DEVELOPMENT OF GERLOVIN'S THEORY (4)

A VACUUM THEORY OF GRAVITATION

How strange it may seem, the gravitation, while begin a ubiquous and permanent reality for us, remains a mysterious phenomenon. The Standard Model describes well three fundamental interactions, in the frame of the quantum theory. But is says nothing about gravitation: it is more a classical than a quantum theory.
Conventional science, with superstrings, loop gravitation, via gravitons as transfer particle, tries to unify the quantum and gravitation theories into a single one.
But I. Gerlovin worked out a fully different (reverse) mechanism to unify the 4 interactions. In the frame of his TFF, a single particle, the FUNDAMENTON, pretends to the role of QUANTUM OF ALL FIELDS and OF ALL ELEMENTARY PARTICLES.
The fundamenton is a closed string (loop) of universal size in the virtual world, and its harmonics, when "projected" into our real world, "give birth" to the elementary particles, which are described in the general equations of GTR as quantum black holes.
On the TFF, the GTR equations raise to the status of unified fundamental field for all kinds of interactions, this field originating in layered subspaces and unifying them into a single one ; these equations are renamed triunity equations in the TFF.
Can Gerlovin's TFF pretend to the role of THEORY OF EVERYTHING? The answer to this question should be searched for in the couloirs of the academic science. Our task here is more modest: we will consider to which extent the vacuum theory of gravitation (VTG) of I.L. Gerlovin corresponds to the contemporary description of the world…

In the TFF, what hides the formula giving the gravitation constant?

In Gerlovin's theory, the space has a layered structure. The real world (for us) is called the laboratory space and is designed as the First Sub-Space (1SS). Other subspaces are virtual: the physical vacuum (φV) is designed "2SS" and this deepest layer (the tachyon world of Fundamentons - strings) is designed "3SS".
All three subspaces, when superposed, form our Universe.

The TFF gives a formula ([1], p.174 (11.15)) to compute the constant of gravitation:

$$G = a_g \frac{9}{8}\left(\frac{\lambda\!\!\!^{-2}_p R^2_\infty e}{\pi m_w}\right)^2 \qquad (1)$$

Where:
$\lambda\!\!\!^{-}_p = \frac{2\hbar}{2\pi m_w c}$ is the Compton wavelength of the proton;
R_∞ – universal constant of Rydberg ;
m_w – mass of the elementary particle of vacuum (EPV) of the particular proton-antiproton vacuum, which is equal to 2 times the mass of the proton

The physical content of this equation remains non-understood. If we could manage to find such a physical meaning, then we could better understand what in TFF is meant by "vacuum theory of gravitation".

For this, let's revert to the logic (the algorithm) of construction of equation (1) in the VTG.

According to ([1], p.175.3), **the gravitation appears as the result of "shielding" of the φV's strains (pressure)**, itself created by all the elementary particles.
Further, the TFF computes, in a pure classical form the pressure forces which apply to a couple of elementary particles. **The area between the two EPs is shielding the pressure "applied" by the φV**, prorate the masses, certain angles (similarly to "shadows" formed by these EPs) and the distance between these EPs.
Thanks to the "decreased pressure" between the 2 EPs, they are mutually attracted, by a mechanical force, which is equal to Newton's gravitational force applying to these 2 EPs ([1], p.173.(11.10)).

From equation (11.10) the gravitational constant is deducted (1).

Let's analyze this result.

The nature of gravitation in the VTG.

We can ascertain that we can compute gravitation in a pure mechanical way, without involving the gravitational constant *G*.

Let's make the test with our planet Earth.

We give a physical meaning to the equation (1) with the help of the formula $m_w = \frac{2}{2\pi}\frac{\hbar}{\lambda\!\!\!^{-}_p c}$, and the elementary charge $e^2 = \alpha\hbar c$:

$$\frac{Gm_w}{\lambda\!\!\!^{-2}_p} = kc^2\lambda\!\!\!^{-3}_p R_\infty^4 \qquad (2)$$

Where: $k = a_g\frac{9}{8}\alpha$ is a coefficient without dimension; a_g is the metric coefficient of the proton-antiproton vacuum equal to 1,000888.

