Gravitating sphere in near-Earth space and its rotation

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Abstract: The article highlights experiments the Military Space Academy staff named after are considered A.F. Mozhaisky with artificial Earth satellites made it possible to detect an additional gravitating sphere in near-Earth space and her rotation.

Keywords: torsion gravity, satellite, halo of dark matter, effective mass, gravitational potential, time

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1.Introduction

The presence of an additional gravitating sphere in near-Earth space was discovered in experiments with artificial Earth satellites equipped with magnetometers and clocks in 1997. It was possible to detect the rotation of the globe, while the satellite’s velocity relative to the sphere was determined by changing the magnetic field strength. Experiments were carried out at the Military Space Academy A.F. Mozhaisky in the 90s of the 20th century under the guidance of the deputy head of the academy for scientific work, Professor V. Fateev. Discovery of the Earth's rotating ethereal sphere was presented to the scientific community by Academy employees colonels V.L. Groshev and V.B. Kudryavtsev in 1997 [1]. In reports dated November 12 at the workshop of the Physical Society of St. Petersburg and December 10 at the workshop “The Universe” by Professor P.V. Parshina in the House of Scientists in St. Petersburg, the speakers reported that from the analysis of the accumulated scientific data the military is not able to create a satisfactory physical model and seek help from the scientific community so that the necessary theory was created.

2. Torsion gravity

In 1922, the French mathematician E. Cartan put forward a hypothesis according to which the space around a rotating substance must also rotate [2]. Then Riemannian geometry, allowing torsion to take its place in it, will be called the Riemann-Cartan geometry. Currently the theory of torsional gravity of Professor Luca Fabbri is most complete theory describing the dynamics of space-time, since torsion is associated with spin in the same spirit in which curvature is associated with energy [3]. But there is still controversy about the role of torsion other than curvature in gravity, and there may be several reasons for this. The main one was that the success of Einstein's theory of gravity at the beginning of the 21st century was already too great to make anyone think about modifying it. At the beginning of the 20th century spin was not yet discovered, and Einstein, while developing his theory of gravity, adopted the Ricci tensor with zero torsion. When the torsion disappears, the Ricci tensor is symmetric and, therefore, it can be consistently associated with the symmetric energy tensor, realizing the identification between the curvature of space-time and its energy content, expressed by Einstein's field equations [4]. Left side in Einstein's field equation describes the curvature of space-time, while the right side describes the distribution of matter:

$$R\mu\nu - \frac{1}{2}g\mu\nu = \frac{8\pi G}{c^4} T\mu\nu \qquad (1)$$

Where $R\mu\nu$ is the Ricci tensor, $g\mu\nu$ is the event space metric tensor, $T\mu\nu$ is the energy-momentum tensor of matter.

Einstein is talking about free space, which means there is no matter there, not even the

electromagnetic field; consequently, the right-hand side (1) should be zero. The equation is simplified to $R\mu\nu-1/2\ g\mu\nu=0$, which is equivalent to a more concise form $R\mu\nu=0$, which is also known as "The Vacuum Einstein Field Equation" [4]. Now physicists say that they can create a Bose-Einstein condensate and research the physical vacuum. In June 2020, the Bose-Einstein condensate was successfully recreated in Earth orbit on the International Space Station (ISS). It became possible to create all the conditions for the appearance of the quantum fifth state of matter within a few seconds. This was enough for scientists to get an idea of how exactly dark matter moves and why we cannot see and feel it [5]. Last discovery by astrophysicists relatively of the rotation of space-time tissue around a white dwarf in the PSR J1141-6545 binary star system [6], in my theory Torsion gravity is explained by the rotation of the ethereal sphere, formed by the halo of dark matter [7]. The rapidly spinning white dwarf pulls has caused the pulsar's orbit to change its orientation slowly over time. That prediction is a phenomenon known as frame dragging, or the Lense-Thirring effect. This means that space-time will revolve around a massive rotating body, although, of course, it is not space-time at all, but a sphere of dark matter rotating with the star. Experiments have detected frame dragging in the gravitational field of the turning Earth, but the effect is minimal and, therefore, has been challenging to measure. The objects with more powerful gravitational fields, such as white dwarfs and neutron stars, offer better chances of seeing this phenomenon. Lead author Vivek Venkatraman Krishnan, an astrophysicist at the Max Planck Institute for Radio Astronomy in Bonn, Germany, said that the researchers measured when pulses from the pulsar arrived at the Earth to an accuracy within 100 microseconds for nearly 20 years using the Parkes and UTMOST radio telescopes in Australia. This made it possible to detect a long-term drift. Scientists detailed their findings in the journal Science [6]. In my theory Torsion Gravity I introduced a complete environment for modern physics with potential applications wherever spin effects can be significant, from quantum mechanics to elementary particle physics and cosmology [7]. It is necessary to clarify the question of what revolves around galaxies, stars, and planets. Last astrophysical data indicate the ethereal sphere around galaxies, stars and planets is formed by a halo of dark matter [8]. Interplanetary circumsolar plasma environment mainly includes the solar wind, the interplanetary magnetic field, cosmic rays (high-energy charged particles), and neutral gas. This list can be supplemented by a superfluid medium of dark matter, which has the property of gravity and forms halos around galaxies, stars, and planets [5]. Density of dark matter in the vicinity of the Sun was estimated by Professor S. Garbary from the University of Zurich as 0.85 GeV/cm³ $\sim 12\times10^{-25}$ g/cm³. In the same time, the density of baryonic matter is estimated to be 3.8 GeV/cm³ $\sim 50\times10^{-25}$ g/cm³.

