Introducing the Dimensional Continuous Space-Time Theory

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Abstract. This article is an introduction to a new theory. The name of the theory is justified by the dimensional description of the continuous space-time of the matter, energy and empty space, that gathers all the real things that exists in the universe. The theory presents itself as the consolidation of the classical, quantum and relativity theories. A basic equation that describes the formation of the Universe, relating time, space, matter, energy and movement, is deduced. The four fundamentals physics constants, light speed in empty space, gravitational constant, Boltzmann's constant and Planck's constant and also the fundamentals particles mass, the electrical charges, the energies, the empty space and time are also obtained from this basic equation. This theory provides a new vision of the Big-Bang and how the galaxies, stars, black holes and planets were formed. Based on it, is possible to have a perfect comprehension of the duality between wave-particle, which is an intrinsic characteristic of the matter and energy. It will be possible to comprehend the formation of orbitals and get the equationing of atomics orbits. It presents a singular comprehension of the mass relativity, length and time. It is demonstrated that the continuous space-time is tridimensional, inelastic and temporally instantaneous, eliminating the possibility of spatial fold, slot space, worm hole, time travels and parallel universes. It is shown that many concepts, like dark matter and strong forces, that hypothetically keep the cohesion of the atomics nucleons, are without sense.

1. Introduction
In this article, the main equation of this theory is formally deduced, that is named the primitive equation of the continuous space-time. In order to give a first notion of the introduced concepts of this theory, imagine that any object occupying a specific space has dimensions that fill and define a volume in this space and this space cannot be occupied instantaneously by other object.

Imagine for example a stick in the space. This stick exists only because it has a potential energy that creates, defines and keeps its dimensions, determining a volume in the space.

In order to characterize the empiric concept of the existence of a volume occupying a determined space, it will be established the concept of a dimensional axis of potential energy, in which a elementary dimensional axis of potential energy occupying a space do not allows that other elementary axis of potential energy occupies the same space. This dimensional axis that constitutes an incremental axis, for example, of matter, that to exist physically needs a potential energy that creates and keeps it occupying a volume in the space. This first concept is introduced formally in the following [1].

2. Embryo of the Primitive Continuous Space-Time
In the last section, it will be established the rudiments of a theory that supposes the existence of a dimensional length that has a potential energy. This potential energy is stabilized from two opposed pairs of conjugated forces that have the same common origin.
Other In the last section, it will be established the rudiments of a theory that supposes the existence of a dimensional length that has a potential energy. This potential energy is stabilized from two opposed pairs of conjugated forces that have the same common origin \[2\].

It is defined a dimensional length \(\alpha\), whose end points are defined by the points \(P_1\) and \(P_{-1}\). At both points, there are two forces, one of contraction and the other of expansion, that are in equilibrium and maintain the potential at these points.

The conjugated forces of contraction \(f_n\) and \(f_{-n}\) are named anti-space-time conjugated forces and the conjugated forces of expansion \(f_s\) and \(f_{-s}\) are named space-time conjugated forces.

These two couples of conjugated forces \((f_n; f_{-n})\) and \((f_s; f_{-s})\) constitute one energy dimensional axis that sustains the elementary points \(P_1\) and \(P_{-1}\). This energy dimensional axis constituted by the elementary points \(P_1\) and \(P_{-1}\) is the 0 dimensional basis of the space and it is going to be named as a elementary dimension of potential energy.

One elementary dimension of potential energy has a space field \(S\), which energy is proportional to \(S^2\), that is

\[E = kS^2\] (1)

where \(k\) is a constant that depends on the dimensional length \(\alpha\). The space field \(S\) on the other hand should be dependent of the dimensional length \(\alpha\) too. Imagine that the space field should be an exponential function of dimension length \(\alpha\), if it is differentiated or integrated it must result in the same space field. Suppose an origin point in the space where many elementary axis of energy pass through. These axis and their energies are jointly independent, so they are mathematically orthogonal, that means that the total energy is the sum of the energies of each elementary axis. Then for two elementary axis of energy,

\[E(P_{1,-1} + P_{2,-2}) = E(P_{1,-1}) + E(P_{2,-2})\]

where \(P_{1,-1}\) is the elementary axis whose extreme points are \(P_1\) and \(P_{-1}\) and \(P_{2,-2}\) is the elementary axis whose extreme points are \(P_2\) and \(P_{-2}\). Equivalently,

\[E_1 = E(P_{1,-1}) = kS_1^2S_{1\perp}^2 = kS_1^2\]
\[E_2 = E(P_{2,-2}) = kS_2^2S_{2\perp}^2 = kS_2^2\]
\[E_{1,2} = E(P_{1,-1} + P_{2,-2}) = kS_1^2 + kS_2^2\] (2)

It is defined a volume \(V\) that contains two elementary dimensional axis of potential energy \(E_1\) and \(E_2\), where the total energy is given by equation (2) and the space fields \(S_1\) and \(S_2\) are mathematically orthogonal. So, the volume \(V\) containing a set of \(m\) elementary dimensions is a euclidian space. As consequence, the addition of the energies \(E_1\) and \(E_2\) forms a one-dimensional mathematic space, that can be obtained from two zero-dimensional mathematic spaces, that has equal energies, \(E_1 = E_2\).