The constant of Rydberg is inversely proportional to the wavelength $\lambda\!\!\!^{-}_R$ of the electromagnetic quantum of ionization energy of the hydrogen atom; then the equation (2) gets the following form:

$$\frac{Gm_w}{\lambda\!\!\!^{-2}_p} = k\,c^2\,\frac{\lambda\!\!\!^{-3}_p}{\lambda\!\!\!^{-4}_R} \qquad (3)$$

In the left part, we deal with the tension (gravitational acceleration) created by one elementary particle of vacuum (EPV)
In the right side, as an "echo", we have its inertial analogue (in an unusual form), which remain without physical explanation.

An analysis shows that in quantum mechanics, at the junction with classical mechanics, we have a similar equation:

$$\frac{Gm_p}{\lambda\!\!\!^{-2}_p} = c^2\,\frac{\lambda\!\!\!^{-2}_0}{\lambda\!\!\!^{-3}_p}, \qquad (4)$$

Where : $\lambda\!\!\!^{-}_0$ – Planck's length;
m_p – mass of the Elementary Particle, - here, a nucleon;
$\lambda\!\!\!^{-}_p$ – Compton's wavelength of the Elementary Particle, - here, a nucleon.

The left parts of equations (3) and (4) are identical, and we thus can suppose that the physical meaning of the right parts thereof should be the same also, and this will allow us to further operate the equation (4).
In this equation (4), we have an exact solution, where the Rydberg wavelength is replaced by the Compton's wavelength of any EP.
This equation thus gets a general and dynamic character, confers a physical meaning to to it, significantly simplifies calculations, and allows calculating the gravitational parameters of any spherical object without involving the gravitational constant G.

For instance, let's apply this formula to calculate the **gravitational acceleration on Earth's surface** (g_{earth}).

$$g_{earth} = c^2\,\frac{\lambda\!\!\!^{-2}_0 N_p}{\lambda\!\!\!^{-3}_p N_{int}} \qquad (5)$$

We will simplify here, and calculate only for demonstration and on the basis of powers of 10.

The tension (acceleration) created by on nucleon is equal to:

$$g_p = c^2\,\frac{\lambda\!\!\!^{-2}_0}{\lambda\!\!\!^{-3}_p} = 10^{17*-70/-45} = 10^{-8}\ m/c^2$$

In one Earth's diameter we have approx. $N_p = 10^{17}$ nucleons. Then their total (and we emphasize here) one-dimension impact will create an acceleration equal to:

$g_{earth\,1} = g_p\, N = 10^{-8}\, 10^{17} = 10^{9}\, m/c^2$

This acceleration corresponds to a neutron Earth (distance between nucleons equal to 10^{-15} m).

Further, let's expand the nucleons up to the average density of Earth, thus an average distance equal to 10^{-11} m (Earth's dimensions is multiplied by 10^4).

Hence the intensity of interaction, being a quadratic function, will be reduced by a factor 10^8.
Then we get:

$g_{earth} = \frac{g_{earth1}}{10^8} = \frac{10^9}{10^8} = 10^1\, m/c^2$,

And this is the **acceleration of free fall on Earth's surface**.

With this simple calculation, we have shown that the shielding model of the VTG works fine, while the physical interpretation if the PRESSURE SHIELDING required further analysis.

I. Gerlovin is probably the first and single one, who looked at the gravitation at the micro scale, and demonstrated that **gravitation can be directly linked to the shielding of φV's pressure by material bodies**.

But does it physically mean « **shielding of φV's pressure** »?
The answer will be rude and peremptory: NOTHING.

The shielding of φV's pressure means a resistance to the free motion of bodies in the φV medium.

