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COSMIC ABSOLUTE LENGTH IN CORRELATION WITH TERRESTRIAL PLANCK LENGTH, IN AN EVTD^2 QUANTIFIED SPACE-TIME. IMPACT ON THE MUONS LIFETIME

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Abstract:

This paper, in EVTD^2 entities theory, is an extension of publications [1-2], concerning the Galilean Doppler-Fizeau effect on wavelengths felt by the Earth in absolute speed in the Cosmos. There would be an absolute reference wavelength in the Cosmos, correlated with the length of Planck on Earth. The reference of the Cosmos would be a numeric expression of the Golden number, decimals pres. The Doppler-Fizeau effect is used to find the absolute speed of the Earth in the Cosmos (333 Km.s^{-1} for 369 Km.s^{-1} admitted). In addition, the muons lifetimes, following their speeds, are correlated with absolute reference wave felt frequencies. ***Key words:*** *Galilean Doppler-Fizeau effect, decay of muons, golden number, EVTD^2 theory, fully quantum space-time.*

1. INTRODUCTION

We note in physics that a certain value, representing a reference in the extremely small dimensions (the representative number of the Planck length having the numeric value l_P =1,61624·10^{-35}m), is very similar, except for orders of magnitude, to the value of Golden number rounded up to the 1.618034. If the factor 10^{-35} m is ignored for the Planck length, there are two representative numbers, very important notions in their respective fields that are almost of the same numeric expression. The difference between these two terms, in such a context, is less than $1{,}794 \cdot 10^{-3}$. Is there a possible correlation between these two very similar numeric expressions? If this is the case, this is likely to be relative to physics: because there is about the physical value of Planck length that is, itself, quite particular. Indeed, the Planck length (l_P) is generally described as the length from which the gravity would begin to present quantum effects. The l_P would be, in the current state of physics, the minimum length that is possible to be significantly measured. In superstring theory the l_P is defined as the minimum diameter of a string. The corollary of this assumption is that no less length than l_P has physical meaning.

These short comments and definitions of the l_P are fully consistent with the basics of the EVTD^2 entities theory [3-7] and the respective quantum gravity [8-9] which takes, among other parameters, EVTD^2 (of edges l_P/2) cubes as considered space-time quanta. We have, therefore, since little the EVTD^2 entities theory [3-7] and this theory basically takes into account the vacuum energy resulting from the three vibration actions of EMW (electromagnetic mother wave) on some space-time element (not defined so far), that we called "*substratum*". This element "*substratum*", recalls the old ether but, here, much better defined, is nevertheless something of real and isotropic: ***the quantum substrate of space-time***. It allows understanding, among other things, the emergence of the vacuum energy.

Certainly a physics of everything, type EVTD^{2}entities, seems, at present, the most suitable to enable a better connection, to the less intellectual, between these two numerical expressions that are apparently very far from each other as to their true values and meaning.

2. TEST FOR CORRELATION BETWEEN THE PLANCK LENGTH AND AN ABSOLUTE LENGTH OF THE COSMOS

It seems not possible to try to correlate the Planck length with proportionality: it is not a ratio of two lengths. So the easiest, would be to equate the gold number, himself, with a very significant length but that would have an extremely small intrinsic value with many zero decimal. One may think that that's what would have prevented any proper storing of such a small quantity. It is almost impossible to represent naturally what could happen to the dimension of Planck, so a "clever representation" had to be adopted as to make memorization easier to transmit even by ordinary mortals.

We can continue this joint track which is thus drawn into a kind of assimilation of the golden number to a comparable to Planck length but very slightly different. From here and, for a time, we are preferentially addressing to the Planck length which offers slightly less risks and uncertainties in its definition in physics.

The definition relationship of Planck length is given by:

$$l_P = \sqrt{\frac{\bar{h}.G}{c^3}}, \qquad (1)$$

G is the gravitational constant and *c* the light speed.

