THE LAWS OF ASTROPHYSICS ARE DEFINED BY THE FUNDAMENTAL INTERACTION SYSTEM THERE ARE IN NATURE

Anatoly S. Yurchenko
LLC „Scientific Production Company TEKHOSNASTKA-RTD", Volzhsky, Russian Federation

Abstract: *Due to the fact that humanity has repeatedly experienced various disasters associated with the processes occurring in space, and its influence is indisputable, the relevance of studying the movement of celestial bodies in outer space was laid by anxiety that occurs when the Sun eclipsed or when a comet approached it. The statement of the problem of this work is to show, on the basis of the established Fundamental Interaction System (FIS), which determines the laws of certain processes occurring in nature, how Cosmos affects the present and future of humanity. And which danger most realistically can be expected at any moment. The purpose of this work is to get the opportunity to determine the stage of the process that will determine the probability of danger and reduce it to a minimum by some means or another on the basis of the laws of the FIS. The results of this work make it possible to reveal the errors made by modern theory and to show that the FIS is indeed a System that determines all the processes occurring in space, understanding which will help not only to correctly determine the mechanics of the movement of space bodies in the Solar System but also to change the System of thought, getting rid from false dogmas and double standards.*

Keywords: movement of celestial bodies; space, Fundamental Interaction System, System of thought.

The systematic and fairly strict observations of the processes occurring in the Solar System that are the basis of astrophysics have led to different systems for their evaluation, based on different putative mechanisms and characteristics of the process. For example, in the case of Titius – Bode law, the initial parameter is the distance from the Sun to the Earth,[1] whereas in the works of Butusov[2], the adopted distance from the Sun to Jupiter, although it gave a more accurate description of the process, but left many unresolved questions.

Regarding different points of view on the same process, N. Tesla remarked: "... there will be no harm if the student accepts the wrong point

[1] M. Nieto, *Titius – Bode law: history and theory*, Mir, Moscow, 1976.
[2] K.P. Butusov, "Concerning the cyclicity of solar activity", in *"The Sun, Electricity, Life" of the Moscow Society of Naturalists, Section of Physics*, Moscow State University, Moscow, 1972; K. P. Butusov, "Structural laws of the solar system", in *Proceedings of the Congress – 2004 "Fundamental problems of science and technology. Part II. Series "Problems of Universe Research", vol. 29,* Osipov, St. Petersburg, 2005.

of view, but when many great minds are mistaken, the world pays for such mistakes for a long time"[3].

Faced in their practical work with the existence of such errors, N. Tesla realized that the existing evaluation system does not allow to establish not only the exact mechanics of the processes under consideration, but also "...Understand this great mechanism, discover the existing forces and laws that govern it...". And since the evaluation system of all processes determines not only the foundation of science, but also the entire System of thought, Tesla paid special attention to the issues of accurate assessment of processes. As a result, the tesla was introduced into the SI system.

It is impossible to dispute that the emergence of both the existing System of thought of mankind (the system of thought should be understood as a system of emotional and quantitative assessment of the processes taking place, on the basis of which the laws of religion[4] and science are created) and the Maya civilization is associated with systematic and rather strict methods of analyzing facts about the movement of celestial bodies. Moreover, the various methods used by these civilizations as the basis for observation and research fundamentally changed the assessment of the same process of movement of the planets around the Sun, which affected not only the Systems of Thought of civilizations, but also the accuracy of assessment.

If Maya based their observations on the relative displacement of the Sun and planets based on a system of nested cycles[5], then Kepler, also based on data from strict and long-term observation of the planets, created his own laws[6] on the basis of a completely different assessment of the ongoing process, the nature of which many scientists tried to describe, putting forward various hypotheses.

However, Newton did not begin to deal with these issues and, successfully combining the two experimental laws, he formally described, but did not explain, the nature of "gravity"[7] Without going into the essence

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[3] N. Tesla, *Lectures, vol. 36*, Publishing House "Agni", Samara, 2010.

[4] I.V. Vasenina, V.A. Sushko, "The role of religion in the formation of the family values of youth", in *Astra Salvensis*, 2018, vol. 6, no. 12, p. 451-459.

[5] Yu.I. Cherkasov, "Calendar-chronological secrets of the Maya Indians", in *New Mirror of CHRONOS*. Available at: http://www.hrono.info

[6] J. Kepler, *Astronomia nova*, Voegelin, Heidelberg, 1609; J. Kepler, *Harmonices mundi*, Johann Planck, Linz, 1619.

[7] I. Newton, "Mathematical principles of natural philosophy", in *Proceedings of the Nikolaev Marine Academy*, 1915-1916, vol. IV-V, p. 276-277.

of what nature is, and how the Sun acts on any body that falls into its field, it recorded his famous law of universal gravitation.

$$m \cdot a = F = G\frac{M \cdot m}{r^2} \quad (1)$$

In which to comply with the preservation of the dimensions of the left and right side (balance), he introduced the coefficient G, $m^3/kg \cdot s^2$. Having hidden in this coefficient the nature of the interaction of the Sun and the Planets, Newton carried out an assessment of the cosmic laws of Kepler, without resorting to an initial assessment of the mechanics of the processes taking place. As will be shown later, he initially formally assessed the process, and then later tried to give it and the characteristics a true physical meaning, introduced the coefficient G. As a result, the difference in the accepted characteristics for evaluating the same process of movement of the planets around the Sun led European civilization to a completely different System of thought.

However, the essence of these Systems of thought was fixed in experimental observations.[8] Therefore, after understanding the assessment systems adopted by the Maya civilization and the existing SI system, the following work will show how Maya completely computed the duration of different nature cycles for a modern science, but also recorded the law that our civilization calls law of conservation of energy.

