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By Stanislav Konstantinov

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I. 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. Using magnetometers, 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. The 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. The discovery of the Earth's rotating ethereal sphere was presented to the scientific community by employees of the Military Space Academy in 1997 Colonels V.L. Groshev and V.B. Kudryavtsev [1]. In reports dated November 12 at a workshop at the Physical or Society of St. Petersburg and December 10 at a seminar by Professor P.V. Parshina "The Universe" in the House of Scientists of St. Petersburg, the speakers reported that from analysis 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.

II. 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]. In this case, Riemannian geometry, allowing torsion to take its place in it, will be called the Riemann-Cartan geometry. Today, "The fundamental theory of torsion gravity" by Professor Luca Fabbri is the most complete theory describing the dynamics of space-time, and since torsion is associated with spin in the same spirit in which curvature is associated with energy [3]. However, there is still controversy about the role of torsion other than curvature in gravity, and there may be several reasons for this. The single most important of these may be that the successes of Einstein's theory of gravity at the beginning of the 21st century were already too great to make anyone think about modifying it. At the beginning of the 20 st century, spin was not yet discovered and Einstein, while developing his theory of gravity, adopted the Ricci tensor with zero torsion, because 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]. The 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. So 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 "Vacuum Einstein Field Equation" [4]. However, now physicists say that instead of studying space, they can create a Bose-Einstein condensate and study the physical vacuum. In June 2020, the Bose-Einstein condensate was successfully recreated in Earth orbit on the International Space Station (ISS) . Only there it was possible to create all the conditions for the appearance of the quantum fifth state of matter within a few seconds, but this was enough for scientists to get an idea of how exactly dark matter moves and why we cannot see and feel it [5]. The last discovery by astrophysicists of the rotation of space-time around a white dwarf in the PSR J1141-6545 binary star system is interpreted by them as a new proof of the correctness of Einstein's theory [6]. 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. It states that space-time will churn around a massive, rotating body, although, of course, it is not

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space-time that rotates, but a sphere of dark matter together with a star. Satellite experiments have detected frame dragging in the gravitational field of rotating Earth, but the effect is extraordinarily small and, therefore, has been challenging to measure. Objects with more powerful gravitational fields, such as white dwarfs and neutron stars, offer better chances to see this phenomenon. Study lead author Vivek Venkatraman Krishnan, an astrophysicist at the Max Planck Institute for Radio Astronomy in Bonn, Germany, told that the researchers measured when pulses from the pulsar arrived at Earth to an accuracy within 100 microseconds over a period of nearly 20 years, using the Parkes and UTMOST radio telescopes in Australia. This allowed them to detect a long-term drift. The scientists detailed their findings in the journal Science [6]. The 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 the in my theory "Torsion gravity" is explained by the rotation of the ethereal sphere, formed by the halo of dark matter [7]. In the theory "Torsion Gravity" I introduced complete environment for modern physics with potential applications wherever spin effects can be important, from quantum mechanics to elementary particle physics and cosmology [7]. Here it is necessary to clarify the question of what revolves around galaxies, stars and planets. Recent astrophysical data indicate that that the ethereal sphere around galaxies, stars and planets is formed by a halo of dark matter [8]. The interplanetary circumsolar plasma environment mainly includes the solar wind, the interplanetary magnetic field, cosmic rays (high-energy charged particles), and neutral gas. Today, this list can be supplemented by a super fluid medium of dark matter, which has the property of gravity and forms halos around galaxies, stars, and planets [5]. The density of dark matter in the vicinity of the Sun is estimated by Professor S. Garbary from the University of Zurich to be 0.85 GeV/cm^3 $\sim 12\times10^{-25}$ g/cm^3. At the same time, the density of baryonic matter is estimated to be 3.8 GeV/cm^3 $\sim 50\times10^{-25}$ g/cm^3.