In order to produce a two-dimensional mathematic space, it will start from two one-dimensional mathematic spaces. So it needs to add two more elementary dimension of potential energy. Now, considering a great number of elementary axis of potential energy that are uniformly distributed inside a volume \(V\) and constituted by elementary dimensions of length \(\alpha\), where the \(i\)-th elementary energy is given by \(E_i = E_0\). Where \(E_0\) is the elementary axis of potential energy, that is the same in all directions.

In order to establish an empiric formation law, it can firstly notice that the \(D\)-dimensional space of potential energy is formed by the addition of a power of two elementary energy dimensions.
Starting from a zero-dimensional mathematic space of energy \( E(0) \), that is \( E(0) = E_1 = E_0 \).

The one-dimensional mathematical space of energy \( E(1) \) is obtained by the addition of two zero-dimensional space of energy, that is \( E(1) = E(0) + E(0) = E_1 + E_2 = 2E_0 \). The two-dimensional mathematical space of energy \( E(2) \) is obtained by the addition of two one-dimensional mathematical space of energy, that is \( E(2) = E(1) + E(1) = E_1 + E_2 + E_3 + E_4 = 4E_0 \).

So, the \( D \)-dimensional mathematical space of energy \( E(D) \) is given by:

\[
E(D) = 2^D E_0 = e^{2\alpha_0 D} E_0
\]

(3)

So, \( D \) is defined as the dimension of a \( D \)-dimensional mathematical space of energy. In this way, it is found an elementary law that describes the total energy inside the volume \( V \).

In the following, it is discovered that the total energy is dependent on the mathematical dimension \( D \). Defining the space constant \( \alpha_0 \) as

\[
\alpha_0 = \frac{1}{2} \ln 2
\]

(4)

The energy \( E(D) \) represents the energy of a dimensional space containing a set of elementary dimensions of potential energy.

The space of energy has dimension equal to \( D \) constructed from the bases of segments of one-dimensional axis of energy, given by

\[
E_{1b} = E(D)^{\frac{1}{D}} = 2E_0^{\frac{1}{D}} = e^{2\alpha_0 \frac{1}{D}} E_0^{\frac{1}{D}}
\]

(5)

So, the base zero-dimensional of one energy elementary dimension has energy, given by

\[
E_{0b} = E_0^{\frac{1}{D}}
\]

(6)

The (3) define an embryonal formula of the continuous space-time of the matter, energy and empty space that represents the totality of all real things in the Universe.

It can be demonstrated that

\[
D = \infty \quad \text{for the time and for the empty space}
\]

(7)

\[
D = D_0 = 56 \quad \text{for the matter and for the energy}
\]

(8)

On the other hand, conjugated forces of space-time, \( f_s \), do no exist for the empty space, there are only conjugated forces of anti-space-time, \( f_r \).

3. Introducing the Temporal Variation in the Length \( \alpha \)

Starting from the embryonal equations (1) and (3), it is possible to find an expression for \( E_0 \). Since the elementary dimension of energy has a length \( \alpha \), setting \( k = \alpha \) in (1). Since the space potential \( S_{(0)} \) must be a function of \( \alpha \) and an exponential law has to be obeyed, so doing:

\[
E_0 = kS_0^{\alpha} = \alpha e^{2\alpha_0 \alpha}
\]

(9)

justified by the dimensional law \( 2^D \), where by analogy it has been done \( D = \alpha \) as elementary dimension.

In this theory, the universe is constituted only by dimensions whose unit of length is described in an absolute mathematical measurement system, that is perfectly characterized by the international measurement system (SI) [3]. It can be demonstrated that using the absolute mathematical measurement system, that

\[
\alpha = \frac{1}{\pi}
\]

(10)
Now appears the first question: How to introduce in the expression of $E_0$ space and anti-space representations and its temporal dependence? So, doing

$$E_0 = \alpha S_{0s} = \alpha S_{0s} S_{0r}$$

(11)

where $S_{0s}$ is a space component and $S_{0r}$ is a anti-space component of the elementary energy $E_0$. So it has

$$D_{ls} = L_s = \frac{\alpha}{2}$$

where $D_{ls}$ is a dimension of the stationary space given by $D_{ls} = L_s = \frac{\alpha}{2}$ and $L_s$ is a dimensional length of the dimension $D_{ls}$ of the stationary space.