Let's demonstrate, purely analytically, that such a shielding model of gravitation doesn't work.
If we take a test EP, and surround it by an extremely dense sphere packed with EPs (density equal to the φV's density), then, according to the VTG, a gravitational screen forms. And any mass, finding itself outside this sphere, will have no gravitational effect on the test EP inside the sphere. This is physically absurd.
It is not clear how, for instance, an electron, or a neutrino, would shield the φV…?

The shielding of φV's pressure in the VTG is interpreted as a gravitational "friction", and the cosmological redshift is advanced as a proof and an argument ([1], p.176).

Let's demonstrate, again purely analytically, that the interpretation of redshift as an effect of gravitational friction (manifestation of a « mechanical » aether), is fundamentally untrue.

In the TFF the propagation of light is considered as a sequential movement of an excitation, from one EPV to another, with the speed of light ; the energy of excitation of an EPV being always equal to the energy of the propagating radiation, minus the energy needed to compensated the inevitable part of it lost when overcoming the gravitational "friction" forces ; this leading to the redshift.
Physically, friction forces appear only when there is a gravitational gradient (difference of potentials) ; for distant galaxies, the Z-shift reaches 8 – 10 units, which corresponds to a difference of potential in the range of $\mathbf{c^2}$**.** In this situation, the Universe should be extremely inhomogeneous from the point of view of gravitation. There could be not talk about stationary state, and the Universe should either expand, either shrink until it collapses. Any model of the Universe, including the stationary one, in which the redshift increases when you travel back in time, requires the same sequential increase of temperatures also, up to the plasma state, and further. Such an evolution of the Universe can be explained only by its expansion.

Science discarded mechanical aether (aether wind, related friction, etc.) more than 100 years ago, based on numerous experiments. So what did in fine find I. Gerlovin in his equations ([1], 11.16 -11.28)? No doubt, it is the Doppler effect; in the formula, there is not a gravitational friction, but indeed a deceleration.
Therefore he got calculation results which were in line with observations: so we have here a pure mistake of terminology, not in the method or the formulas themselves.

The fact is that Gerlovin was the first to justify, and describe mathematically in a strictly way, the manner in which the Hubble constant (H_o) is obtained: it is a pure effect of cosmological gravitational deceleration.

We have seen above that when calculating the gravitational constant, Hubble's constant (without any correction) and the gravity on Earth's surface, the mathematical apparatus (algorithm) of the VTG works rather well, and it corresponds to reality ; but the physical interpretation of these calculation, on the contrary, create only unsolvable problems.
We have resolved the issue of the gravitational "friction", now we have also to tackle the screening model of gravitation, i.e. to find out what really mean the calculations ([1], 11.1-11.15).

Let's revert to I. Gerlovin's words in a summarized way ([1], p.175.3): … *gravitation is the result of the interaction of bodies with the φV, and has a cumulative character* ….

A key word above is this "CUMULATIVE" : ACCUMULATION, which radically changes the physical content of VTG's algorithm.
In the TFF, φV corresponds to a stationary, very dense crystalline grid, with a permanent pressure, with EPVs at the nodes of this grid. And this permanent, constant pressure has laid the ground for Gerlovin, to consider gravitation as an effect of pressure shielding.

In the VTG, the "accumulation" refers to the increase of the shield's size, this shield being borne by each EP, but as a result, the subspace structure of TFF would require a radically different, dynamic structure of the φV.

Each EP, finding itself in the φV medium, actually changes this same φV. In the GTR, as a macro effect, we have a curvature of the space. In the TFF, as a micro effect, we have the mapping (imaging) of the Fundamenton from the 3SS to the 1SS, in the form of a loop (closed) metric tensor (quantum black hole), which leads to a change of the φV's structure.

Then, the elementary response of the φV (its excitation in answer) to the appearance of an EP, is an adjustment of the crystalline grid's spacing towards the Compton's wavelength of the EP, and this is described by the equation (4), which is applicable to any EP, and is of universal nature.
In QED and QCD, the change of the crystalline grid's spacing of the φV corresponds to a change of pressure (p) and density (ρ) of the φV, according to the combination (ρc^2+3p), and at distance comparable to the Compton wavelength it always corresponds to the pressure and density of the EP.

