The gravity and the state expansive - contractive of the universe in the fifth dimension

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Abstract

Einstein's equation (1905) provides mathematical support for the physical law of conservation of the mass and the energy. Says this law that, in the universe, mass and energy can not be created or destroyed, they can only be transformed into one another. The way this transformation is made, according to Einstein´s equation (1905), determines the state, expansive or contractive, of the universe in the fifth dimension. For example, when mass is transformed into energy in the absence of gravity occurs a process of wave nature, expansive and hot, like the one that originated the universe in the Big Bang. Such a process that started from a point of singularity to propagate, creating the space and the time, ended with the formation of stars, closing the expansive cycle of the universe. On the other hand, when energy is transformed into mass in the periphery of the stars according to Einstein's equation (1905), a process of contractive, implosive and cold nature occurs, resulting in the appearance of gravity and electromagnetism, starting the contractive cycle of the universe.

Introduction

The purpose of the present work is to contribute with the understanding of the universe and its evolution, always respecting the opinion of the great masters, even though they may seem sometimes misleading.

The fifth dimension

The universe is in the fifth dimension (x, y, z, t, m). When a stone is thrown in a windows, the location is characterized by (x, y, z), the three dimensions of space, while (t) represents the time of occurrence. The mass (m) represents the material body that reached the windows, which in the specific case was the stone.

The expanding universe

Einstein´s equation (1905), which is the basis of the theory of restricted relativity, must also be considered as one of the mathematical foundations of the law of conservation of mass and energy (equation 1).

$$E = mc^2 \quad (1)$$

Says this law that, in the universe, mass (m) and energy (E) can not be created or destroyed, they can only be transformed into one another. According to the equation (1), there are two transformation possibilities, which occur at quantum level and at speed of light squared (c^2). Only one of these two transformation possibilities is being considered in this topic. It occurs in the absence of gravity, when the universal mass is transformed into energy, forming a process of wave nature, expansive and hot, like the one that originated the universe in the Big Bang.

Hawking (1971) was correct in saying that the expanding universe originated from a point of singularity, but what he did not say was that the universal mass is really contained at that point of singularity because the mass is protected by the law of conservation of the mass and the energy, when the universe is only the inside.

The process of wave nature, expansive and hot allowed the wavefront of energy, starting from the point of singularity to propagate, creating the space and the time. This process took many billions of years to complete, until it stopped, when the stars formed, closing the expansive cycle of the universe. From there, the black holes appeared and the stars grouped together forming galaxies, which, in turn, the galaxies grouped together forming the contracting universe, which at the end of its evolution returns to the point of singularity.

The gravity

According to Newton (1687), the gravitational potential (U) (equation 2), which goes to zero at infinity, where (m) is mass, grows with decreasing distance $\left[s = \left(x^2 + y^2 + z^2 \right)^{\frac{1}{2}} \right]$ (Figure 1), where (x, y, z) are the three dimensions of space and (G) is the constant of universal gravitation.

$$U = G\frac{m}{s} \quad (2)$$

The gradient $(\overline{\nabla})$ (equation 3), which points to infinity (Figure 1), when negative points in the opposite sense, towards the growth of the potential (U) (equation 2) and to the growth of gravitational field $(\overline{g})$ (equation 4).

$$\overline{\nabla} = \hat{i}\frac{\partial}{\partial x} + \hat{j}\frac{\partial}{\partial y} + \hat{k}\frac{\partial}{\partial z} \quad (3)$$

$$\overline{g} = -\overline{\nabla}U = G\frac{m}{s^2}\left(\frac{\overline{s}}{s}\right) = \left(\frac{\overline{F}_a}{m_{rf}}\right) \quad (4)$$

In Newton´s wards (1687), matter attracts matter, in the direct ratio of masses $(m.m_{rf})$ and in the inverse ratio of the distance squared (s^2), being $(\overline{F}_a)$ the force of gravitational attraction (equation 4 and Figure 1).

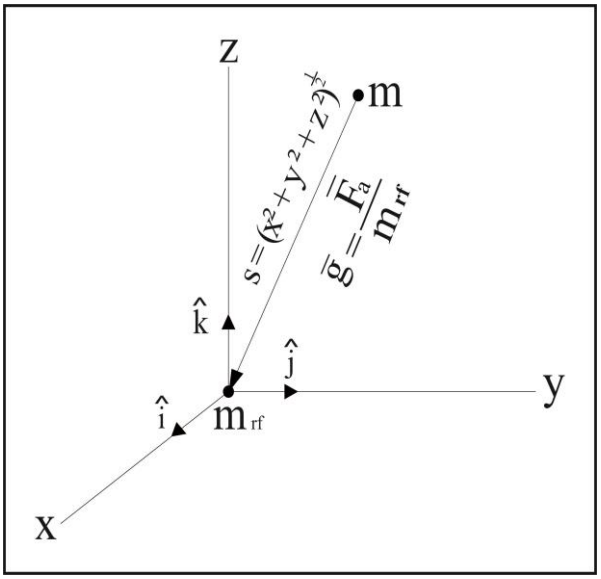

Figure 1 – Graphical representation of gravity $(\overline{g})$ at three dimensions (x, y, z) according to Newton´s conception (1687). By way of illustration (m) represents the mass of the apple that fell on the head of Newton and (m_{rf}) represents the mass of the Earth, taken as reference. It is necessary to observe that, for small distances (s) the mass (m) does not gravitate around the Earth, it simply falls to Earth.