In the article I explain the absence shift of interference fringes in the Michelson-Morley experiments of 1881-1887 due to the presence of a halo of dark matter (ether) rotating with the Earth. The device Michelson designed, later known as an interferometer, sent a single source of white light through a half-silvered mirror that split it into two beams traveling at right angles to one another. Leaving the splitter, the beams traveled out to the ends of long arms, where they were reflected into the middle on small mirrors. Then recombined on the far side of the splitter in an eyepiece, producing a pattern of the interference fringes. When the Earth is traveling through an ether medium, a beam reflecting back and forth, parallel flow ether takes longer than a beam reflecting perpendicular ether because time gained from traveling downwind is less than lost traveling upwind, which result in be a delay in one of the light beams that could be a detected when beams were recombined through interference. Slight change spent time would then observed, as a shift in positions interference fringes. If an ether were stationary relative to the Earth, then it would be detected to produce a shift of 4% size single fringe. In the Michelson-

Morley experiment, the light was repeatedly reflected back and forth along the arms of the interferometer, increasing the path length to 11 m. At this length, the drift would be about 0.4 size single fringe. In the both cases, as in all subsequent more accurate experiments, the result was negative, i.e., the absence of a shift in the interference fringes says that there is no ether.

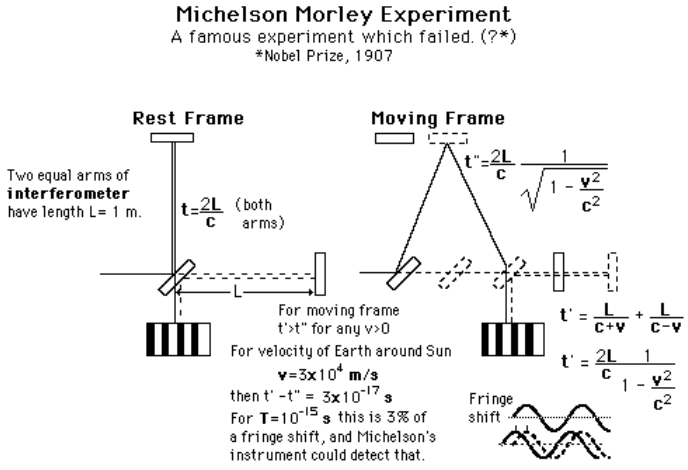

Figure 1. Michelson-Morley experiment

But who says the ether would be at rest on the surface of the Earth? It can move with the Earth like the atmosphere. Astrophysicist Vivek Venkatraman Krishnan proved this on January 30, 2020 and this buried Einstein's Special and General Relativity theory. Just like in the earth's atmosphere, the halo of dark matter rotates counterclockwise with the planet — from west to east. As a result of rotation, it, like the Earth, takes the form of an ellipsoid, that at the equator, its thickness is more significant than at the poles.