So this parameter, as a particular case (pressure of the proton – antiproton vacuum) has been used in the VTG in quality of shielding of gravitation. The algorithm for the construction of terminology SHIELDING and ADDITION, is the same, but the physical content is much different, as well as the consequences of these different interpretations.

Let's draw a preliminary conclusion.

The VTG has used an improper terminology for gravitation – SHIELDING. The gravitation has no shields, it is all-pervasive.

The VTG, using the same algorithm, clearly doesn't consider a shielding, but an ADDITION, i.e. the accumulation of gravitation forces. It is another mechanism of gravitation.
In a classical approach (left part of equation (4)), we should have taken the Earth' mass as a whole, in its whole volume. While in our calculations, according to equation (5), we can clearly see the geometrical string model of gravitation, which is of cumulative nature.

How can we represent this to ourselves? In the TFF, the Fundamenton is the universal, one-dimension "agent" (a kind of string) and is responsible for all fundamental interactions, including gravitation. Possibly, it is this undetectable "**graviton**".
Then each Fundamenton, represented in our laboratory space, for instance as a nucleon, sets up a screed in space, according to the tri-unity equation, via a conform mapping:

$$\varphi = Gm\frac{e^{-\frac{R}{r}}}{r},$$

on 19 exponents, and its geometrical echo is the equation (4). And these screeds are formed in a quantity, equivalent to the number of nucleons encompassed (met) in the one-dimension path of this Fundamenton.

Then, on the ground of the total intensity (density) of the Fundamentons, the classical gravitational field is formed.

What is principally different between the classical gravitation and the VTG?
Classical means the impact (the addition) of all sources of gravitation to all the points of space simultaneously.
In the VTG, there is a sort of one-dimension **scanning by the Fundamentons** of each points of space, and they bear as a result the information about each EP (source of gravitation): mass of this sources, distance between them (which corresponds to the intensity).

All in all, it is the same, but the physical meaning of both approaches is radically different.

Controversial gravitation: a think experiment.

In the TFF, the speed of Fundamenton in the virtual world is almost infinite. So how does the principle of causality work, in practice? Isn't it violated in the real world by this "immediate" virtual world?

We will first demonstrate, with a classical approach, and making a think experiment, that the speed of propagation of gravity in the real world should be exactly equal to the light speed.

Let's imagine that one could build up a neutron star, composed of equal proportions of accurately mixed matter and antimatter, and in such a way that this mix could be protected from spontaneous annihilation. In principle, it is possible, if we excite a volume of φV (approx. $R^3 \approx$ 10-15 км^3, the typical size of a neutron star) to the rest energy of nucleons (like a quark-gluon plasma in the LHC), and then maintain this excited state of the φV thanks to an energy supply. An energetic balance is reach.
Further, we remove the protection (energy supply). The star is almost immediately annihilated. And it is then the resulting irradiation, according to GTR, which becomes the source of gravitation.

Let's consider 2 scenarios of the star's disintegration:

First case – we suppose that the speed of gravitation is smaller than the speed of light.
Then the light shall loose a part of its energy, spending it to overcome the slower gravitation.
In the frame of the GTR, it sounds as following: the disintegration of the energy-impulse tensor (of the light) outstrips the disintegration of the metric tensor. As a result, there is a leakage of some energy of the irradiation, towards "nowhere".

Second case – we suppose that the speed of gravitation is greater than the speed of light.
Then the faster gravitational disintegration of the star leads to the opposite situation, when almost no energy is lost by the irradiation to overcome the gravitation. In the frame of the GTR, it sounds as following: the disintegration of the energy-impulse tensor (of the light) remains behind the disintegration of the metric tensor. As a result, there is an inflow of some energy from "nowhere".

Both scenarios lead to absurd conclusions, when the energy-impulse tensor (irradiation) doesn't correspond to the metric tensor: this violates the law of energy conservation. Only in the case of equality of speeds of gravitation and of light, we have equality of both tensors.