Based on the theory of general relativity (Einstein 1916), the potential (U) (equation 5), where (m) is mass, grows with decreasing space $[s(x, y, z)]$, also growing with growth of the velocity (v) squared and, consequently, with the decreasing of time (t), in the fourth dimension (x, y, z, t).

$$U = G\frac{m}{s} = v^2(s, t, m) \quad (5)$$

The relativistic mathematical equations, among the variable (v) squared and the variables (s, t, m) where (c^2) is the speed of light squared are thus represented (equations 6, 7, 8 and 9).

$$v^2 = G\frac{m_0}{s_0}\left(1 - \frac{v_0^2}{c^2}\right)^{-1} \quad (6) \qquad s = s_0\left(1 - \frac{v_0^2}{c^2}\right)^{\frac{1}{2}} \quad (7)$$

$$t = t_0\left(1 - \frac{v_0^2}{c^2}\right)^{-\frac{1}{2}} \quad (8) \qquad m = m_0\left(1 - \frac{v_0^2}{c^2}\right)^{-\frac{1}{2}} \quad (9)$$

According to Adalberto da Costa Dias (this article), the gravitational potential (U) (equation 5), besides growing with decrease of the distance $\left[s = \left(x^2 + y^2 + z^2\right)^{\frac{1}{2}}\right]$ and with decrease of the time (t), also grows with the growth of the mass (m) in the fifth dimension (x, y, z, t, m), the velocity (v) squared being identified as the independent variable. The gradient in the fifth dimension, when negative and the gravitational field are thus represented (equations 10, 11, 12 and Figure 2).

$$-\overline{\nabla} = -\hat{l}\frac{\partial}{\partial s} - \hat{m}\frac{\partial}{\partial t} + \hat{n}\frac{\partial}{\partial m} \quad (10)$$

$$\overline{g} = -\overline{\nabla}\left(G\frac{m}{s}\right) = -\overline{\nabla}\left[v^2(s, t, m)\right] \quad (11)$$

$$\overline{g} = v^2(s, t, m)\left(\frac{\hat{l}}{s} + \frac{\hat{m}}{t} + \frac{\hat{n}}{m}\right) \quad (12)$$

According to the concepts studied in this topic, based on the equations (2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12), the gravitational field $(\overline{g})$ in the fifth dimension is thus represented (equation 13 and Figure 2).

$$\bar{g} = \frac{\bar{F}_a}{m_{rf}} = G\left(\frac{m_0}{s_0}\right)\left[\frac{\hat{l}}{s_0}\left(1-\frac{v_0^2}{c^2}\right)^{-\frac{3}{2}} + \frac{\hat{m}}{t_0}\left(1-\frac{v_0^2}{c^2}\right)^{-\frac{1}{2}} + \frac{\hat{n}}{m_0}\left(1-\frac{v_0^2}{c^2}\right)^{-\frac{1}{2}}\right] \quad (13)$$