In the new cosmological model, the gravitational well described by the spatial curvature of Albert Einstein can be replaced by a gravitational funnel created in the space environment (dark matter) around a rotating celestial body of astronomical dimensions [7] (Fig. 2)

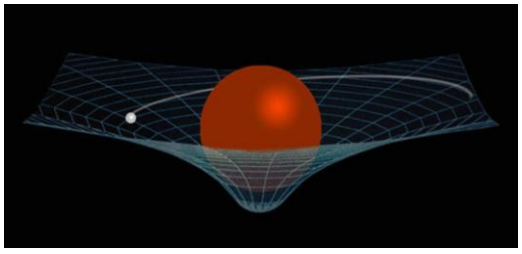

Figure 2*. The gravity funnel*

The stability of the funnel is ensured by its rotation in a magnetic field. For black holes, the magnetic field reaches a monstrous value of 2000 Tesla, for the Sun, the magnetic field reaches 10 Tesla; and for the planet the Earth, the magnetic field reaches $5 \cdot 10^{-5}$ Tesla. Considering all the properties magnetic field in accurate electrodynamics make it possible to detect, in addition to the well-known transverse Lorentz forces, also the longitudinal magnetic field forces rotating black holes, stars, and planets acting at an angle to the axis of rotation of the gravitational funnel [9]. Elastic model of a gravitational funnel lends itself easily to mathematical analysis. "Curvature" of the quantized vacuum (dark matter) when massive celestial bodies are placed in it is associated with two types of deformation: compression and tension, accompanying each other in elastic media as two balancing components. Stability of the funnel is imparted by rotation. If you determine the dimensions of the funnel using space probes and know the mass of the planet and its volume, you can estimate the compression and expansion coefficients of the space environment. It has been experimentally established that the radius of the gravitational funnel of our planet is approximately 900,000 km, and the distance from the Earth to the Sun is 150,000,000 km. The action of the Sun's gravity and the gravity of the planets in the Solar System is differentiated! The planet's gravitational funnels have finite dimensions and do not reach the surface of the Sun. Practice of interplanetary flights shows that there is no smooth transition from the region dominated by solar gravity to the region dominated by planetary gravity. The moment the spacecraft crosses the boundaries of these areas, there is an abrupt change in the "true" speed of the spacecraft. For the correct calculation of interplanetary flight, the "true" rate of the apparatus within the planetary gravitational funnel should be counted only in the planetary- centric frame of reference and in interplanetary space - only in the heliocentric frame of reference. A jump in the speed of the

ship (by tens of kilometers per second) upon entering the gravitational funnel of Mars or Venus is an experimentally confirmed physical effect [10]. Consequence of this jump is an unexpected Doppler shift of the carrier frequency during radio communication with the device and a change in the type of its trajectory. Because of this, a number of Soviet and American vehicles were lost during the first flights to Venus and Mars. Naturally fact of delimiting the gravitational planetary funnels follows from the hypothesis of gravitation, which is based on the excitation of the cosmic environment (dark matter) by bodies of astronomical size.

The torsion theory realized the identification between the curvature of the gravitational funnel in the quantum vacuum (dark matter) and its energy content in the polarization theory of electrogravidynamics of RAS professor V.L. Dyatlov [11] and the identification between torsion and its spin content in the Dirac spinor field theory [12]. Area of quantum vacuum (dark matter), in which energy accumulates, Vyacheslav Dyatlov called a domain. The hypothesis of dark matter in the form of rotating vacuum domains (spinors) allowed Professor Vyacheslav Dyatlov to combine Maxwell's electrodynamics and Heaviside's gravidynamics. It has become possible to determine the energy of a quantum vacuum domain (VD) in electric, gravitational, magnetic and spin fields [11]. Dr. Vyacheslav Dyatlov suggests calculating the energy of a vacuum dipole (VD) as a four-dipole in four areas (E - electric, M - magnetic, G - gravitational, S - spin) in the following form:

$$W = W_E + W_G + W_M + W_S \qquad (2)$$

Where

$$W_E = -\mathbf{d}\mathbf{E}_0;$$
$$W_M = -\mu_0 \mathbf{l}_M \mathbf{H}_0;$$
$$W_G = -\mathbf{d}_G \mathbf{E}_{0G};$$
$$W_S = -\mu_{0G} \mathbf{l}_S \mathbf{H}_{0S}.$$

μ_0,μ_{0G} - magnetic and magnetospin permeabilities

$\mu_0 = 1.257 \cdot 10^{-6}$ m·kg· $s^{-2} \cdot A^{-2}$
$\mu_0 = 1.257 \times 10^{-6}$ m· kg· $c^{-2} \cdot A^{-2}$ $\mu_{0G} = 0.9329 \times 10^{-26}$ m · kg^{-1}

Generally speaking, the fields $\mathbf{E}_0$, $\mathbf{E}_{0G}$, $\mathbf{H}_0$ and $\mathbf{H}_{0S}$ depend on spatial coordinates, but they can be approximately considered constants within the domain. The dipole forces acting on the quantum vacuum domain, guided by the work of Academician Tamm [13], can be determined as follows:

$$\mathbf{F}_{DE} = -\nabla W_E; \qquad (3)$$

$$\mathbf{F}_{DG} = -\nabla W_G; \qquad (4)$$

$$\mathbf{F}_{DM} = -\nabla W_M; \qquad (5)$$

$$\mathbf{F}_{DS} = -\nabla W_S; \qquad (6)$$

where

$\mathbf{F}_{DE}$ is the force acting on the VD as an electric dipole;