If we go deeper in this experiment, we will see that the concept of graviton doesn't fit with the observations.

It is clear that all positive energy coming from the annihilating star is made of EM quanta.

But where is the negative, gravitational energy? … Here, the sole gravitons cannot solve this problem ; they are only make it worse. In GTR, even irradiation gravitates, and any EM quantum bears an energy-impulse.

There are 2 options coming to our minds:
1. Either each EM quantum is accompanied by a graviton and then the irradiation carries away positive energy ; so the graviton shall carry away negative energy.
2. Either each EM quantum is itself a polarized graviton, then the EM quantum bears both some inertia and some gravitation (spin being a separate issue).

First option doesn't work: gravitation (gravitons) don't have any "screens". The GTR wouldn't allow that irradiation remains isolated from gravitons (case when an EM screen would encircle the disintegrating star : all the irradiation finds itself inside the spherical screen, and the gravitons have logically left this sphere).

The second option remains, and as it is physically absurd, there should be a **third variant, a compromise**. And the VTG plays the role of this third variant, in which the irradiation is considered, as per I.L. Gerlovin, as an excitation of the φV (but with some reservations).

In the TFF, there is a single fundamental PARTICLE – STRING responsible for all interactions, the virtual FUNDAMENTON.
Then, the distribution of density and the pressure of the virtual φV is responsible for the 'static' gravitation. In the GTR, this process corresponds to the curvature of space.
And the change of distribution of density and of pressure of the φV is responsible for 'dynamic' gravitation; those changes are always accompanied by an irradiation, or an absorption of EM quanta. We have to understand that each EM quantum bears some "small" tensor energy-impulse, which corresponds to a "small" deformation of the space (metric tensor).
Obviously, the EM quanta, as well as the Elementary Particles, are images of the fundamenton in the laboratory space.
In both cases, static and dynamic, **the FUNDAMENTONS are responsible for gravitation**. With this approach, the think experiment above can be considered as consistent.

The fundamental PARTICLE – STRING is the virtual FUNDAMENTON.

The Fundamenton is really the key theoretical development of I.L. Gerlovin. In the contemporary science, the fundamenton could well pretend to the role of physical mechanism or implementation of holographic dualism [3]: as of today, the corresponding mechanism stills remains unclear.

The Fundamenton, as a string model, can be considered as a separate, full-fledged branch of the string theories, with a detailed mathematical apparatus, based on the equations of the GTR. By the way, there is no GTR in string theory.

On the other side, the physical interpretation of the Fundamenton in the TFF remains very ambiguous. Let's have a closer look to the following extracts, in the Gerlovin's book [1]: p.64-65, p.70, p.87, p.101, p.127, point.7 p.148.
1. The Fundamenton is the image in the 3SS (tachyons) of a 3-dimension sphere, which is itself the Universe… the image of the Fundamenton from layer S^3 on the laboratory space is the particle of Planck…
…Not very clear, and it follows like this ….
2. in the 3SS, the structure of the main particle, the Fundamenton, is revealed, whose parameters are observed when mapping on the 2SS and the 1SS, depending on their level of excitation, as different EPVs and EPs
… here there is already more concretization…
3. … the Fundamentons are tachyons, which fill a 3-dimension sphere (each of them being its center) and they don't move there …
4. The fundamenton is a tore, whose surface is scanned by 2 charges, with a speed corresponding to the tachyon space
…Further we read…
5. the time in the 3SS (tachyon space) has stopped ….

As one can see, all this is quite confusing, and requires clarification and rethinking.

Clarification and rethinking.

Let's take as basis the 2nd point describing the Fundamenton :
… in the 3SS, the structure of the main particle, the Fundamenton, is revealed, whose parameters are observed when mapping on the 2SS and the 1SS, depending on their level of excitation, as different EPVs and EPs…

In the TFF, the integral of density of charge and mass of the Fundamenton, on all the volume of the 3SS – the Universe -, is mapped (3SS→1SS) into the charge and the mass of the corresponding EP. In all logic, the full energy of the EP must be included here.