In other words, the importance of the adopted system for assessing the processes occurring in nature and the adopted dimension of the characteristics are of decisive importance for the correct understanding of the mechanism of the process under consideration and for the entire System of thought that forms one or another civilization. All this led to a parallel, incomprehensible for us, system for evaluating the same processes, with highly accurate knowledge concentrated in the Mayan Calendar. Therefore, only after the establishment of the Fundamental Interaction System, existing in nature[9], was it possible to assess the capabilities of various assessment systems and in the next article[10] to show

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[8] Yu.I. Cherkasov, "Calendar-chronological secrets of the Maya Indians", in *New Mirror of CHRONOS*. Available at: http://www.hrono.info; J. Kepler, *Astronomia nova*, Voegelin, Heidelberg, 1609; J. Kepler, *Harmonices mundi*, Johann Planck, Linz, 1619.

[9] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

[10] A.S. Yurchenko, *Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System.*

the possibility of decoding the Mayan Calendar with the aim of using the knowledge of ancient civilization.

Methodology

But in order to understand and accurately describe all the processes occurring in the fields of the Sun and the Earth, and at the same time answer many questions to which the existing System of Thought defines the paradigm laid, including, the basis of astrophysics, cannot answer, we had to analyze the characteristics adopted by the existing theories[11], and to show that the unity of nature lies in the Fundamental Interaction System (FIS), laid by nature in the basis of "all that exists". Whereas, to establish FIS, Newton only needed to transform his equation (1) as

$$m \cdot a \cdot r^2 = F \cdot r^2 = G \cdot M \cdot m \quad (2)$$

using the known dimensions of the characteristics in the left part of the equation, to come to the conclusion that all processes in the field of the Earth and in the field of the Sun proceed at the level of balance with the dimension of the electric charge, defined by the FIS as

$$m \cdot a \cdot r^2 = F \cdot r^2 = q, \; kg \cdot m^3 / s^2 \quad (3)$$

and different from the dimension adopted by Coulomb ($kg^{\frac{1}{2}} \cdot m^{\frac{3}{2}} \cdot s^{-1}$).

Results and discussion of the possibilities of using FIS

In this case, neither Newton nor Coulomb would need to consider the processes they are investigating at the level of the balance of forces, and the development process of System of Thought would not allow introducing various assumptions and accept various dogmas in almost all fields of science. Therefore, starting with Newton's law of universal gravitation, in the theories of Gravity, Hydraulics, Electromagnetism, Quantum Mechanics, Astrophysics, and other sciences, deviations from

11 A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008; A. S. Yurchenko, "Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System"; A. S. Yurchenko, *Combined theory of physics. Volume I, II.*

the FIS were made that made mistakes that distort the understanding of the mechanisms considered by these theories of processes.

The elimination of some errors, for example, in Hydraulics led to the theoretical derivation of the viscosity equation[12], the creation of the Mathematical Model (MM)[13] of Newtonian and non-Newtonian fluids. However, as practice has shown, the existing System of thought is so "numb" in the format chosen by Newton that even the results of a more accurate and complete description, including "anomalous phenomena", are not perceived by the existing System of thought. One of the areas of science where can be most clearly demonstrated the successes achievable through the use of FIS is astrophysics because in this area of science those contradictions that could be discovered and described with the help of FIS are more clearly laid out. And the first of these lies in the fact that the formal equations used to describe the motion of planets in orbits are completely inapplicable to describe the trajectory of motion of the Comet, thrown away by the Sun or irretrievably leaving the Sun. And also for questions concerning the impact of protuberances on the motions of the planets in their orbits, their influence on the processes occurring in the field of the Earth. And how are these processes associated with the movement of the earth's crust and other phenomena resulting from the introduction of a colossal electromagnetic charge in the field by a prominence.

It was FIS that made it possible to show that contradictions arise because astrophysics was based on a mechanism that only formally reflects the interaction processes in the Earth field and differs from the mechanism operating in the Sun field. The analysis of the original Kepler and Newton laws in[14] led to the need to reassess the basic tenets of theoretical physics, and with it the law of planetary motion around the Sun, based on the pressure balance with its surface density characteristics,

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12 A.S. Yurchenko, A.A. Yurchenko, "Theoretical conclusion of newtonian viscosity equation – a new step in knowledge of human properties", in *XIII interregional scientific and practical conference "Interaction of enterprises and universities – science, manpower, new technologies" (Volzhsky, May 17, 2017): conference report collection*, Polytechnical Institute (Branch) of the Volgograd State Technical University, Volgograd, 2017, p. 172-177.

13 A.S. Yurchenko, "Mathematical model of Newtonian and non-Newtonian fluids. Advances and applications in fluid mechanics"; A.S. Yurchenko, "Mathematical model (MM) of a liquid in the light of dissipative heating meachanism manifestation and other properties of the matter", in *Periodico Tche Quimica*, 2018, vol. 15, Special Issue 1, p. 27-40.

14 A.S. Yurchenko, "Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System".

ρ, kg/m^2 and acceleration, a, m/s^2, determining the dynamics of the field, manifested in the form of the Solar Wind (SW). The action and mechanics of which was considered in the work[15].

Here it is immediately necessary to clarify that Newton, equating, on the one hand, the resultant force $F_u = m \cdot a$ of the inertial process of motion with some kind of acceleration $a = \vartheta^2 / r_{c-n}$ of the planet's mass m_n, and on the other hand, in some inexplicable way, the gravitational force constantly acting through space at the same distance r_{c-n}, defined as $F_\Gamma = G \cdot M_c \cdot m_3 / r_{c-n}^2$, thereby tacitly accepted the equivalence of the dynamic mass expended by the field of the Sun $m_Д = \rho \cdot S$ on the balance with the inertial mass of the Earth. Assuming that this balance is carried out on the surface of the Earth $S_3 = 4\pi R_3^2$, m^2 at a distance of R_3 from its center, into which the action of force is transferred.