The reduced Planck constant is given by:

$$\bar{h} = \frac{h}{2\pi}, \qquad (2)$$

In addition, the new physics of EVTD^2 entities can clarify, once more, that the Planck length was taken as EMW wavelength that is also spreading on the Earth surface. That is, in EVTD^2 physics, that EMW (concerning the determination, on Earth, of the light speed in the vacuum) passes in gradients very neighbors in density of *substratum*. These gradients are closely linked to each areas of the Earth's surface which has specific reliefs and, therefore, different gravitation on such a surface. Consequently, it follows that ***the substratum of the terrestrial environment follows perfectly all the Earth movements*** being connected to it by the gravity.

This is what makes that in his times Michelson and Morlaix experiments results were unable to demonstrate the existence of any Ether *wind*. Then, there was the fault of denying Ether itself: only highlighting that there was no Ether wind. It's a little bit like, if by analogy of thought experiment, we could advocate the absence of air because in related studies it had not the slightest observation of any air flow (no wind): indeed, for example, the weather there had announced areas of calm.

So to return, here, one has to be well aware that in the context of the EVTD^2 entities theory, the Earth as well as its *substratum* layer (which is closely related to it) travel together, at a certain speed, in the Cosmic space-time. It is at absolute speed, as has been mentioned by astrophysicists and used in [1] and [2], of 369±10 km·s^{-1} according to semester, that the Earth would move in Universe space-time. Indicatively the Sun, only in the Milky Way Galaxy, would move it to 220 km·s^{-1}. But, further, it is necessary to add the galaxy own speeds in Cosmos and those of the Earth around the Sun as achieve the absolute speed of Earth that would be about 369 km·s^{-1}.

On the other hand, always in EVTD^2, the space-time is formatted as special cubic joined by two entities in the three directions. Thus, it is a universal and quantum space-time which, in absence of condensed matter somewhat disruptive here (bends), is organized homogeneously and perfectly stable in time. The representation of this space-time is, in imagined form, like a 3D structure established and fixed by a triple vibrating state which is continuously identically regenerated (it is maintained). Consequently, the low distortions,

caused by the passage of a mass, for example, are cleared immediately after and the immutable structure of space-time (empty of matter) is put into place.

All electromagnetic waves (EW) including EMW spread, especially, in *substratum* at the same speed *c* (light speed). In the particular case, on the Earth surface, is considered this speed that was, at the moment, measured only in vacuum [7]. Thus, the representation of all this, as part of space-time defined by the EVTD[2] entities theory, is as follows: it's ***a universal background constituted of a vast 3D matrix formatted in small cubic joined entities*** which form the 3D frames ultra refined and stabilized. In such universal background, the "packaging", of various concentrations of energy levels, sizes and shapes, which ultimately are the masses of particles and bodies, are moving at their own absolute speeds because ***this background would represent the absolute reference system of Universe.*** This is the absolute reference system of Newton.

The universal immutable stabilized background is, from the point of view of its structure, of perfect stillness (absolute zero speed). But this represents a temporal 3D canvas, which is animated in an absolute tempo by the EMW absolute frequency that formats it, propagating through it at the light speed *c*. *The EMW absolute frequency*, indefinite so far, will be calculated away of this type of framework. Thus, we can claim that *the EMW frequency received and felt by the substratum* on the Earth surface, ***moving in this background***, has *the same value that those deducted of Planck length and of light speed c*. The relation between the wavelength λ and the corresponding frequency *f* of an EW is simple as we know $\lambda = c \cdot T$, where *T* is the period, and $f = \frac{1}{T}$ hence, $f = \frac{1}{T} = \frac{c}{\lambda}$.

It is now necessary to describe the relations that link on the one hand, the frequency and the wavelength received and felt on Earth according to its absolute speed, with on the other hand, the frequency and the wavelength of initial OME that structure this coherent background.