Hence we have: as the Fundamenton in 3SS contains all the information about the EP, including its energy, then according to the laws of physics, the time (as the link with energy) can be frozen in the 3SS. The way it passes there, is another issue.

We need a compromise, which appeared in contemporary consideration of the Universe: it is the "holographic dualism" (see 1st article of [5]). Let's take the conclusions of this article. If our Universe in a whole is a back hole (many cosmologists tend to think so, according to calculations), then according to the law of Beckenstein…

"With every [event] horizon that forms a boundary separating an observer from a region which is hidden from them, there is associated an entropy which measures the amount of information which is hidden behind it. This entropy is always proportional to the area of the horizon."

… all the information about the Universe is contained on the surface of a black hole. Therefore this surface is called a holographic screen.
Each point if the laboratory space, with respect to the φV, being a black hole, therefore the Universe in a whole, with respect to the φV, is also a black hole.
The φV, according to the said above, should the, be considered as a holographic screen.

What are the consequences? It appears that in contemporary interpretation, **the 'tachyonic' Fundamenton of Gerlovin fits very well in the "holographic dualism"** (Gerlovin's version of dualism, it is the "metamorphose", the mapping from one subspace to another).
The tri-unity equations, via transfer exponential operations of mapping of the Fundamenton from one subspace to another, **complement perfectly the mechanism of holographic dualism, and clarify it**.

But there is a single BUT.

Why did Gerlovin introduce the 3SS? The answer is trivially simple: in the TFF the φV (2SS) and the laboratory space (1SS) are black hole media.
Hence the question: they are black hole media with respect to what? Naturally, Gerlovin had to introduce a zero-level subspace, the 3SS.

The fact that φV is a black hole medium is of course a mistake of Gerlovin: according to contemporary considerations, the φV is a "medium" with minimal energy of all fields, i.e. the potentials of all fields tend to zero.

It appears that in the holographic approach, the 3SS simply disappears: all the functions of 3SS are laid down in the 2SS, i.e. in the φV. So can abandon the 3SS, and it simplifies much the mathematical apparatus of the TSS, with violating its physical content.

We have found the compromise.

About the speed of propagation of the Fundamenton in the real and virtual worlds.

We still have an unresolved issue, about the speed of propagation of the Fundamenton-tachyon in the 3SS : in the TFF, this process is almost instantaneous.
But at the same time, the TFF considers that the time in the 3SS is frozen: and this means that all the processes taking place in the 3SS are also frozen.

'Instantaneous and 'frozen' are fully opposite notions, and we have here a paradox situation.
In order for the Fundamenton to pretend to the role of EVERYTHING, we have to solve this paradox: the 'instantaneous' speed of the Fundamenton and the speed of gravitation in GTR, equal to the speed of light, should be somehow reconciliated.

We propose the following algorithm of calculation of the speed of the Fundamenton in the virtual φV.

The cosmic background radiation in the real space, as well as in Gerlovin's vacuum in the virtual φV, fills the whole Universe, without voids. We can well calculate the dynamics of expansion of the Universe, based on the dynamics of expansion of this cosmic background radiation.
In the TFF, the length of the 1D closed string (Fundamenton) is always equal to the instantaneous size of the Universe.
Let's suppose that each Fundamenton is individually linked (Gerlovin says in the TFF that it metamorphoses into) only one quantum of radiation or one EP, then the quantity of Fundamentons in all the Universe should be comparable to the quantity of cosmic background radiation, $n_{rel} = 10^{87}$, plus all the EPs.