To accept this equivalence, he was forced by the law of Galileo, which consists in the fact that all bodies near the surface of the Earth, regardless of the inertial mass m, fall on the mass of the Earth *M* with the same acceleration

$$a = g = G \cdot \frac{M_3}{R_3^2} \cdot \frac{m_u}{m_{гр}} = Const \quad (4)$$

Thus, the equivalence of masses ($m_u / m_{гр} = 1$), legalized in science by both Newton and Einstein[16], eliminated the understanding that the Sun actually creates a SW, which has dynamics defined as its speed ϑ^2, and by its acceleration $a = \vartheta^2 / r$, depending on the nature of its propagation in space, carries the mass of the field. The result is that the field of the sun has energy directed from it. And all the processes occurring in the field of the Sun determine both the spiral-forming character of SW and the trajectory of the movement of the planets or any body falling into the field of the Sun.

In[17], the physical essence of the interaction between the Sun and the planets was shown, which established the relationship of SW with the

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15 A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

16 A. Einstein, *Collection of scientific works*, Nauka, Mjscow, 1965.

17 A.S. Yurchenko, "Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System".

movement of the planets in their orbits, and carried out calculations to determine the position of the planets on the SW spiral.

However, in order to focus attention on some issues that scientists could not explain by putting forward different hypotheses, we will construct a diagram of the spiral trajectory SW, presented in Figure 1, explaining the essence of the process.

To build the Archimedean spiral on a scale of $1:10^{10}$, we express the speed of light as $c = k = 3$ *cm*. Next, draw a circle with a radius of *3 cm* from the center O (Fig. 1). We divide it by points b_0, b_1, b_2, b_3 … by an arbitrary number (for example, $n = 20$) of equal arcs. On the Ob_0 ray, we postpone the segment $OA = 2\pi k$ (the pitch of the spiral is equal to *18.84 cm*). We divide it by the same number of equal parts ($2\pi k / 20 = 18{,}84 / 20 = 0{,}942$, *cm*). On the rays Ob_1, Ob_2, Ob_3... we postpone segments equal $OD_1 = 1 \cdot OA / n$; $OD_2 = 2 \cdot OA / n$; $OD_3 = 3 \cdot OA / n$ … as a result, we obtain points D_1, D_2, D_3 … of the first turn of the spiral. We will get the points of the second coil of the helix, laying aside on the continuations of the segments OD_1, OD_2, OD_3 … the segments equal to the pitch of the spiral OA. Similarly, we obtain the points of the next turns.

The tangent at an arbitrary point, for example, the D_4 helix (Figure 1) is obtained from the direct OD_4 by turning the latter to the acute angle OD_4N, for which the tangent of the angle alpha, is defined as

$$tg\alpha = ON/OD_4 \quad (5)$$

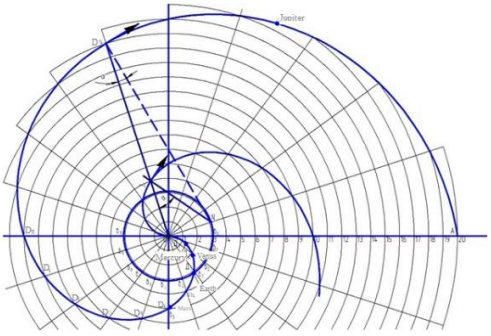

Figure 1: Diagram of the spiral trajectory
of the SW and the distribution of the planets in orbits

At the same time, the normal D_4N, drawn through the point D_4 of the Archimedean spiral, intersects the straight line ON perpendicular to the polar radius OD_4 at the point N, separated from O at the distance $ON = a / 2\pi = k$. Then, based on the construction of a spiral, for planets

removed at different distances from the center of rotation (Sun), when $OD = r_{c\text{-}n}$ corresponds to the distance to the planet, the alpha tangent is determined according to (5) and for different planets will be:

$$tg\alpha = 3/580 = 0{,}005172\text{, where the angle } \alpha = 0{,}296354\ ^\circ/s$$
$$tg\alpha = 3/1080 = 0{,}002772\text{, where the angle } \alpha = 0{,}159154\ ^\circ/s$$
$$tg\alpha = 3/1495 = 0{,}002006\text{, where the angle } \alpha = 0{,}114874\ ^\circ/s$$
$$tg\alpha = 3/2279 = 0{,}001316\text{, where the angle } \alpha = 0{,}075422\ ^\circ/s$$

As can be seen from the data obtained, the shoulder *ND* is perpendicular to the vector of the velocity SW of each planet on a spiral when the planets are removed, turning less and less angle α. At the same time, the duration of time during which point *D*, moving with the speed of light in a straight line, rotating evenly around the center, will reach one or another planet:

$$t_n = r_{c-мер}/c = 58{,}0\cdot 10^9/3\cdot 10^8 = 193{,}33\ s$$
$$t_n = r_{c-вен}/c = 108{,}0\cdot 10^9/3\cdot 10^8 = 360{,}00\ s$$
$$t_n = r_{c-зем}/c = 149{,}5\cdot 10^9/3\cdot 10^8 = 498{,}33\ s$$
$$t_n = r_{c-мар}/c = 227{,}9\cdot 10^9/3\cdot 10^8 = 759{,}66\ s$$

A straight *OD* will turn at an angle equal to one radian:

$$0{,}296354^\circ\cdot 193{,}33 = 57{,}29^\circ$$
$$0{,}159154^\circ\cdot 360{,}00 = 57{,}29^\circ$$
$$0{,}114874^\circ\cdot 498{,}33 = 57{,}29^\circ$$
$$0{,}075422^\circ\cdot 759{,}66 = 57{,}29^\circ$$

that is from one full turn in relative units *57,3° / 360° = 0,15913*.

In this case, the velocity of the SW at the location of the planet on the spiral can be determined according to the following expression

$$c = 2\pi\cdot r_{c-n}\cdot 0{,}15913/t_n = 0{,}999 r_{c-n}/t_n \quad (6)$$

Which reflects a very important for understanding the mechanics of the process that the SW velocity vector with increasing r_{c-n} turns around

along the generator of the spiral (Figure 1. The vector at points D_4, D_{14}), maintaining the speed of propagation of the field in a spiral constant and equal to the speed of light *c*.

A similar result is obtained when the process is evaluated in dynamics, i.e. when the tangent of the angle alpha is determined in time equal to one second.