As a consequence,

$$S_{0r} = e^{\alpha_0 \alpha_1} e^{\alpha_0 \alpha_1} = e^{\alpha_0 \alpha_1} S_{1s}$$

(12)

where $D_{ls}$ is a dimension of the stationary space given by $D_{ls} = L_s = \frac{\alpha}{2}$ and $L_s$ is a dimensional length of the dimension $D_{ls}$ of the stationary space.

Now it is introduced a variation into the lengths $L_{ls}$ and $L_{lr}$ so it will be substituted respectively $L_{ls}$ and $L_{lr}$ by

$$L_{ls} = \alpha_s(t_s) = f_s(t_s) + \frac{\alpha}{2}$$

$$L_{lr} = \alpha_r(t_e) = f_r(t_e) + \frac{\alpha}{2}$$

(14)

With the harmonic fluctuations $\alpha_s(t_s)$ and $\alpha_r(t_e)$ having a complete temporal dependence of $t_s$ in a most simple form. It is designed $t_s$ as the subjective time or the time that rises to the future like the common concept that we have about the time.

Otherwise, the real time is a dimension that oscillates as a pendule with variable velocity. So it is defined a spatial fluctuation dependent of the time designed as space-time function given by $f_s(t_s) = (\alpha_0^2/2) \sin(\alpha_0 t_s)$ where $\alpha_0$ must be determined.

4. Identification of Light Speed as a Universal Constant

On the other hand, before the Big-Bang $E_0$ can not have fluctuations because of the equilibrium between anti space and space time forces.

In this first moment because there is no correct notion of the time movement $t_s$, it is erroneously induced that $\alpha_s(t_s)$ is equal to $-\frac{\alpha}{2} \sin(\alpha_0 t_s) + \frac{\alpha}{2}$.

So, before the Big Bang $E_0 = \alpha e^{\alpha_0 (D_{ls} + D_{lr})} e^{\alpha_0 \alpha_1(t_s)} e^{\alpha_0 \alpha_1(t_e)}$

Now it must focus to the physical and mathematical nature of $S_{ls}$ and $S_{lr}$. The nature of the anti space and space forces are totaly dynamics, in this sense they only can be represented by the dynamics components of $\alpha_s(t_s)$ and $\alpha_r(t_e)$.
Then it is defined the elementary embryonal equations components of dynamics space \( S_s \) and of dynamics anti space \( S_r \) in the same sense of \( S_1s \) and \( S_1r \), so that

\[
S_{1s} = e^{\alpha_0D_j} e^{\alpha_0f_j(t)} = e^{\alpha_0D_j} S_s
\]

\[
S_{1r} = e^{\alpha_0D_j} e^{\alpha_0f_j(t)} = e^{\alpha_0D_j} S_r
\]

(15)

Then \( D_{2s} = D_{2r} = \sqrt{\alpha/2} \). So they have a dynamics components of the energies given by

\[
S_{0s} = e^{\alpha_0D} e^{\alpha_0(D_j + D_{2s})} S_s
\]

\[
S_{0r} = e^{\alpha_0D} e^{\alpha_0(D_j + D_{2r})} S_r
\]

with

\[
D_j = D_{1s} + D_{2s} = \alpha = \frac{1}{\pi}
\]

\[
D_r = D_{1r} + D_{2r} = \alpha = \frac{1}{\pi}
\]

where \( D_s = D_r = \alpha = \frac{1}{\pi} \) are the dimensions of dynamics space and anti-space components. Its correspondents lengths \( L_s \) and \( L_r \) are equal to \( \alpha \) that is the peak to peak variation of \( f_j(t) \) and \( f_j(t) \) respectively.

\[
E(D) = \alpha e^{2\alpha_0D} e^{\alpha_0(D_j + D_r)} S_s S_r
\]

(16)

Now the dimensional physical and mathematical space has dimension \( D + \alpha \) and the quantities \( \beta(D) = e^{2\alpha_0(D+\alpha)} \) are fundamental nature, dimensional function, that only depends of the dimension \( D \).

This function \( \beta(D) \) is physically and mathematically without dimension and to the mater and energy it has \( D = D_0 = 56 \). Then to the mater and energy, it is identified \( \beta(D_0) \) with the square of the light velocity \( c \) in the empty space, expressed in meters per seconds.