For this we ***should go to the Galilean Doppler-Fizeau effect*** and well understanding that the transmitter, to be in analogy with this effect, may be considered at absolute zero speed and emits an EW signal with the frequency of initial and original EMW. This consideration on the coherent background and his animation, which induces different animations in moving bodies, is an extension of the work concerning the determinations of absolute speeds by Doppler-Fizeau effect [2]. While the receiver, the *substratum* of the Earth's surface, *will modulate, by its absolute speed gradient, the frequency* and hence the wavelength of original EMW (somehow, a signal) that he receives during his cosmic trip.

In this specific case, it should be noted that there are no special conditions depending on the direction of receiver motion because the background texture is fixed and, more, *is admitted as being isotropic.* So, whatever the orientation of the absolute motion of the receiver Earth, its speed (v_{rec}), for the approach taking into account the Galilean Doppler-Fizeau effect, *should all the time, following the compliance with this formalism, be counted in negative value because the receiver goes as against (to) the transmitter (background texture).* So the frequency of the received signal (original EMW), at the Earth speed, will increase according to this last. It remains more to transcribe the correct relationship of this Galilean Doppler-Fizeau effect adapting it to specific circumstances of this study. Classically, the EW signal relationship is written as the receiver moves away from the transmitter (immobile $v_{em} = 0$) and its speed is not close to the speed of light:

$$f_{rec} \approx \frac{c - v_{rec}}{c} f_{em} . \qquad (3)$$

But here, according to defined conjuncture, especially the considered negative value of v_{rec}, hence the general relation, for v_{rec} expressed in absolute value, becomes:

$$f_{rec} \approx \frac{c + v_{rec}}{c} f_{em} \approx \left(1 + \frac{v_{rec}}{c}\right) f_{em} . \quad (4)$$

So there are: f_{em} which is the original EMW frequency (emitted); f_{rec}, the frequency of original EMW modulated and received on terrestrial surface; v_{rec} is the absolute speed of Earth receiver, and c is the light speed c= 299792,458 Km·s^{-1}.

But, here, it is better to appear the relationship relative to its equivalence by expressing it based on wavelengths, emitted on the one hand (λ_{em}), and on the other hand, received and felt (λ_{rec}). It is the passage relationship, recalled above, between the frequency and the wavelength:

$$\frac{c}{\lambda_{rec}} \approx \left(1+\frac{v_{rec}}{c}\right)\frac{c}{\lambda_{em}}, \qquad (5)$$

giving, ultimately for wavelengths:

$$\lambda_{em} \approx \left(1+\frac{v_{rec}}{c}\right).\lambda_{rec}. \qquad (6)$$

A first calculation will be performed, as a test, to see if the value found from λ_{em} (in its significant numeric expression) is close enough to the value of the golden ratio, using the well known values: v_{rec} =369 Km.s^{-1} on average and considering $\lambda_{rec} = 1{,}61624 \cdot 10^{-35}$ m $= l_P$.

The result of this calculus gives the value $\lambda_{rec} = 1{,}618229 \cdot 10^{-35}$ m, which is relatively close, in numerical expression (significant digit) of Golden ratio.

It may be a coincidence, almost perfect, between λ_{em} given in significant expression and the golden number: this can be done if for the Earth absolute speed the adopted value is *333 Km.s^{-1}*. The value obtained by the second calculus of λ_{em} becomes: 1,618035·10^{-35} m, which, without the factor 10^{-35} m, is better superposing with 1,618034 – the Golden ratio.

So, the approach which was conducted allows finding a famous numeric expression (the Golden ratio) from significant reference in ultra refined physics values on Earth: the Planck's length expressed only in its significant digits for the case sake. The new physics of EVTD^2 entities helped by taking account the Galilean Doppler-Fizeau effect, allowed, perhaps, the correlation between two terminals dimensional basis for references in physics: the EMW wavelengths respectively in absolute vacuum for the original wave and for the EMW received and modulated by the Earth absolute speed in this close neighborhood.