Accordingly, it is estimated in °/*c* and the angle of rotation, which in relative units of a full *360°* rotation for each distance r_{c-n} will be

$$0{,}296354° / 360° = 0{,}0008232\ ,\ 1/s$$
$$0{,}159154° / 360° = 0{,}0004421\ ,\ 1/s$$
$$0{,}114874°° / 360° = 0{,}0003191\ ,\ 1/s$$
$$0{,}075422° / 360° = 0{,}0002095\ ,\ 1/s$$

Then, in one second, the planet at a distance of r_{c-n}, from the Sun, the field runs at a speed:

$$c = 2\pi \cdot r_{c-n} \cdot \alpha / 360° \quad (7)$$

and for each planet will be:

$$2 \cdot 3{,}14 \cdot 58{,}00 \cdot 10^9 \cdot 0{,}0008232 = 2{,}99 \cdot 10^8\ ,\ m/s$$
$$2 \cdot 3{,}14 \cdot 108{,}00 \cdot 10^9 \cdot 0{,}0004421 = 2{,}99 \cdot 10^8\ ,\ m/s$$
$$2 \cdot 3{,}14 \cdot 149{,}50 \cdot 10^9 \cdot 0{,}0003191 = 2{,}99 \cdot 10^8\ ,\ m/s$$
$$2 \cdot 3{,}14 \cdot 227{,}90 \cdot 10^9 \cdot 0{,}0002095 = 2{,}99 \cdot 10^8\ ,\ m/s$$

Thus, the equation of the spiral rotation of the field, taking into account the kinematic characteristics, will be written as follows:

$$r = c \cdot t \quad (8)$$

where *r*, *m* – radial movement from the center (the Sun) with a constant speed of light *c*, *m/s* for some time *t*, *s*.

In other words, the Wind emitted by the Sun, propagating in the radial direction with the speed of light, simultaneously moves in a spiral also with the speed of light. Moreover, as the distance increases $r \to \infty$, the angle alpha decreases more and more, and distant planets more and more "lie on its side".

In addition, the above construction of the SW spiral has made it possible not only to explain this effect, but also to show that, running onto the planets, the solar radiation field has two vector components that ensure the repulsion of the planet from the Sun and its orbital motion. Answering not only the question about the force that causes the planets to move around the Sun, but also explaining a number of other questions that the current theory of answers does not yet give.

It should also be noted here that the same angle of rotation of the arm *OD*, equal to one radian of *57.3°* for planets differently distant from the Sun, is not achieved simultaneously! Thus, it turns out, despite the fact that the speed along the spiral generators of the field at each point remains constant, there appears a speed of relative displacement between the branches of these spiral generators, which determines the direction and speed of rotation of the planets themselves.

At the same time, it is necessary to once again focus on the fact that equation (4) adopted by modern theory for describing processes in the Universe despite the fact that Newton did not substantiate the nature of the transfer of "action at a distance", but only on the basis of a formal description directed Gravity to the Sun itself is speculative. Since it is based on a model of a stone rotating around a center on a rope, where the representation of the long-range Gravitational force is provided by the rope. If gravitational attraction in the form Newton had given us in the Sun's field, due to the force of gravity, the Sun would not only tear the Moon from the Earth, but also destroy the Earth, the Moon, and all the planets. All this is confirmed by elementary calculations, including those given in[18]. However, a sober calculation is rejected under various pretexts, and speculation on the so-called equation controlling the dynamics of the Universe (4), taking into account the conclusions that the propagation velocity of gravity ϑ in the acceleration equation $a = \vartheta^2/r$ tends to the speed of light c, leads to the construction of the so-called mechanical model of the Universe and the resulting gravitational Schwarzschild radius[19]:

$$r_\Gamma = 2M \cdot G/c^2 \quad (9)$$

[18] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

[19] K. Schwarzschild, "On the gravitational field of point mass in Einstein's theory", in *Albert Einstein and the theory of gravity*, Mir, Moscow, 1979, p. 199-207.

distorting the real physical meaning of the process of interaction between the planets and the Sun and "resulting in the existence of black holes, twisting space and devouring time". At the same time, the accepted model of the mechanism acting in the Sun field cannot reflect many other real processes and phenomena, for example, associated with different entrance and exit of comets in the Sun field and their transfer by the Sun field, when some of them are discarded, while others go beyond the Sun and do not return.

Whereas the change in the direction of acceleration on the reverse, determined by the radiation of the sun, leads to a dedicated center of radiation of energy forming the solar wind. The properties and distribution principle of SW in the surrounding space, considered in[20], made it possible to explain the different mechanics of phenomena occurring both in the Sun field and in the Earth field, showing that the mechanism of action of these fields is different. Therefore, to understand the difference in these mechanisms, it was necessary to reassess the basic postulates of theoretical physics in its entire format, starting with Newton's theory of gravity, Euler's equations of motion, Einstein's Theory of Relativity, Electromagnetism and Quantum Mechanics, showing that the laws and these theories were determined by FIS. In this paper, we apply the equations obtained in[21], relating only to questions of astrophysics.

At the same time, among other things, we showed that Newton, not fully comprehending Kepler's research, stated that Kepler's law proves the existence of some quantity in the Sun field, which he called "mass that is preserved in planetary motions" ($M = Const$), which does not change its value as it passes through different spheres formed in the orbits of the planets' rotation. In this case, this mass should be distributed in space with variable, both bulk and surface density, intersecting these spheres. Therefore, this mass should in no way be enclosed in the visible sphere of the Sun, determining its mass.

In reality, the value of this mass is transferred to the SW field emitted by the Sun, and only.