In the equation (16) by doing \( D = D_0 \), the value \( c \) numeric equal to the light velocity in the empty space, is the phase time velocity of the wave time into the mater and energy.

\[
c = e^{\alpha_0(D_0 + \frac{1}{\pi})}
\]

(17)

where \( c = 2.997438563\times10^8 \) m/s. The percentage difference between theoretical and practical values is \( PD = -0.016 \).

Now it is inquired that velocity has dimension, but this theory will proof that dimension time is exactly like space dimension, so meter by seconds is not dimensional.

This theory will proof that everything that exists into the universe is express in the unity of mathematical dimensional length \( \alpha \). So in a concise form it has

\[
E(D_0) = \alpha c^2 S_s S_r
\]

(18)

5. Determination of the Angular Frequency \( \omega_0 \)

Aiming to find a most complete equation that (16) represents, it will start admitting the principle that before the Big-Bang the continuous space time equation must not change with movement time. So the elementary cell of energy do not change with the time variation too.
The cell must be totally static, without manifestation of temperature, without mass like it is known, or electric charge. The cell must be only an elementary cell of potential energy that keeps its dimensions stable. So, in this way, the composition of the continuous space-time equation must be present the dynamics equations \( S_s \) and \( S_r \) representatives of the forces of space and anti-space that mutually one neutralizes the other from a derivative process.

As a starting point principle, it will consider that the time was always present and it, in fact, made a continuous and indefinite process derivative in the energy at the elementary cells.

Meanwhile, before the Big-Bang the continuous temporal derivative in the energy, does not promote fluctuations in this static energy.

So, initially it will admit that the derivative of the energy before the Big-Bang was zero and it will be making

\[
\frac{dE(D_0)}{dt_s} = 0
\]

In this way, the primitive Universe was totally static in the zero absolute temperature. It was constituted only by elementary cells, completely stationaries, disposed side by side, totally occupying the empty space and All Universe Energy was stored in this elementary cells as potential energy.

Each elementary cell contains \( 2^{D_0} \) elementary dimensions of potential energy in a homogeneous spherical distribution of radius \( \alpha / 2 \).

Because the elementary cells has this homogenous distribution it can be proven that the potential gravitational between the cells is always constant, independent of the volume of the cells that is considered.

It is going to be choose the referential space-time function \( f_s(t_s) \) to have a sinusoidal form and the referential anti-space-time function \( f_r(t_s) \) to be a cosine, that it will be justified later and is given by

\[
f_r(t_s) = -\frac{\alpha}{2} \cos(\omega_0 t_s)
\]

It will be postulate that the equation of action into the continuous space time is a continued derivative equation. For a while it will be doing this action equation before the Big-Bang to be equal zero

\[
\frac{dE(D_0)}{dt_s} = \omega_0 \alpha_0 \alpha^2 \frac{\sqrt{2}}{2} \cos \left( \omega_0 t_s - \frac{\pi}{4} \right) c^2 S_s S_r = 0
\]

The unique form of this expression to be zero is done \( \omega_0 = 0 \). But so where will be the temporal variation?

6. Introduction of the Phase Variation

The question above will be solved by introducing a phase variation \( \theta(t_s) = \omega t_s \), where \( \omega = 2\pi \frac{V_f}{\lambda} \) and \( V_f \) is the phase velocity of the time wave, \( \lambda \) is the length of time wave produced by this phase velocity.

As in this moment the time will be considered into complete stationary space and not into movement matter, is possible to demonstrate that in this condition it must have \( \frac{\lambda}{v_f} = 2\pi \)

When it will be considered the matter in movement with velocity \( v \), it will be demonstrated that

\[
\omega = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}
\]
that is the known Lorentz factor [4].

In this moment it will be assumed that $\omega_1$ is a constant value to be found.

Aiming not to disturb the equation before the Big-bang, it is introduced two oppositive phases. So, before the Big-Bang, it is going to suppose initially that

\[
f(t_s) = f_1(t_s) + f_2(t_s) = \alpha \frac{\sqrt{2}}{2} \sin(\omega t_s - \frac{\pi}{4} + \theta(t_s) - \theta(t_s))
\]

In this first moment it will be supposed that space and anti space forces will be represented by the phases $\theta(t_s)$ and $-\theta(t_s)$.

What does it mean having into the space a sinusoid with zero frequency and $\theta(t_s)$ phase changing with the time?

It means that the amplitude of the sinusoid will be instantaneously the same in all universe and this amplitude has a variation with the time which amplitude is defined by the phase. This equation depends on the time and is producing zero derivative.

7. Alteration of Equilibrium Conditions

After the Big-Bang the $\frac{dE(D_\eta)}{dt}$ equation has to be changed.