In the article i will cite bring an exhaustive explanation for the absence of a shift in the 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. Michelson's experiment (Fig. 1*)*, was aimed to detect earth's motion with respect to the fixed ether and it was performed on the surface of the earth. The device Michelson designed, later known as an interferometer, sent a single source of white light through a half silvered mirror that was used to split it into two beams travelling at right angles to one another. After leaving the splitter, the beams travelled out to the ends of long arms where they were reflected back into the middle on small mirrors. They then recombined on the far side of the splitter in an eyepiece, producing a pattern interference fringes. If the Earth is traveling through an ether medium, abeam reflecting back and forth parallel flow ether take longer than beam reflecting perpendicular ether because time gained from traveling downwind less than lost traveling upwind, what result be delay in one of light beams that could be detected when beams were recombined through interference. Any slight change spent time would then observed, as shift in positions interference fringes. If a ether were stationary relative the Earth, then would be detected produce shift 4% size single fringe. In 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 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.

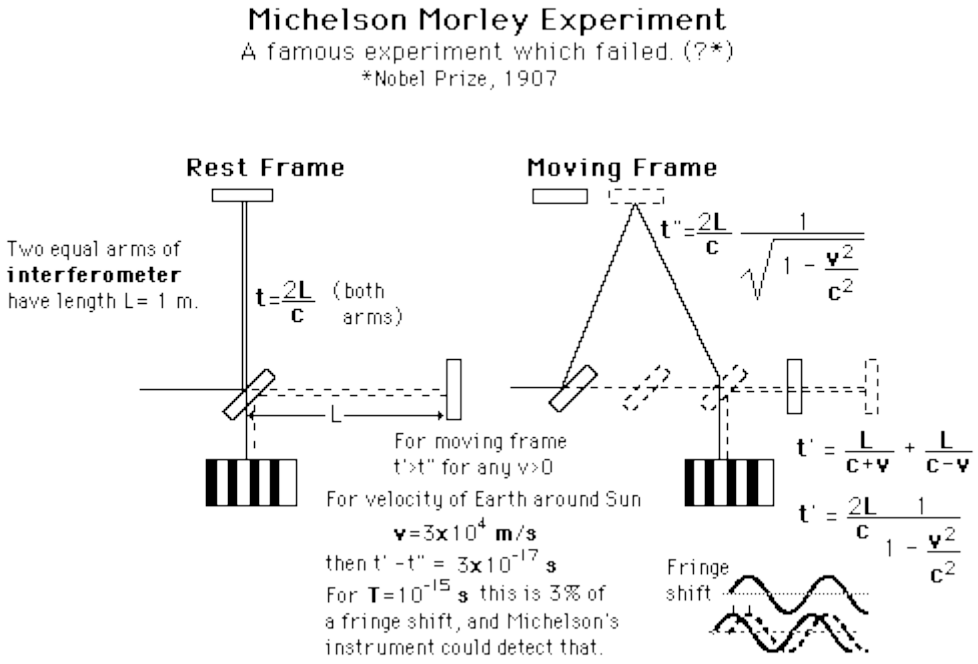

Figure 1: Michelson-Morley experiment

But who says the ether would be at rest on the surface of the earth? He can move with the earth like the atmosphere. Observations astrophysicist Vivek Venkatraman Krishnan have proven this January 30, 2020 and buried Einstein's Special and General Relativity theory. Like the Earth's atmosphere, the halo of dark matter rotates counterclockwise with the planet — from west to east. Due to rotation, it, like the Earth, takes the form of an ellipsoid, that is, at the equator its thickness is greater 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)