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[20] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008; A.S. Yurchenko, "Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System"; A.S. Yurchenko, *Combined theory of physics. Volume I, II.*

[21] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

Partially, this mechanic was revealed in[22], where it was also shown that the Sun, besides radiating a constant Mass, carries it in a constant dynamic volume

$$V = a_n \cdot r_{c-n}^2, \; m^3/s^2 = Const \quad (10)$$

In determining the value of which mass is not taken into account. And as can be seen from equation (10), the value of this dynamic volume does not change with the passage of any equipotential sphere, and it can be determined without knowing the mass value (which allowed Newton to neglect it, considering it to remain in planetary movements $M = Const$) nor the value $G = Const$, but only from the values of the variables a_n and r_{c-n}, calculated from astronomical observations for any planet. In this case, the reference value of the emitted volume, determined according to (10), is:

$$V_\partial = a_n \cdot 4\pi \cdot r_{c-n}^2 = 1667{,}6 \cdot 10^{26} \; m^3/s^2 = Const \quad (11)$$

and keeps its value constant for all planets, which is easy to check.

Therefore, Newton's equations only formally describe Kepler's laws, allowing for errors in the evaluation of the physical essence of the processes taking place. And no matter how unusual it seems from the position adopted by Newton's dogma that acceleration in the sun's field is created by gravity, the opposite follows from this equation: the acceleration of the SW field carrying some mass creates a force $F = m \cdot a$. Therefore, the force itself does not exist in the field of the Sun. And this means that the laws of Newton in the field of the Sun do not work. The masses are not gravitating. There is no gravity, and the force is created only in the process of action on the mass of the SW, spreading in space with some kind of acceleration:

$$a_n = V_\partial / 4\pi \cdot r_{c-n}^2 \quad (12)$$

which, at a constant value of the dynamic volume radiated by the Sun, $V_D = Const$ will change only as a function of the distance change r_{c-n}^2. Then, rewriting equation (12), the defining acceleration value as

[22] *Ibidem.*

$$a_n \cdot r_{c-n}^2 = V_o / 4\pi = Const \quad (13)$$

and assuming that $V_o / 4\pi = V` = Const$, we get the parabola equation for a particular case of motion in the Sun field, when the SW is determined by the value $V` = V_o / 4\pi = Const$.

$$a \cdot r^2 = V` = Const \quad (14)$$

Considering the construction of a parabola proposed in[23] (Figure 2) as a graph of the equation defining the locus of the points *M* equidistant from the focus *F* and the director *PQ* of the parabola, reflected by the equality

$$FM = KM \quad (15)$$

Attention should be paid to the fact that the direction from *O* to *F* is taken as a positive direction. In this case, all rays from director *PQ* to the parabola and further to the focus *F*, in which the Sun is located, fully correspond to the mechanics of gravitational attraction. But contrary to reality, only the choice of a positive direction.

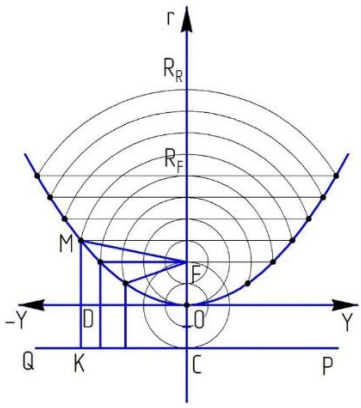

Figure 2: Parabola construction scheme

It is necessary to note that the so-called parabola parameter $FC = p$, as well as the dynamic volume $V`$, remain the same for all cases of equality, including when equality (15) is defined as $FO = OC = p / 2$. And so as the

[23] M.Ya. Vygodsky, *Handbook of higher mathematics*, Astrel, Moscow, 2003.

dynamic volume $V_o = Const$ according to (11) is determined by the product r_{c-n} and a_n, then it is their ratio that determines the position of *M* on the parabola symmetrical with respect to the direction of the axis of movement of the *FC* beam of rays. And with our choice of the coordinate system is the axis of ordinates 0-r_{c-n}, where the point 0 was called the vertex of the parabola, which is taken as the origin (Fig. 2).

Moreover, from the construction of the parabola as well as from the construction of the spiral SW, it follows that the parameter *FC* is the decisive quantization value of the distance *FR* to the points at which the value *M* is determined, corresponding to field acceleration a, decreasing according to (14) with increasing radius of equipotential spheres (Figs. 1 and 2).

Indeed, taking into account that the constant dynamic volume $V_D = Const$ transfers the missing field mass, the parabola equation (13) when multiplying both its parts by the mass *M*, leads to the FIS, which I discovered when analyzing Newton and Kepler's laws

$$M_3 \cdot a_3 \cdot 4\pi \cdot r_{c-3}^2 = Const = M_3 \cdot V_3,\ kg\ m^3/s^2 \quad (16)$$

It is characteristic that even mathematics, which is considered an abstract science, tells astrophysicists the correct mechanics of moving comets in a parabola. It is only necessary to correctly estimate the direction of movement (towards the center of *FO* or from the center of *OF*). If the direction from the center *OF* is taken as the positive direction of the force, then equation (17) is reflected by a graph of parabolas that are turned downwards toward the Sun (Fig. 3).

$$ax^2 = y \quad (17)$$

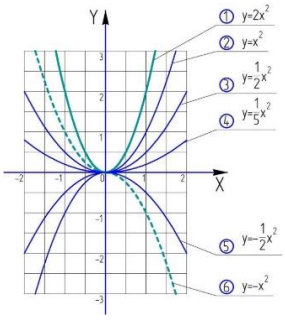

Figure 3: Scheme reflecting the change in the field acceleration depending on the choice of the coordinate system vector

Parabolas with a decreasing acceleration of masses approaching the Sun due to an increase in resistance SW, are located above the axis *OX*). Parabolas with increasing acceleration, are directed by concavity in the opposite direction (Fig. 3, parabolas 5 and 6).

As a result, a comet with some mass *m*, bounded by a surface $S = 4\pi R_к^2$, entering the field of the Sun with some speed $\vartheta_к$, possessing kinetic energy $E_к = m_к \cdot \vartheta_к^2$, will be inhibited by the oppositely directed energy of the field of the Sun.