$\mathbf{F}_{DG}$ is the force acting on the VD as on the gravitationa

$\mathbf{F}_{DM}$ is the force acting on the VD as on a magnetic dipo

$\mathbf{F}_{DS}$ is the force acting on the VD as a spin dipole (spin

∇ is the gradient operator [11]

The combined theory of Dyatlov's electrogravidynamics and asymmetric continuum mechanics (Cosserat continuum) by Professor V. Merkulov [14] made it possible to explain the nature of tornadoes and tropical hurricanes. A tornado originates from a mother cloud and descends to the earth in the form of a long trunk, inside which the air makes a rapid rotational movement at a speed that sometimes reaches the speed of sound. A Mother cloud, a small tropical hurricane, has a so-called eye, in which there is dead silence, and has a spiral structure. Inner cavity of the tornado has a significantly reduced pressure. Self-luminous formations exist both in a large tornado cloud and in a small tornado funnel. A tornado emits electromagnetic waves,

both in the light range of electromagnetic waves and in the radio range, in the form of high-intensity white noise. Presence of an electric field in a tornado is evidenced by a large number of ball and linear lightning flashes accompanying the tornado. The trunk of a tornado-tornado has a magnetic field corresponding to an electric current of hundreds of amperes. Incredibly intense rotational motion in a tornado-tornado can only be caused by a distributed moment of force. Effect is explained by the fact that the spins of domains (spinors) in a polarized medium of a quantum vacuum in the region of electric discharges, initially oriented arbitrarily under the action of a magnetic field, acquire a predominant orientation in the direction of the area. In the initial state the total angular momentum of all spins was equal to zero, and in magnetic field, it acquired a specific value. In the momentum theorem, this will cause the air masses to rotate in the opposite direction to the spins. In tornadoes and tropical hurricanes there are the physical properties that indicate the presence of vacuum domains (spinors) there. The behavior of vacuum domains in a tornado is entirely identical to the conduct of ferromagnetic domains in the Einstein - de Haas experiments in a constant magnetic field. Spin polarization in the Einstein-de Haas effect is the rotation of the liquid volume at $dS / dt \neq 0$, where S is the total spin of the extracted fluid. Spin polarization of vacuum domains in an electrified thunderstorm atmosphere can suck huge air masses into a terrible whirlpool of tornadoes and tropical hurricanes [14].

3. The results of the experiments and their discussion by the staff of Military Space Academy staff named after are considered A.F. Mozhaisky in near-Earth space

In 2004 researcher V.Kh. Hoteev published the results of experiments the Military Space Academy staff named after considered A.F. Mozhaisky with Earth satellites to detect an additional gravitating sphere in near-Earth space [15]. It was found that in areas of tectonic faults, where there is intense electromagnetic and gravitational energy interaction between the liquid magma of the earth with the near-Earth dark matter halo toroidal luminous vortices with sizes ranging from microparticles to tens of meters (rotators, spinors, hadrons) [1]. The help of magnetometers, it was possible to detect moving vortex quantum spinors in the near-earth medium having the form of tangential cylinders with axes parallel to the axis of rotation of the Earth's. Can be assumed that spheres formed this way should exist around other planets, stars, and, galaxies. The discovery allowed the researchers to amend Newton's law of universal gravitation and propose a new formula for calculating time on artificial Earth satellites instead of the relativistic Einstein-Lorentz formula. When calculating the motion of a spacecraft according to Newton's law of gravitation, it is necessary to consider the additional variable groups of dark matter that forms a globe around astrophysical bodies. When the spacecraft leaves the planet, the position of the center of gravity of the groups in the planetary system the Earth's - dark sphere will constantly shift by the flight of the ship due to dark matter [15]:

$$F = G \frac{(Me+Md)m}{R^2} \qquad (7)$$

where Me is Earth's mass,

Md is a variable, or mass of dark matter in near-Earth space,

(Me + Md) is effective mass,

m is spacecraft mass,

R is the distance between the ship and the system's center of gravity

The presence of a sphere formed by dark matter near the Sun may explain the strange acceleration noted by American scientists when the automatic interplanetary stations Pioneer 10 and Pioneer 11 moved away from the Sun at a distance of more than 20 AU, when the influence of solar radiation practically disappeared Stations Pioneer 10 and 11 were launched in the early 1970s and explored the outer solar system. In 1980, mission scientists noticed that