The fact that the absolute speed of the Earth, which best adapts to the correlation between two numeric expressions, turns out be a relatively close value to those that is currently estimated in Astrophysics (333 Km·s^{-1} for 369 Km·s^{-1}) is a comforting and encouraging index for this approach. That would mean, continuing in this logic, that universal EVTD^2 cubes *of universal coherent background* would have their edges formatted to the value of the representative half-length of the Golden ratio, multiplied by the factor 10^{-35} m, i.e.: 0,809017·10^{-35} m. While those are formatted in the immediate environment of the Earth, they would be equal to the Planck half-length: 0,80812·10^{-35} m.

In line with this, it is able to think that the Gold number would be the revealer, somewhat hidden, with a value of dimension of the universal space representing the tiny brick of the whole universe arrangement base. If it will turned out to be true, it should be recognized that this would be a really stunning revelation, particularly for the credibility of the new physics based on EVTD^2 entities. From this reference brick, why not Golden brick by analogy, all the other dimensions of the EVTD^2 entities structuring would ensue overall from the original Golden size and from the Galilean relativity (according to each of their respective absolute speeds).

Thus *the Golden ratio memorization* voluntarily facilitated with the significant numerical value of a physical quantity such as the wavelength (rather than his half-length, less representative) freed a direct information on the size of an original EVTD^2. Now it is possible to deduct the value of the absolute frequency of EMW ($f_{EMW\ Abs}$) in the empty cosmos of condensed matter. To do this, the speed of light is considered as a universal constant and also its wavelength in absolute background, which would be equal to: 1,618034·10^{-35} m; then the

absolute frequency of the original EMW is a result of the ratio:

$$f_{EMW\ Abs} = \frac{c}{\lambda_{Or}}, \qquad (7)$$

i.e. in corresponding value :

$$f_{EMW\ Abs} = \frac{299792458}{1{,}618034 \cdot 10^{-35}} = 185281943{,}53347 \cdot 10^{35}\ Hz$$

Similarly, the EMW frequency modified at the Earth's surface results from the ratio:

$$f_{EMW\ Terre} = \frac{299792458}{1{,}61624.10^{-35}} = \quad .$$

$$= 185487587{,}23952.10^{35}\ Hz.$$

Then the appearing conclusion is that the intrinsic and internal animation in a body will grow with its absolute speed.

In addition, a living being in absolute motion with the speed near of *c* would suffer, consequently, very great internal animation due to the EMW received frequency. It is possible to correlate this to an internal increase in the level of mechanical and electromagnetic stresses which can, then, damage and make aging faster its living matter (superior wear). Thus in fact, we arrive to the reverse conclusion to those of the Langevin twins paradox, which presumes a rejuvenation of the twin who travels at a speed close to *c* in report to the one remained on Earth, here due to the different gradients of passing time, according to SRT.

3. IN EVTD² THEORY: STATES OF MUONS DECAY FOLLOWING THEIR ABSOLUTE SPEEDS

Last suggested presumption of a larger aging of condensed matter with the increased of the absolute speed presents contradictions with recognized experimental results (it is more a thought experiment): there are those relating to muons' life expectancy. In summary muons, which are stabilized in the laboratory, are animated by a very low speed relative to the Earth and their life expectancy was measured at approximately $2\mu s$. While the muons from the upper atmosphere must have 10 to 20 times greater life to do the course in question until the Earth's surface (sea level) and thus, to be detectable: animated that they are in the vicinity of the speed of light (but without exact details). It is enough to simply indicate the correct speed in relation to that of light, as Lorentz equations allow to correlate the experimental results to relativity. This allows for accreditation, until evidence to the contrary, the basis of the theory of relativity.

Relativity proponents, therefore, advocated as explanation, the muon behavior according its speed, only from the point of view of this particle, when it is animated in the vicinity of speed *c*, that the route distance contracts or even his own time expands.

Thus, while remaining within the physics, we should admit that a material particle, without laughing, has a point of view (sic). But, more annoying than this explanation is the fact that the first postulated governing this relativity is as follows: *"The laws of physics have the same form in any inertial reference"*. So, it would be endorsed: *"that a stationary observer on Earth, for example,* ***attributed*** *to a body in motion a shorter length than the length of this same body* ***measured*** *at rest on Earth"*. Then, we are entitled to ask, if length and time fluctuations represent a same form of physical laws in all inertial reference while some laws in certain references arise from ***attributions*** rather than from ***real physical measurements*** in concurrency.