Therefore, it is necessary to consider this interaction process at the level of their energy balance (taking into account both the angle of approach to the SW spiral and the values of the variables *ρ* and *a*), written, for example, for the simplified case of

$$m_к \cdot \vartheta_к^2 = E_к = E_n = \rho_c \cdot a_c \cdot S_к \cdot r_{c-к} \quad (18)$$

Solving this equation only when taking into account the different values of variables, we get a series of parabolas located above the axis *OX* (Fig. 3, parabolas 1–4), the character of which is determined by both the value and the direction of the vector *a*. The smaller the absolute value of *a* (in Fig. 3, we have *a = 2*, *a =± 1, a =± 1/2 a = 1/5*), the closer the focus is to the vertex, the greater is the "width" of the parabola. From which it follows: the greater the acceleration of the SW field, the more distant the comet will be rejected from the Sun, and the more pronounced the trajectory of its movement in the Sun field.

Considering the mechanics of the field from the standpoint of energy balance, it is always necessary to remember that the trajectory of the body and its character determines both the absolute value of all characteristics included in equation (18) and their possible change in the process of moving along its trajectory. For example, it was shown above how the value of the acceleration a_c, created by the radiation of the Sun, affects the distance from the top of the parabola to the Sun. Therefore, it is necessary to understand that the energy balance $E_к = E_n$ is reached at the distance $r_{c-к} = R_c + h$, at which the top of the comet was recorded, which characterizes both the velocity value $\vartheta_к$, and the energy of the comet $E_к = m_к \cdot \vartheta_к^2$ or planet.

Accordingly, with a constant mass of the comet $m_к = Const$, you can determine the speed of the comet at the top of the parabola, the value

of which can be calculated from the energy balance (18) after conversion to the following form

$$\vartheta_к^2 = P_c \cdot S_к \cdot r_{c-к}/m_к = F_{c-к} \cdot r_{c-к}/m_к \quad (19)$$

where $P_c = \rho_c \cdot a_c$ – the pressure of the solar field on the surface of comet $S_к$ creates a force $F_{c-к} = P_c \cdot S_к$, that repels the comet and changes with distance r_{c-n} due to changes in density $\rho_c = M_c/4\pi \cdot r_{c-n}^2$ and acceleration $a_c = V/4\pi \cdot r_{c-к}^2$.

And since the increasing pressure of P_c on the surface of comet $S_к$ as it approaches the Sun creates an increasing value of the braking force of the comet by the field of the Sun

$$F_{c-n} = P_c \cdot S_к = \rho_c \cdot a_c \cdot S_к \quad (20)$$

then, after reaching the energy balance (18), the field of the Sun, like a compressed spring, can throw the comet to one side or the other or leave it "swing" in this orbit, approaching or moving away from the Sun under the influence of prominences.

Thus, the nature of the movement of a comet along a particular trajectory will determine the ratio of the speed of a comet at its top $\vartheta_к$ to the velocity vector of field $\overline{\vartheta_c}$ ($\vartheta_к/\overline{\vartheta_c}$) at the same point of the field. As can be seen, upon the transition of comets through the *Y* axis (Fig. 3), the trajectory curves are most strongly inclined to this *Y* axis; This means that the trajectory at the apex is not curved, and the change in speed (and hence acceleration) is zero, and the speed $\vartheta_к$ is maximum.

Then, in the case when the speed of comet $\vartheta_к$ is greater than the speed of the field of the Sun at the top of the comet, the field of the Sun will approach the comet, for example, along the left branch of the parabola 1 (Fig. 3), reject the same right branch of the parabola. If the speed of the comet at the apex is less than the speed of the field of the Sun ($\vartheta_к < \vartheta_c$), then the comet of the Sun along the left branch of the parabola 2 will capture and throw away along the right branch of the parabola 6 (Fig. 3).

If the incoming body or comet at the top of the parabola will have an equal velocity value $\vartheta_к = \vartheta_c$ at the balance of energies $E_к = E_n$, then the comet will replenish the asteroid family by taking its place in the asteroid field, and the planet will take its orbit in accordance with the

energy balance. This suggests a new model of the formation of the Solar System and, in general, change the concept of many phenomena.

Whereas, the existing theory of astrophysics cannot answer all the questions discussed above from the standpoint of the uniform mechanics of the solar field. Also, as well as on a number of other issues related, for example, to the nature of the formation of the spiral arms of Galaxies, determining the mass of any body moving in the field of the Sun, its speed and position.

Therefore, it is once again necessary to pay attention to the fact that the FIS, which we established when have analyzed the laws of Kepler and Newton, allows us to show that the dynamic processes occurring in the solar field determine not only the nature of the trajectory of motion of various bodies, but make it possible to calculate, for example, the speed of the planets in orbits depending on the dynamic volume emitted by the Sun $V_д = 1667{,}4 \cdot 10^{26}\ м^3/с^2$ and the distance $r_{с-п}$ to the planet.

$$\vartheta_{орб} = \sqrt{V_д / 4\pi \cdot r_{с-п} \cdot 10^8} \quad (21)$$

In addition, the same equation (21) allows us to determine the initial velocity $\vartheta_{н.св.}$, propagating in the space of the sphere of the surface of the Sun. The value of which we obtain, substituting in equation (21) instead of $r_{с-п}$ the radius of the solar disk $R_с = 7 \cdot 10^8\ м$.

$$\vartheta_{н.св.} = \sqrt{1667{,}4 \cdot 10^{26} / 4 \cdot 3{,}14 \cdot 7 \cdot 10^{16}} = 435{,}5\ км/с$$

Next, calculating the value of the SW velocity vectors on equipotential spheres, whose radius is quantized relative to the Sun's radius ($r_{сф} = n \cdot R_с$), according to this equation, we plot the velocity vectors $\vartheta_{св.}$ at different distances from the Sun, including the orbits of rotation of several planets (Fig. 4).

Considering the scheme for changing the initial velocity $\vartheta_{н.св.}$, it becomes clear that with increasing radii of equipotential surfaces, the constant value of the radiated energy dissipates in space, and the velocity of the field in the spiral arm with increasing distance $r_{с-п} = n \cdot R_с$ decreases according to a parabolic law (Fig. 4) in accordance with the established mechanism the dynamics of the field of the Sun.