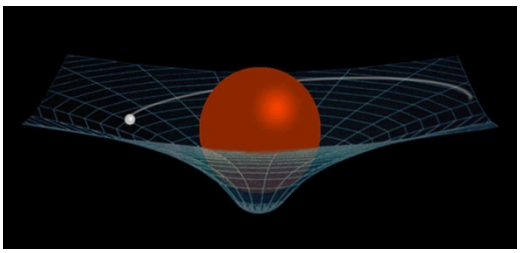

Figure 2: Gravity funnel

The axial rotation of black holes, stars and planets in the dark matter halo is possibly due to the formation of strong magnetic fields around them. So, 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 Earth the magnetic field reaches $5 \bullet 10^{-5}$ Tesla. Taking into account all the properties of the magnetic field in real electrodynamics makes 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]. The stability of the funnel is imparted by rotation. The elastic model of a gravitational funnel lends itself easily to mathematical analysis. Any "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. The stability of the funnel is imparted by rotation. Having determined the dimensions of the funnel with the help of space probes, and knowing the mass of the planet and its volume, it is possible to estimate the compression and expansion coefficients of the space medium. It has been experimentally established that the radius of the Earth's gravitational funnel is approximately 900,000 km, and the distance from the Earth to the Sun is 150,000,000 km. In the solar system, the action of the gravity of the sun and the gravity of the planets are delimited! Planetary gravity funnels have finite dimensions and do not reach the sun. The 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. At the moment the spacecraft crosses the boundaries of these areas, there is an abrupt change in the "true" speed of the spacecraft. Moreover, for the correct calculation of interplanetary flight, the "true" speed 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) when entering the gravitational funnel of Mars or Venus it is an experimentally confirmed physical effect [10]. The 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. For this reason, a number of Soviet and American vehicles were lost during the first flights to Venus and Mars. The fact of delimiting the gravitational planetary funnels naturally 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 spin or field theory [12]. The area of quantum vacuum (dark matter), in which energy accumulates, Vyachislav Dyatlov called a domain. The hypothesis of the existence of an inhomogeneous quantum vacuum (dark matter) in the form of rotating vacuum domains (spinors) allowed Professor Vyacheslav Dyatlov to combine Maxwell's electrodynamics and Heaviside's gravidynamics. This made it possible to determine the energy of a quantum vacuum domain (VD) in electric, gravitational, magnetic and spin fields [11]. Based on this, Dr. Vyacheslav Dyatlov suggests calculating the energy of a vacuum dipole (VD) as a four-dipole in four fields (E - electric, M - magnetic, G - gravitational, S - spin) in the following form:

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

Where

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

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

$\mu_0 = 1.257 \cdot 10^{-6}$ m·kg· s^{-2}·A^{-2}

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

Generally speaking, the fields $\mathbf{E}_0$, $\mathbf{E}_{0G}$, $\mathbf{H}_0$, $\mathbf{H}_{0S}$ depend on spatial coordinates, but they can be approximately considered constants within the domain. Therefore, 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

FDE is the force acting on the VD as an electric dipole;

FDG is the force acting on the VD as on the gravitational dipole;

FDM is the force acting on the VD as on a magnetic dipole (magnetic moment);

FDS is the force acting on the VD as a spin dipole (spin moment)

∇ 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 down 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. The mother cloud, which is a small tropical hurricane, has a so-called eye, in which there is a dead silence, and has a spiral structure. The inner cavity of the tornado has a significantly reduced pressure. Self-luminous formations exist both in a relatively large tornado cloud and in a relatively small tornado funnel. It is known that 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. The presence of an electric field in a tornado is evidenced by a large number of ball and linear lightning flashes accompanying the tornado. It was found that the trunk of a tornado-tornado has a magnetic field corresponding to an electric current of hundreds of amperes. The incredibly intense rotational motion in a tornado-tornado can only be caused by a distributed moment of forces. This 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 field. And if in the initial state the total angular momentum of all spins was equal to zero, then in a magnetic field it acquired a certain value. According to the momentum theorem, this will cause the air masses to rotate in the opposite direction to the spins. Thus, we see in the phenomenon of tornadoes and tropical hurricanes all the physical properties that indicate the presence of vacuum domains (spinors) there. It should be pointed out that the behavior of

vacuum domains in a tornado is completely identical with the behavior of ferromagnetic domains in the Einstein - de Haas experiments in a constant magnetic field. A 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 liquid volume. Such 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].