For the notion of time reasoning is similar, if only the duration lengthen for moving bodies relative to those in a position of rest, is took into account. As a postulate is not proof, it is to admit or to reject. We understand that relativity wants to send (communicate), to another inertial reference, intrinsic information on phenomena occurring in a given inertial. But especially for the time, it is recognized that two relatively moving clocks cannot be synchronized, the simultaneity cannot be the same for these two references moving one another. On the other hand, synchronization of two clocks within a same inertial reference allows dating events and *defining simultaneity*

for it. *While, for two references, the information arrive to observer only delayed, because they travel with the maximum light speed.*

Therefore, the observer has, by relativity, only the possibility *to attribute* (as above mentioned) information on length and on time, for example related to internal phenomena to another moving reference. The exact data can be and are distorted by the non-simultaneity between these references and by the information communication that ***is not done at instantaneous speed***. Thus, logically, relativity manifesting its desire to communicate observer and phenomena located respectively in inertial references moving, one to the other, ***can induce, more often, strictly only optical illusions*** (non-simultaneity and *c*, information maxim speed) because it is that "***the observer believes seeing"***, himself being "***optically abused"***. In fact, most often *the information changes are done through light signals.*

But that there may be worse, although the basis of relativity is not sufficiently established in the physical framework, is that sometimes the conclusions related to time lengthening especially for higher speeds, are endorsed by *muon particle differentiated behaviors* due to increasing life duration for speeds close to *c*. So, it must try to find an explanation that avoids to appeal to anything that can introduce "*optical illusions*" for another understanding attempt, more rigorous, in its physical form.

We above had stayed to an approach (aging and therefore more rapid disintegration of a very particle animated at very high velocity) in contradiction in contradiction with the behavior proved by muon following their speeds and life duration. As to keep intact the $EVTD^2$ entities physics, in this case, we must try to develop a different approach that could actually cause the increase in received and felt EMW frequencies by the muons, during their movement close to light speed *c* or, more at Earth absolute speed. There is, in this case, a physical and also mechanical output conceivable and which seems to be likely. For this, it must be remembered that in mechanical vibrations for a constant force or even energy of sinusoidal vibration animation, for example, amplitudes of generated vibration will decrease gradually as the excitation frequency increases, and also the number of vibrations.

You can describe this showing that sinusoidal vibrations, profile well marked for low frequencies, will diminish (flatten) fast enough for even relatively small increases in frequency. Let us presume, then, for the studied case, that the muons decays (but in parallel, also for the current atomic clocks) *are very sensitive in amplitudes and frequencies of vibrations* being energetically received by these unstable particles decaying less or more rapidly.

It is estimated that it would be among the lowest frequency received at lower speeds (for example to 333 $km \cdot s^{-1}$, the muon absolute speed in rest in a terrestrial laboratory), relatively favored effects for producing resonances, which would cause the decays of these particles or atoms. It is analogous to the fact that anything like the rhythmic step of a troupe in walking on a suspension bridge can eventually break this bridge deck. He is then excited at *one of its very low resonance frequencies that allows to generate larger vibration amplitudes* and so, arriving to break the bridge deck which is the link between the two banks of a river, for example. Therefore, *low frequencies are also possible destructive agents for certain chemical bonds* that in space are pseudo-assimilated to decks of suspension bridges: *wherefrom their possible decays*. Also, as soon as the received frequencies increase, far away of the range of good resonance excitation, it is foreseeable that the decays will decrease, which will increase the life expectancy of the particles themselves. This is therefore in perfect agreement, in the framework of $EVTD^2$ physics, with various physical, non-relativistic behavior of muons or of atomic clocks and all this is conceived without using "several points of view" from different references. It will follow that, even *following the perspective of relativity, this can cleverly assimilate* to a time dilation or a shortening of the lengths for the particle in question.