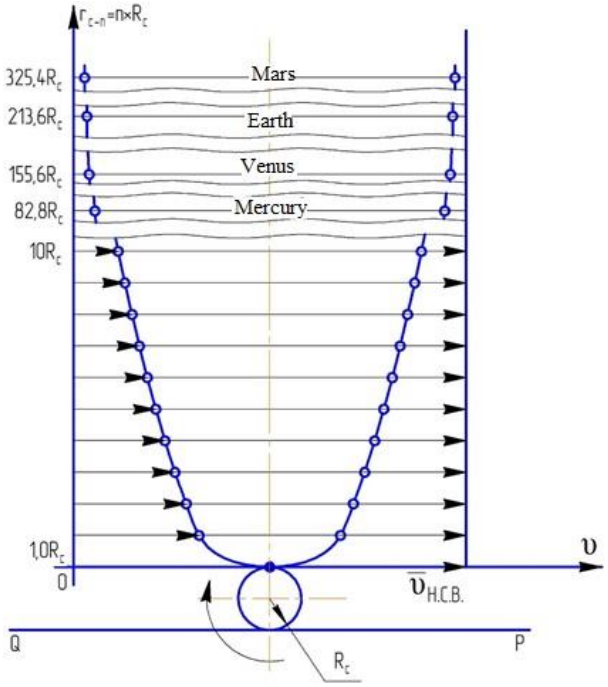

Figure 4: Diagram of the change in the value of the velocity vector $\overline{\vartheta_н}$ depending on the distance $r_c = n \cdot R_c$

And the fact that the calculated values of the resulting velocity vectors on the orbits of the planets coincide with their experimentally determined values confirms that the planets due to the balance of energies and velocities were captured by the Sun's field into their orbits, and disturbing this balance, for example, by atomic bomb explosions is very dangerous. In conjunction with the protuberances, this at least threatens the movements of the earth's crust. And at most – an imbalance of energy and deviation from the orbit.

In addition, the carried out quantization of the energy of the solar radiation field by R_c in[24] made it possible to show that the value of the velocity vector SW at a given distance $r = n \cdot R_c$ can be determined according to the following equation

$$\vartheta_r^2 = \vartheta_н^2 \cdot 1/(1+n) \quad (22)$$

[24] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

or

$$\vartheta_{орб} = \sqrt{\vartheta_н^2 / (1+n)} \quad (23)$$

From where, for example, for the Earth, the value of the orbital velocity at $\vartheta_н = 435{,}5\ km/s$ and $n = 213{,}6$ will be:

$$\vartheta_{o.з} = \sqrt{189660{,}25/214{,}6} = 29{,}73\ km/s,$$

which practically coincides with the real value and corresponds to the value calculated according to equation (21), the nature of which is shown in Fig. 4.

To confirm the physical essence of the adopted approach, which led to the derivation of equation (22), on the basis of experimental data in a wide range of observations, Kepler's second law, obtained as a result of a long observation of the motion of the planets, was used. Writing down which for the entire field, starting from the surface of the sphere (R_c) of the Sun, as

$$R_c \cdot \vartheta_н^2 = \vartheta_{орб}^2 \cdot r_{c-n} \quad (24)$$

And given that the distance from the Sun to the planet can be expressed as $r_{c-n} = R_c + h$, we rewrite equation (24) as follows

$$R_c \cdot \vartheta_н^2 = \vartheta_{орб}^2 \cdot (R_c + h) \quad (25)$$

Further, having carried out its transformation to the following form

$$\vartheta_{орб}^2 = \vartheta_н^2 \cdot 1/(1+n) \quad (26)$$

we obtain that nature based on the second Kepler law laid the mechanism associated not only with the quantization of solar radiation energy as it passes through the surfaces of equipotential spheres, quantized relative to the initial sphere of the Sun with a radius R_c, but also the mechanism determining distances from the Sun of the Earth – Moon system when moving in the field of the Sun.

According to the equality of the products of the left and right sides of equation (25), which reflects Kepler's law for the Earth's motion in the Sun field, with the substitution of known values R_c and ϑ_c, it is easy to show why the speed of the Earth $\vartheta_з$ depends on the position of the Earth in orbit

$$\vartheta_з = \frac{R_c \cdot \vartheta_c^2}{r_{c-з}} \quad (27)$$

And since the radiation process is sometimes accompanied by the release of colossal energy in the form of protuberances, astrophysics can explain that the automatic fulfillment of the energy balance smoothes the shock increase in surface density ϱ, kg/m^2 and acceleration a, m/s^2, creating a sharp increase in pressure

$$P = \rho \cdot a, \; kg\, m/s^2, \; (28)$$

acting on the surface of the Earth $S_з$, creating a force with which the SW holds the Earth at the required distance $r_{c-з}$

$$F_з = P \cdot S = \rho \cdot S \cdot a = M_з \cdot a_з, \; kg\, m/s^2, \; (29)$$

which when substituting numerical values

$$F_з = M_з \cdot \vartheta^2 / r_{c-з} = 5{,}983 \cdot 10^{24} \cdot (29{,}73 \cdot 10^3)^2 / 149{,}5 \cdot 10^9 = 3{,}54 \cdot 10^{22} \; kg\, m/s^2$$

corresponds to the value of the "gravitational force of the Earth by the Sun" calculated by Newton. It differs from the Newtonian force in that it takes into account the change in ϱ and a, thus ensuring the balance of energy due to the change $r_{c-з}$. Of course, it is clear that an increase in pressure or force at this moment may manifest itself in the movements of the earth's crust. The interrelation of these phenomena is established at such a level that we can determine the possible loads from changes in the parameters ϱ and a. It is only necessary to take care of their fixation in order to warn about possible cataclysms, including those considered in the next article.