The start of the Big-Bang was caused by a unbalance in a single elementary cell. With finality to promote a transformation in the equation, in this first moment $-\theta(t_s)$ will be eliminated. The introduction of two oppositive phase terms was resulting of a logical rationality, but it will be demonstrated that even before the Big-Bang, it was only necessary the phase $+\theta(t_s)$ and the phase $-\theta(t_s)$ was totaly unnecessary.

So to promote the changing in an energy differential equation it will eliminate $-\theta(t_s)$, then the transformation will give $f(t_s) = \alpha \frac{\sqrt{2}}{2} \sin(\omega t_s - \frac{\pi}{4} + \theta(t_s))$

Now the derivation of the energy equation is starting to produce a factor of energy reduction and dimensional contraction. The energy factor will form the mass and charge of the matter.

After the Big Bang it will postulate that to constitute the materia, the differential equation $\frac{dE(d_\eta)}{dt_s}$ will be separated in two components that are totally tied and produces combined action, but having independent actuation.

Considering the product $P(t_s) = S, S_t = e^{\omega \alpha f(t_s)}$. The mathematical derivative of the product is

\[
P'(t_s) = \alpha_0 f'(t_s) P(t_s) = \alpha_0 f'(t_s) e^{\omega \alpha f(t_s)}
\]

\[
f'(t_s) = \frac{df(t_s)}{dt_s} = \frac{\sqrt{2}}{2} \cos(\omega t_s - \frac{\pi}{4})
\]

\[
P'(t_s) = \alpha_0 \frac{\sqrt{2}}{2} \cos(\omega t_s - \frac{\pi}{4}) e^{\omega \alpha f(t_s)}
\]

Now it must attempt to the true physical derivative form of $P(t_s)$.

The time derivative actuation is produced over all functions in all equations. and must separate space and anti space.

So it is postulated that the derivative form physically must produce:

\[
P'_\alpha = \alpha_0 f'_\alpha(t_s) e^{\omega \alpha f(t_s)} + \alpha_0 f'_\beta(t_s) e^{\omega \alpha f(t_s)}
\]
Then it must have

\[ E'(D_0) = \alpha c^2 P'_o = \alpha c^2 \left[ \alpha_0 \alpha \right] \cos(\omega t_s) e^{\alpha_0 f_s(t_s)} + \alpha c^2 \left[ \alpha_0 \alpha \right] \sin(\omega t_s) e^{\alpha_0 f_s(t_s)} \]

The term \( \alpha_0 \alpha / 2 \) will be proved in the Theory that it is an incremental contribution to the mass and charge of the elementary particles.

Then to the space and anti-space components it will have respectively

\[ E'_s(d_0) = \alpha c^2 \left[ \alpha_0 \alpha / 2 \right] \cos(\omega t_s) e^{\alpha_0 f_s(t_s)} \]
\[ E'_s(d_0) = \alpha c^2 \left[ \alpha_0 \alpha / 2 \right] \sin(\omega t_s) e^{\alpha_0 f_s(t_s)} \]
\[ f'_s(t_s) = \alpha / 2 \cos(\omega t_s) \]
\[ f'_s(t_s) = \alpha / 2 \sin(\omega t_s) \]

Now it will try to reconstruct the primitive equation from its separation doing firstly

\[ g(t_s) = E'_s(t_s) e^{\alpha_0 f_s(t_s)} + E'_s(t_s) e^{\alpha_0 f_s(t_s)} = \alpha c^2 \left[ \alpha_0 \alpha / 2 \right] \sqrt{2} \cos(\omega t_s - \frac{\pi}{4}) e^{\alpha_0 f_s(t_s)} \]

So in the equation above has the additive term from a sinuous and cosine given by

\[ h(t_s) = \sqrt{2} \cos(\omega t_s - \frac{\pi}{4}) \]

This term is not reconstructed, and its represents an other separation term between \( E'_s(D) \) and \( E'_s(D) \) and it can be seen that

\[ h(t_s) = \frac{e^{j(\omega t_s - \frac{\pi}{4})} + e^{-j(\omega t_s - \frac{\pi}{4})}}{\sqrt{2}} + \frac{e^{j(\omega t_s - \frac{\pi}{4})} - e^{-j(\omega t_s - \frac{\pi}{4})}}{\sqrt{2}} \]

To restore the original form of this term its substitution will be postulated by

\[ q(t_s) = \frac{e^{j(\omega t_s - \frac{\pi}{4})} - e^{-j(\omega t_s - \frac{\pi}{4})}}{\sqrt{2}} \]

In the reconstruction the term \( \left[ \alpha_0 \alpha / 2 \right] \) is obtained because it is resultant from the process of the separation by derivation.