III. Analysis of Experiments the Military Space Academy Staff Named After is 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 are considered A.F. Mozhaisky with artificial Earth satellites made it possible to detect an additional gravitating sphere in near-Earth space [15]. Academy staff 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 are formed toroidal luminous vortices with sizes ranging from micro particles to tens of meters (rotators, spinors, hadrons) [1]. With 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. It can be assumed that spheres formed in this way, should exist around other planets, stars and galaxies. This discovery allowed researchers to amend the law of universal gravitation of Newton and propose a new formula for calculating time on artificial satellites of the Earth instead of the relativistic Einstein-Lorentz formula. Now when calculating the motion of a spacecraft according to Newton's law of gravitation, it is necessary to take into account and the additional variable mass of dark matter that forms a sphere around astrophysical bodies. When the spacecraft leaves the planet, the position of the center of gravity of the masses in the planetary system Earth - the sphere will constantly shift in accordance with 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 variable mass of dark matter in near-Earth space,
(Me + Md) is effective mass,
m is spacecraft mass,
R is distance between the ship and the center of gravity of the system.

Availability of a sphere formed by dark matter near the sun can explain the strange acceleration, marked by American scientists in removing automatic interplanetary station “Pioneer 10” and “Pioneer 11” from the Sun at a distance of more 20a.e. when solar radiation effects has practically disappeared. Pioneer 10 and 11 were launched in the early 1970s and explored the outer solar system. But in 1980, mission scientists noticed that spacecrafts have unexpectedly drifted off course. Both spaceships experienced a slightly stronger force of attraction to the sun than expected, and since their launch, they have drifted off course by hundreds of thousands kilometer. Coherent 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 $(8.74 \pm 1.33) \times 10^{-10}$ $m \cdot s^{-2}$ at distances between 20 and 70 AU (Anderson et al., Phys. ... Rev. D 65, 082004). But 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”, “Messenger” (to Mercury) - all of them at different times performed an accelerating maneuver near the Earth, using its gravity, in order to get energy and to accelerate or slow down, and in all experiments the acceleration / deceleration was anomalous, not quite consistent with the indicators of both Newtonian (which is natural) and Einstein’s physics. The Voyager 1 and Voyager 2 spacecraft, which in 2012 gone even further from the Sun than the Pioneers, weren't a helpful as might have been expected in contributing to the investigation of the Pioneer anomaly because of the way in which they are stabilized. Unlike the Pioneers, which are spin-stabilized, the Voyagers have what is known as three-axis stabilization. This results in an greater uncertainty in the spacecrafts' theoretical positions. The uncertainty was great enough to mask any deceleration similar in magnitude to that seen in the Pioneer probes.

In the article “The Conflict between the Unitary Quantum Theory and the Special and General Theories of Relativity”, Professor Lev Sapogin criticized Einstein's relativism with devastating criticism [16]. So, regarding the Lorentz transformations, in the interpretation of SRT and GR of Einstein, 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 potential on 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:

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

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

Ue, υe is gravitational potential and velocity associated with the ground chronometer.

That is, if the period of time measured by clocks between known events on the Earth's 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:

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

where: υ is the orbital speed of the satellite relative to the Earth 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 potentials on the Earth's surface and in the satellite's orbit.

If the satellite is moving perpendicular to the equator, it will have a maximum speed relative to the outer sphere rotating with the Earth 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].

IV. Conclusion

The article presents the results of studies of near-Earth space, carried out back in the 90s of the last century the Military Space Academy staff named after are considered A.F. Mozhaisky which discover a near-Earth sphere rotating with the Earth. This discovery of Russian scientists went unnoticed by world science and was re-described after 30 years by Germen an astrophysicists relatively of the rotation of the sphere around a white dwarf in the PSR J1141-6545 binary star system [6].

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