400- meter cliff. In 2018, Japanese scientists from Tokyo University Yoon Rekimoto, Takayuki Hoshi and Yoichi Ochiei showed the world how using sound waves you can move various small things in space, such as children's blocks, and promised that in the near future they will be able to manipulate objects like this any mass and weight. NASA experts are already interested in this technology.

4. Conclusion

There is no doubt that violation of the equivalence principle is accompanied by a violation of the law of conservation of energy. This fact should be decisive in the methodology of new experiments. In this case, the energy conservation law is performed in an open system with the participation of a quantum vacuum (dark matter). According to the results of new experiments it can be argued that the "geometric" concept of gravity of A. Einstein requires correction. Such factors as oscillation frequency, spatial configuration system and its scale have a greater impact on the violation of the principle of equivalence and require more in-depth research. This effect can be the basis for the creation of technical systems to overcome the force of gravity and a new principle of controlling the motion of bodies.

References

[1] Einstein A. The Collected Papers of Albert Einstein – Princeton University Press (1915)

[2] Stanislav Konstantinov Violation of the Equivalence Principle and the Boundary of Einstein's General Relativity - International Journal of Advanced Research in Physical Science Volume 5, Issue 2, (2018), Page No: 18-24

[3] Hartmut Müller and other, On the Acceleration of Free Fall Inside Polyhedral Structures - PROGRESS IN PHYSICS, Volume 14, Issue 4 (2018)

[4] Shipov G.I. The theory of the physical vacuum. Theory, Experiments and Technologies - Moscow: Science, (1997).

[5] Konstantinov S.I., The cosmological constant and dark energy: theory, experiments and computer simulations, - Global Journals Inc. (US) GJSFR-A, Volume 16, Issue 5, (2016).

[6] Dmitriev A. L. Physical substantiation of an opportunity of artificial change of body weight // Physics Procedia. (2012). Vol. 38, P.150-163.

Citation: *Stanislav Konstantinov, (2019). The Effect of the Form and Violation of Equivalence Principle. International Journal of Advanced Research in Physical Science (IJARPS) 6(7), pp.23-26, 2019.*