Because it has introduced a complex time it must consider the time into \( f'_s(t_s) \) and \( f'_s(t_s) \) initially as a complex term, than it will have the reconstructed form

\[ E'(D_0) = \alpha c^2 \sqrt{2} e^{j(\omega t_s - \frac{\pi}{4})} e^{-j(\omega t_s - \frac{\pi}{4})} e^{\alpha_0 f_s(t_s)} \]
\[ E'(D_0) = \alpha c^2 \sqrt{2} e^{\frac{\pi}{4} \cos(j t_s - \frac{\pi}{4})} \]

The complex coordinates that appears will be explained when the Relativity Theory is introduced [5]. The complex coordinate that is found is the temporal coordinate which is necessary to be complex to obtain a real phase of the time into the space.

8. Real Condition of the Invariability before the Big-Bang

Returning to consider again the derivative of the primitive energy equation.
It was made a preliminary analysis considering its mathematical derivative as been \$\text{zero}\$, however its derivative can not produce nullity of the continuous space time equation, but in sense that keep it unmodified.

So the continue derivative of the primitive continuous space time equation before the big bang has to produce itself, keeping its continuity.

So the real condition in a mathematical derivative definition before the Big-Bang must be

$$\frac{dE(D_0)}{d(jt_s)} = E(D_0),$$ and do not zero.

To satisfy this condition it must eliminate one of two complex terms keeping only one of them. Studying the Relativity Theory the term $+ j\omega t_s$ must be conserved. So the following term will be eliminated. $e^{-j\omega t_s}/\sqrt{2}$ and consequently $- j\omega t_s$ in the $f'(t_s)$.

So in the primitive equation there is only a temporal complex coordinate $+ j\omega t_s$. Than it will have the primitive equation without derivative $E(D_0) = \alpha c^2 e^{j\omega t_s} e^{\alpha f(t_s)}$ where in this new condition $f(t_s) = j\frac{\alpha}{2} \sin(\omega t_s) - j\frac{\alpha}{2} \cos(\omega t_s)$ and its mathematical derivative equation with respect to complex temporal coordinate $jt_s$, before the Big Bang, will be

$$\frac{dE(D_0)}{d(jt_s)} = \omega t_s \alpha c^2 e^{j\omega t_s} e^{\alpha f(t_s)} + \alpha c^2 f'(t_s) e^{j\omega t_s} e^{\alpha f(t_s)}$$

so that the derivative with respect to complex time coordinate $jt_s$ produce the properly derivative energy of the continuous space time, so $\omega = 1$ radian and $f'(t_s) = 0$ taking our attention to the term $f'(t_s)$.

In this moment there is a question to solve: the continue derivation of $f_s(t_s)$ and $f_r(t_s)$ with respect to $jt_s$, must produce the nullity of the term $f'(t_s) = f'_s(t_s) + f'_r(t_s)$. How can it be possible?).

9. Characterization of the Dimensional Variation

Now the above question will be solved! When the complex component is introduced and keeping the sinuous and cosine components, the complex component $e^{j\omega t_s}$ is a description of the time. So the sinuous and cosine components in $f(t_s)$, can not be the time representation, but the spatial dimensional actuation of the time on the dimension. So inside of the sinuous and cosine terms the time is not the subjective time but the rotating amplitude constant vector $\vec{t}_s$ which amplitude is the constant equal to 1.

Otherwise, the time rotating vector actuation on the dimensional components in sinuous and cosine depends respectively of $t_{ss}$ and $t_{sr}$ and do not directly of $t_s$.

It can be seen that

$$t_{ss} = \vec{t}_s \sin(\omega t_s) = j \sin(\omega t_s)$$
$$t_{sr} = \vec{t}_s \cos(\omega t_s) = j \cos(\omega t_s)$$

In the terms $f_s(t_s)$ and $f_r(t_s)$ it will be done respectively the transformations

$$j\omega t_s = \alpha t_s \frac{t_{ss}}{\sin(\omega t_s)} = \alpha t_s \frac{t_{sr}}{\cos(\omega t_s)}$$

so it will have
\[ f_s(t_{ss}) = \frac{\alpha}{2} \sin \left( \omega t_s - \frac{t_{ss}}{\sin(\omega t_s)} \right) \]
\[ f_r(t_{sr}) = -\frac{\alpha}{2} \cos \left( \omega t_s - \frac{t_{sr}}{\cos(\omega t_s)} \right) \]

that results
\[ f_s(t_{ss}) = \frac{\alpha}{2} t_{ss} \]
\[ f_r(t_{sr}) = -\frac{\alpha}{2} t_{sr} \]

As seen above, \( f_s(t_{ss}) \) and \( f_r(t_{sr}) \) do not depends on \( \omega_t \). Utilizing the Relativity Theory [6] it can be proven that \( t_{ss} \) and \( t_{sr} \) do not depends of an angular variant frequency \( \omega_t \) and in the expression of \( t_{ss} \) and \( t_{sr} \), the angular frequency is \( \omega_t = -j \).