The use of FIS allowed us to explain the most diverse phenomena observed in the field of the Sun, combining them with the same

mechanism acting in its field. However, there are still a few phenomena that are predicted by this mechanism, but were not explained by astrophysics. The simplest of them is due to the fact that all asteroids due to close orbits should have close masses and sizes.

Consideration of other more significant phenomena observed in the field of the Sun and the field of the Earth is also justified at the level of the FIS, which changed both the basic principles of Electromagnetism and Quantum Mechanics and the construction of the System of thinking, does not apply to this work and therefore will be published separately in,[25] which do not affect the course of the study and are given for information only.

Again returning to the definition of the principle of constructing the existing System of Thought, it should be noted that by performing quantization of the field energy along the radius of the Sun, and not according to the Titius – Bode law[26] or Jupiter[27], it was possible to show that it was Kepler's laws that determined the foundation on which the existing System of thought originated, the refinement of which led to the FIS.

Moreover, at present, the question of how a particular body that enters the Sun field will move and whether it will be thrown into the Earth's field, astrophysics based on the use of the law of Gravity cannot give a certain forecast with sufficient confidence. Just as she cannot answer why the Chebarkul meteorite fell vertically downwards, forming a circular hole in the ice of the lake. And also, why all the craters on the Moon and on the planets, including on Earth, have such a regular shape that it creates the feeling that they are artificially created.

Studies have shown that the mechanism of interactions occurring in the field of the Earth, although determined by the FIS, is radically different from the mechanism occurring in the field of the Sun. And as the analysis of the theories of Electromagnetism and Quantum Mechanics showed, all the difference is determined by the properties of the electromagnetic charge, which manifest themselves differently in different fields. In this

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[25] A.S. Yurchenko, "Mayan Calendar – the quintessence of the parallel system of thought, which is subject to the Fundamental Interaction System"; A. S. Yurchenko, *Combined theory of physics. Volume I, II.*

[26] M. Nieto, *Titius – Bode law: history and theory*, Mir, Moscow, 1976.

[27] K.P. Butusov, "Concerning the cyclicity of solar activity", in *"The Sun, Electricity, Life" of the Moscow Society of Naturalists, Section of Physics*, Moscow State University, Moscow, 1972; K. P. Butusov, "Structural laws of the solar system", in *Proceedings of the Congress – 2004 "Fundamental problems of science and technology. Part II. Series "Problems of Universe Research", vol. 29,* Osipov, St. Petersburg, 2005.

case, as was established, the charge does not change either in time or in space. And, probably, in star systems in the Universe, it remains unchanged.

It is on this property of the electromagnetic charge that the FIS represents a new perfect mechanism operating in the field of the Sun, which allowed both qualitatively and quantitatively to describe the behavior of any body with a particular mass and speed, entered into the field of the Sun, and at the level of considering the balance of its kinetic energy and energy field of the sun to determine, for example, the trajectory of its movement. Or calculate the speed of any planet at any point of its orbit, or the speed of its rotation around its axis.

In addition, specifying in[28], for example, the mass of Mars, defined as $0{,}17 \cdot M_з = 0{,}64 \cdot 10^{24}$ *kg*, it was shown that it is actually 2.6 times more, and, possibly, is the cause of errors in the calculation of the "force of attraction" and, as a result, the breakdowns of the vehicles launched on its surface. Showing how costly such errors are.

At the same time, to test the theory of FIS, no. additional experiments are required, for example, related to the launch of artificial devices, as well as in astrophysics and other areas of science, its use has eliminated the so-called anomalous phenomena. And due to the clarification of the mechanism of the processes under consideration, to conduct more accurate calculations.

It remains to hope that astrophysics, taking into account the possibilities of the FIS, shown in this work, will try to determine how it is consistent, above all, with actual data from other observations.

Gravity alone, with its black holes merging and absorbing interstellar matter, was not enough to build star systems due to the appearance of various contradictions. Moreover, it turned out that, according to the accepted provisions, black holes can be not only huge, but also microscopic. In addition, there was an assumption about the existence of white holes – the exact opposite of black holes.

As can be seen, the construction of such theories based on gravitational interaction through emptiness leads to paradoxes. If only because astrophysicists found in the center of the Milky Way a mass of "emptiness", surpassing the solar "emptiness" more than 4 million times!

It is hoped that FIS, which exists in nature, will help astrophysicists to deal with this issue, or at least really look at the processes occurring in

[28] A.S. Yurchenko, *Combined theory of physics. Volume I*, OJSC Alliance Yugpoligraphizdat, Volzhsky, 2008.

the Universe, without endowing the "void" with mass. Or rather, without naming the mass as emptiness.

Caring for safety and the future of mankind, scientists sought to find the gravitational radius just to determine the boundaries of the action of Gravity. However, basing their false systems of thinking on the basis of their System, they came to even more "horror stories" than the fall of a meteorite or collision with another celestial body.

To understand what mankind can expect from Cosmos and how it can influence to avoid a catastrophe from a collision, for example, planning to impart the necessary impetus to a comet, you need to know exactly the whole mechanics of the movement process and the trajectory of bodies, both in the Sun field and in the field of the Earth.

In addition, knowing the laws of FIS, acting both in the Sun's field and in the Earth's field, humanity can calculate the possibility of a more real danger, determined by the release of a prominent huge mass M, kg and dynamic volume V_D, $kg \cdot m^3/s^2$ the form of a huge electromagnetic charge $Q = M \cdot V_D$, $kg \cdot m^3/s^2$ and its entry into the field of the Earth. Knowing the place and the moment of ejection of the prominence, as well as the trajectory of its flight, and the location of the Earth in orbit at this moment, one can determine the probability of such a hit. That will allow you to turn off the power grid on time, land the planes, secure many controlled technological processes. Thereby eliminate the failure of expensive equipment and the associated accidents leading to casualties.

At the same time, FIS allows you to create a computer-based tracking system for these processes in order to determine the likelihood of danger and the need for an intervention. Moreover, this system will be able to warn of a possible loss of orientation in a particular area of the Earth with insignificant emissions of protuberances, having improved space navigation.