spacecraft had unexpectedly drifted off course. Spaceships experienced a slightly more potent force of attraction to the Sun than expected, and since their launch, they have drifted off course by hundreds of thousands of kilometers. Radio Doppler data generated by the Deep Space Network with the Pioneer 10 and 11 spacecraft show an anomalous, constant frequency drift that can be interpreted as an acceleration directed towards the sun of magnitude (8.74 ± 1.33) x 10^{-10} m·s^{-2} at distances between 20 and 70 AU (Anderson et al., Phys. ... Rev. D 65, 082004). This is not the only problem regarding the trajectories of distant spacecraft. Galileo, NEAR (sent to the asteroid Eros), Rosetta (to comet Churyumov – Gerasimenko), Cassini, and Messenger (to Mercury) - all of them at different times performed an accelerating maneuver near the earth, using its gravity, to get energy and to accelerate or slow down, and in all experiments the acceleration / deceleration was eccentric, not entirely consistent with the indicators of both Newtonian (which is natural) and Einstein's physics. Voyager 1 and Voyager 2 spacecraft, which in 2012 went even further from the sun than the Pioneers, weren't as helpful as might have been expected in contributing to the investigation of the Pioneer anomaly because of how they are stabilized. Unlike the Pioneers, which are spin-stabilized, the Voyagers have what is known as three-axis stabilization .Results in a more significant greater uncertainty in the spacecraft's theoretical positions. The delay was significant enough to mask any deceleration similar in magnitude to that seen in the Pioneer probes.

In the article "About the Conflicts between the Unitary Quantum Theory and the Special and General Relativity Theories" Professor Lev Sapogin debunked Einstein's theory [16]. Regarding Lorentz's time transformation, in the interpretation of SRT and GR of Einstein, it is represented by the following formula:

$$\Delta ts = te\left(\frac{Us - Ue}{c^2} - \frac{\upsilon^2 s - \upsilon^2 e}{2c^2}\right) \qquad (8)$$

where Us, υs is the gravitational of potential and velocity associated with the satellite;

Ue, υe is gravitational of potential and speed associated with the ground clock.

In the same time Leo Sapogin claims that time does not slow down and does not accelerate in different frames of reference, but simply the speeds of all processes change equally under the influence of a changing gravitational potential. As a result, in near-Earth orbit, on the international space station, high-precision measurements using atomic clocks showed time dilation. In addition to gravity, the rate of nuclear processes is affected by the polarization of the quantum vacuum (dark matter). Satellite experiments conducted at the Military Space Academy A. F. Mozhaisky, made it possible to establish that the course of time depends not only on the gravitational of potential the satellite, namely on the height of its orbit, but also on the angle of inclination of the orbit to the plane of the Earth's equator. It turned out that time does not depend on the relative speed of the satellite and the ground observer, as required by the Einstein-Lorentz formula (8). That is, if the period measured by clocks between known events on the Earth surface is equal to Δte, the same time measured by clocks on the satellite Δts is not determined by the relative speed of the satellite and the ground observer, but, violating relativistic locality, does not depend on the location of the observer and satellite on the geographic map of the earth:

$$\Delta ts = \Delta te \frac{\sqrt{1 - \frac{\upsilon^2}{c^2}(1 - \cos\alpha)^2}}{1 + (Ue - Us)/c^2} \qquad (9)$$

where: υ is the orbital speed of the satellite relative to the Earth's and the sphere rotating with it;

α is the angle of inclination of the satellite's orbit to the plane (magnetic) of the Earth's equator;

Ue, Us is the gravitational potential on the Earth surface and in the satellite's orbit.

4. Conclusion

The article presents the results of studies of near-Earth space, carried out back in the 90s of the last century by the Military Space Academy staff named after are considered A.F. Mozhaisky, which made it possible to detect an additional gravitating sphere in near-Earth space and her rotation. At the same time, researchers found that if the satellite is moving perpendicular to the equator, it will have a maximum speed relative to the outer sphere rotating with the Earth's equal to its orbital speed. The greater the speed of the satellite relative to the sphere, the greater will be the polarization of the space medium forming the sphere and the greater will be its influence on all processes occurring on the satellite, including the time between events [1].. The discovery of Russian scientists went unnoticed by world science and was reopened after 30 years by German astrophysicists relatively of the rotation of a sphere around a white dwarf in the PSR J1141-6545 binary star system [6]

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