So in reality the correct forms are the following.
\[ t_{ss} = \sin(t_s) \]
\[ t_{sr} = \cos(t_s) \]
\[ f_s(t_{ss}) = \frac{\alpha}{2} t_{ss} = \frac{\alpha}{2} \sin(t_s) \]
\[ f_r(t_{sr}) = -\frac{\alpha}{2} t_{sr} = -\frac{\alpha}{2} \cos(t_s) \]

And the derivative of \( f_s(t_{ss}) \) and \( f_r(t_{sr}) \) is not with respect to \( j t_s \) but is with respect to components \( t_{ss} \) and \( t_{sr} \) respectively.

In this condition the sum of the continue derivation of \( f_s(t_{ss}) \) and \( f_r(t_{sr}) \) will be producing
\[ f'(t_{ss}, t_{sr}) = \frac{df_s(t_{ss})}{dt_{ss}} + \frac{df_r(t_{sr})}{dt_{sr}} = 0 \] (22)

10. The General Form of the Primitive Equation in Static and Dynamics Forms
So after the definition of time functions \( f_s(t_{ss}) \) and \( f_r(t_{sr}) \), now is presented the equations of the continuous space-time before the Big-Bang [7] in the static form:
\[ E(D) = \alpha e^{2a_0t_{ss} + \omega_0} e^{i\omega t_s} e^{a_0f(t_{ss}, t_{sr})} \] (23)
\[ \alpha_0 = \frac{1}{2} \ln 2 \quad \text{space constant} \]
\[ \alpha = \frac{1}{\pi} \quad \text{dimensional length} \]
\[ \omega_0 = 1 \quad \text{angular frequency of the time before the Big-Bang} \]
\[ f(t_{ss}, t_{sr}) = f_s(t_{ss}) + f_r(t_{sr}) \quad \text{static time function} \]
\[ t_{ss} = \sin(t_s) \quad \text{active time in the space component} \]
\[ t_{sr} = \cos(t_s) \quad \text{active time in the anti-space component} \]
\[ t_s = \text{subjective time} \]
\[ f_s(t_{ss}) = \frac{\alpha}{2} t_{ss} \quad \text{time function of the space component} \]
\[ f_r(t_{sr}) = -\frac{\alpha}{2} t_{sr} \quad \text{time function of the antspace component} \]
\[ \alpha_0 = \frac{1}{2} \ln 2 \] space constant

\[ v_f = e^{\alpha_0 (D+c)} \] velocity phase of the time

\[ D = \infty \] to the empty space and the time

\[ D = D_0 = 56 \] to the matter and energy

\[ S_s = E^{\alpha_0 f_s(t_u)} \] space component of the elementary static energy

\[ S_r = E^{\alpha_0 f_r(t_u)} \] anti-space component of the elementary static energy

Now is presented the equations of the continuous space-time before the Big-Bang [5] in the dynamic form:

\[ E'(D) = \omega_1 e^{2\alpha_0 (D+c)} e^{i\omega_1 t} e^{\alpha_0 f(t_u, t_r)} \] (24)

\[ f'(t_s, t_r) = f_s'(t_u) + f_r'(t_u) \] dynamic time function

\[ f_s'(t_u) = \frac{\alpha}{2} \] time function of the space component in continuous derivative

\[ f_r'(t_u) = -\frac{\alpha}{2} \] time function of the anti-space component in continuous derivative

\[ S_s = E^{\alpha_0 f_s(t_u)} \] space component of the elementary dynamic energy

\[ S_r = E^{\alpha_0 f_r(t_u)} \] anti-space component of the elementary dynamic energy

Then the primitive equation (24) of the continuous space time in its complete form in continuous derivation defined as Continuity equation of the continuous space time before the Big-Bang. After the Big-Bang everything starts to move and to the movement it has

\[ \omega_1 = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} \] (25)

that is the angular frequency of the time in a matter moving with speed \( v \).

So the elementary cells of potential energy of the primitive universe into the empty space totally stationary, without any movement or other form of energy are express by the equations (23) and (24) in static equilibrium. These equations are general and can be worked in many ways, obtaining surprising results. when the angular frequency \( \omega_1 \) is introduced, the number \( D_0 = 56 \) to the mater and energy, and \( D = \infty \) to the time and empty space, the separation between space time and anti space time forces, the real time \( t \) instead of the subjective time \( t_u \), and the basis of space and time..