It is perfectly plausible to suggest, in this case, that it is surely necessary to advocate rather a physical phenomenon that somehow

regulates the level of the decays of certain particles (by received frequencies) giving an adapted energy increase or decrease for these catalysts of certain chemical bonds break effects. So, a bit of classical physics, with well-adapted specialties to the study of the problem, can propose simple and plausible responses in an absolute reference without having to involve inertial reference that offer reciprocal and without simultaneity "*points of view*": *wherefrom the possibilities of optical illusions in the attributions of some observers* compared with exact measurements.

4. CONCLUSION

This study on the muons lifetime, according on their absolute speeds in a quantum space-time EVTD^2, appealed to other physics to explain the levels of their decays according to their speeds.

The attempt to correlate the Golden ratio, as a bit hidden representation of a basic, original and essential size in the Nature structuring, once again demonstrates the primacy of a theory of everything, well adapted and homogeneous on various independent and piecemeal theories more or less incompatible assemblies. This is what enabled the pseudo highlight of a definition of the numerical significance of the Golden ratio with the guiding principles that format Nature since its smaller size up those huge of the Cosmos.

Memorization of the Golden number is grown because it then means something very important in and for the entire universe compared to the consequences of current, only mathematics, of its numerical value. The concept of elders' Ether is updated but with a lot more definitions and clarifications, and that's why: the appellation of *substratum* is intended to mark a break and to do more acceptable a notion who had posed major problems for scientists, with more than a century ago. Currently, notions of dark matter and dark energy allowed already a part of the path to this modern approach.

According all presumptions, ideas, established notions and presented and used here concepts one can argue, with some logic, that universe consistent substance as well as the condensed matter and living matter have all a basic texture made and organized by electromagnetism.

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Determinarea lungimii absolute a cosmosului corelată cu lungimea terestră a constantei Planck; întrun spațiu – timp cuantificată cu entitățile EVTD^2. Incidență pe durata de viață a musonilor

Rezumat: Prezenta lucrare, în cadrul teoriei entităţilor EVTD^2, este o extensie a publicaţiilor [1-2], referitoare la efectul galilean Doppler – Fizeau asupra lungimii de undă a vibraţiilor resimţite de către Pământ în mişcare cu viteză absolută în Cosmos. Se presupune că există o loungime de undă de referinţă în Cosmos, în corelaţie cu lungimea lui Planck pe Pământ. Referinţa cosmică este considerată expresia numerică a Numărului de Aur, aproximat la zecimale. Folosirea efectului Doppler – Fizeau permite regăsirea vitezei absolute a Pământului în mişcarea sa absolută în Cosmos (333 Km.s^{-1} pentru valoarea admisă de 369 Km.s^{-1}). În plus, durata de viaţă a musonilor, în funcţie de vitezele lor este corelată cu frecvenţele sesizate de unda absolută de referinţă.

Détermination d'une longueur absolue du Cosmos qui se corrèle avec la longueur terrestre de Planck ; dans un espace - temps quantifié en entités EVTD^2. Incidence sur la durée de vie des muons

Ce travail, en théorie des entités EVTD^2, est un prolongement aux publications [1-2] en ce qui concerne les effets Doppler-Fizeau galiléen sur des longueurs d'onde ressenties par la Terre en vitesse absolue dans le Cosmos. Il y aurait une longueur d'onde absolue de référence dans le Cosmos qui se corrèlerait avec la longueur de Planck sur Terre. La référence du Cosmos serait une expression numérique du nombre d'Or, aux décimales prés. L'utilisation de l'effet Doppler-Fizeau permet de retrouver la vitesse absolue de la Terre dans le Cosmos (333 Km·s^{-1} pour 369 Km·s^{-1} admise). De plus les durées de vie des muons suivant leurs vitesses sont corrélées avec les fréquences ressenties de l'onde absolue de référence.

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