Hence, the speed of the Fundamenton in the virtual φV should be equal to:

$$v_{fund} = \sqrt[2]{n}\, c = 10^{37}\ m/s\ . \qquad (6)$$

A natural remark arises here: this speed happens to fit the speed of expansion of the Universe, which speed is also equal, always and everywhere, to the energy of the Fundamenton in the 3SS (which, when mapped into the 1SS, is transformed into energy of irradiation, or energy of an EP).
During the "trip" of the Fundamenton through the whole Universe, at a speed $v_{fund} = 10^{37}\ m/s$, a quantum of cosmic background radiation moves at the speed of light, and goes a distance only equal to its wavelength,

$$E_{rel} = hc/\lambda_{rel} = E_{fund} = h\upsilon_{fund}/\lambda_{fund}$$
$$\upsilon_{rel} = \upsilon_{fund}\ ,$$

i.e. the proper frequency υ_{fund} and the energy of the Fundamenton E_{fund} are always equal to the frequency of the background υ_{rel} and to the energy E_{rel}, but the difference is that this energy of the Fundamenton is, like its charge, "stretched" ("diluted") over the full length of the string.

The "metamorphosis link" remains during the full arrow of time, and is valid for all quanta and EPs.

In contemporary language, we can formulate it as following: the energy of the Fundamenton is distributed over the whole surface of the holographic screen of the whole Universe. The speed of the Fundamenton in the virtual world is equal to $v_{fund} = 10^{37}$ m/s , while at the stitching (frontier) between subspaces (transition to our real world), via operations of conformal mapping (imaging), the virtual Fundamenton gets a limited speed (light speed), and "legalizes" all the parameters it bears, either into an EP, or into an EM quantum.
This "individuality" of the Fundamenton does not violate the principle of causality. The string-Fundamenton is unique, and always linked to a single "agent" (either a quantum of irradiation, either an EP), and it cannot, never, skip from one to another.

Let's draw some conclusions.

I.L. Gerlovin is really the first who has seen, that with the help of the GTR equation and of operations of mapping (imaging), it is possible to create, at the quantum level, closed metric tensors (quantum black holes), and that this is the way the gravitation can enter the quantum world.

But, in order for the tensor, in the form of an EP, to be stable, it is necessary to incorporate a certain layered "structure" of sub-spaces. As a result, using stitching (frontier) between subspaces and operations of conformal

mapping (imaging), I.L. Gerlovin obtained a full range of stable states (its table of EPs), which is fully in conformity with the reality. This is really unique with the the TFF !
Here, **we don't even touch the issue of uniting the 4 fundamental interactions: the issue is tackled in a reverse way, as all these interactions are just different manifestations of a unique fundamental field**.

We should only ask Gerlovin himself why he introduced into OUR WORLD these 3 subspaces, all included one into the other : this made the theory's mathematical apparatus really complicate… We touched upon this issue in the present paper, above.
Some parts of the TFF are just unreadable, physically. Maybe this is the reason why the TFF remained in the dark : it is written in such abstract, mathematical terms, and it is difficult to find physical analogues to them.

But all this can be corrected, reformulated, simplified without changing the physical meaning of the theory. Let's just use only 2 subspaces (the real and the virtual worlds) and let's describe all this in contemporary terms, and **then the TFF can really pretend to be the THEORY OF EVERYTHING**!

Questions to be addressed in the future.

In this version, I would like to consider one of the interesting consequences:

As gravitation bears a cumulative character, then each Fundamenton, interacting with matter, gets stronger, i.e. individually accumulates INFORMATION about this matter. And this accumulation (INFORMATION) won't get deleted, it is conserved forever.

So, summarizing, the Fundamentons bear the INFORMATION about the whole Universe. Hence the question: can the Fundamenton be the basis of the Paradigm of Gerlovin, and be responsible for the self-consistent development of Universe, - up to the MIND ?!

Moreover, we have seen that the Fundamenton « scans » all the Universe, its stars, its galaxies, …
In this case, the Fundamentons' energies shall be stretched over a huge range.
Could the Fundamentons explain those several abnormal phenomena, for instance described in the "catalogue" of the website "Second Physics" (http://www.second-physics.ru/) …?
Parts 5 and 6 of the TFF consider some of these issues. Maybe, in the future, I could write a new article, about the "TFF and abnormal phenomena".

Yuri Lyubashenko

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