11. Some Theoretical Results

The Equation (23) can be conveniently separated in three terms like.

\[ E(D) = e^{2\alpha_0 (D+c)} TS_s S_r \] (26)

where is defined

\[ T = e^{i\omega_1 t} \] time equation

\[ S_s = e^{\alpha_0 f_s(t_u)} \] space equation

\[ S_r = e^{\alpha_0 f_r(t_u)} \] anti space equation
From the earlier equations, the space-time and the anti space-time equations are

\[
C_s = e^{2\alpha_0 (D + \sigma)} TS_s \quad \text{space-time equation (27)}
\]

\[
C_r = e^{2\alpha_0 (D + \sigma)} TS_r \quad \text{anti space-time equation (28)}
\]

After the Big-Bang the primitive equation of the continuous space time of the elementary cell of potential energy, was separated in two parts producing the equations of space time and anti space time spectrally tied and non separable into the matter, but in the energy there is only the space time component that is responsible by the wave propagation. The empty space has only the anti space component and the time has only the space component.

The empty space is characterized by its presence in distinct points. The time is characterized by the instantaneous actuation in all empty space. So only element of empty space is separated of another element of empty space, but the time is integralized on all empty space. The empty space, because it has only anti space component, it is physically totally static. Because the time has only space component and infinite space dimension it has an infinite phase velocity of propagation. So the time is a stationary wave and its instantaneous energy is simultaneous over all space.

The process of dimensional reduction where are engaged derivative and/or integral of the functions \( TS_s \) or \( TS_r \) will produce matter and energy, as resulting of this process. Now is presented some results of this theory:

\[
N = 7 \quad \text{Number of atomics Shells}
\]

\[
RT_1 = \frac{1}{2\pi \sqrt{2}} - \frac{1}{4\pi \sqrt{2}} \quad \text{Partial reduction of the time function}
\]

\[
RT_2 = \frac{1}{2\pi \sqrt{2}} \quad \text{Complete dimensional reduction of the time function}
\]

\[
M(0) = \frac{1}{2} (e^{\frac{\alpha_0 D}{\tau}} + e^{-\frac{\alpha_0 D}{\tau}}) \quad \text{Dimension alfactor of correction}
\]

\[
Z(0) = \frac{1}{2} \left( M(0) + \frac{1}{M(0)} \right) \quad \text{Dimensional factor correction}
\]

where the factor \( M(0) \) is associated to the space and the \( \frac{1}{M(0)} \) factor is associated to the anti-space. The factor \( Z(0) \) is associated to the conjugated actuation between space and anti space.

Light speed into the empty space

\[
c = e^{\alpha_0 (D + \frac{1}{\tau})} = 2,9974385630 \times 10^8 \text{m/s}
\]

PD = -0,016

where PD is the percentage difference.

Static proton mass

\[
m'_p = \frac{\alpha_0}{\pi} (-\alpha_0^{\rho_0}) \alpha_0^{RT_1} \frac{1}{M(0)} \text{kg} = 1,671795279 \times 10^{-27} \text{kg}
\]

PD = -0,049

Static neutron mass

\[
m'_n = \frac{\alpha_0}{\pi} (-\alpha_0^{\rho_0}) \alpha_0^{RT_1} Z(0) \text{kg} = 1,674341082 \times 10^{-27} \text{kg}
\]

PD = -0,034

Boltzmann constant[8]
\[ k = \frac{1}{\alpha_0 \pi} e^{-\alpha_0 \frac{2RT_1-RT_2}{\alpha_0}} = 1,380299907 \times 10^{-23} \text{ J/K} \]  

(32)

\[ \text{PD} = -0.0262 \]

Bohr Radius [8]

\[ r_0 = \frac{1}{(m(8)-1)c} = \frac{1}{63c} = 5.29526678 \times 10^{-11} \text{ m} \]  

(33)

\[ \text{PD} = 0.070 \]

where

\[ m(8) = \sum_{l=0}^{7} (2l+1) = 64 \]

\[ m(8) - 1 = D_0 + N \]

12. Conclusions

In this article, the equation called the primitive equation of the continuous space-time was formally deduced. This paper presents a completely new work that is a small part of a work quite extensive, resulting from years of intense research of the author. It was presented as an introduction, so it can be appreciated, analyzed and criticized. The conclusion will depend on future works all interconnected, and these conclusions may only be obtained after full publication of several other items that compound the theory.

13. References

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