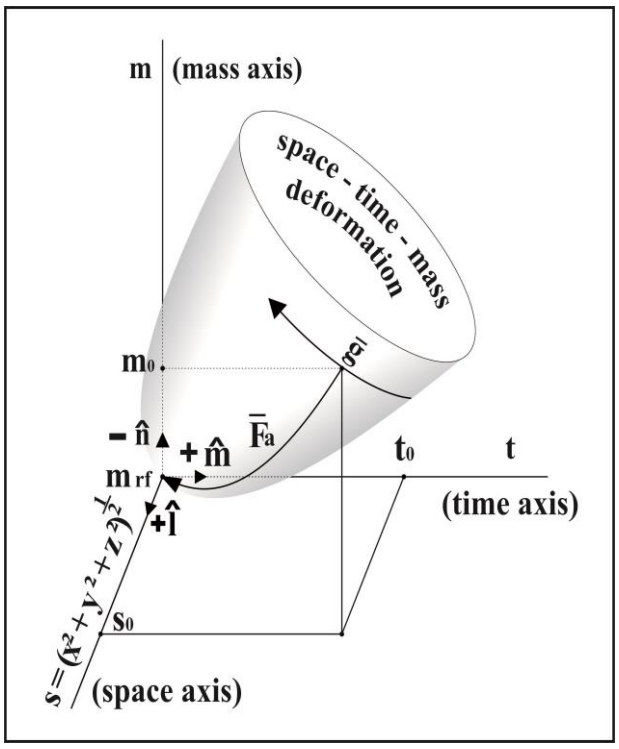

Figure 2 – Graphycal representation of gravity $(\bar{g})$ at five dimensions (x, y, z, t, m), which corresponds to a hyperboloid of revolution according to the conception of Adalberto da Costa Dias. The figure of the hiperboloid is drawn with the help of the gradient (Reitz & Milford 1970). When negative, the gradient (equation 10) is applied to gravitational potential (equation 5), which mathematically equals gravity field (equations 11, 12 and 13), lending the shape of the hiperboloid of revolution to the contracting universe itself. The time axis (t) and the mass axis (m) make up the fifth dimension with the space axis $\left[s = \left(x^2 + y^2 + z^2\right)^{\frac{1}{2}}\right]$ which was borrowed from Figure (1).

The contracting universe

Gravity $(\bar{g})$ is the physical phenomenon, which has its origin in the attraction among masses, which gravitate in the contracting universe in the fifth dimension, deforming the space, the time and even the mass causing the celestial bodies to acquire the spherical form. The deformation caused by gravity corresponds to a hyperboloid of revolution (Figure 2), this being the same figure as that Einstein (1916) designed to represent the own gravity. This deformation is complete when a force of gravitational attraction $(\bar{F}_a)$ (equation 13 and Figure 2), of contractive, implosive and cold nature pulls the attracted masses that gravitate, the space and the time towards the attractive centre of mass (m_{rf}), taken as reference.

When (m_{rf}) is the attractive mass of the sun and the attracted masses that gravitate are planets, it is the solar system.

When (m_{rf}) is the attractive mass of a black hole and the attracted masses that gravitate are stars, it is a galaxy.

When (m_{rf}) is the attractive mass of the black hole called the big hole, located in the gravitational center of the contracting universe and the attracted masses that gravitate are galaxies, then it is the contracting universe itself.

It is the big hole, which maintains, by extreme attraction, the contracting universe assembled forming a constellation of galaxies. If the big hole did not exist then the universe would not exist either, because in this case the galaxies would all come out of their universal constellation out of the universe itself, which would be absurd.

Based on equation (13) and Figure (2), the time count is regressive, meaning that the contracting universe is coming from the future, passing trough the present (14 billion and 700 million years) and going towards the past, not so far away, until it is completely annihilated in the big hole $\left(s = 0, t = 0, \bar{g} = +\infty, E = m_{rf}c^2\right)$. For example, the extinction of dinosaurs occured in the future. The geological time scale needs to be inverted to be understood. The human race, which lives in the present, had its origin in the future.

The enigma is explained that the observable mass of the contracting universe represents something around 5% of the total mass, as follows: the remaining 95% of the universal mass has already been sawllowed by black holes, being invisible within them, in the form of light particles, which are cold and do not occupy free spaces.

Here is the equation that mathematically defines black holes (equation 14), where (d) is density, (m) is mass and (v) is volume:

$$\lim_{d \to +\infty} d = \lim_{\substack{m \to increase \\ v \to 0}} \frac{m}{v} \quad (14)$$

The black hole is a product of its own gravity, being nothing more than a gravitational center with power of

attraction tending towards more infinity. The only kind of matter that fits inside the black holes are particles of light, which by the reduced volume, tending to zero, are the treshold between mass and energy. Even with the colossal implosive power of black holes, causing the volume tending to zero (equation 14), the mass remains latente within them, because the mass is protected by the law of conservation of mass and energy (equation 1).

Based on the propagation velocities of seismic waves V_S and V_P, Gutenberg (1951) showed that the inner core of the planet Earth is consolidated, despite the great pressure reigning there, being constituted by heavy metals, according to the distribution of densities (ρ) (Figure 3, modified from Teixeira et all. 2003).

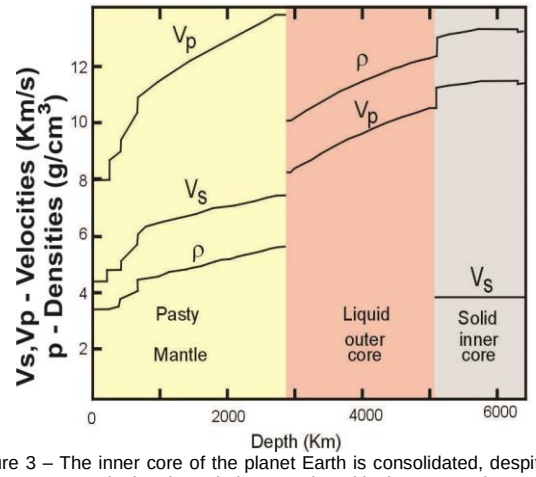

Figure 3 – The inner core of the planet Earth is consolidated, despite the great pressure reigning there, being constituted by heavy metals.

It is possible to make the following bold prediction (Dias 2013), based on the results showed by Figure (3): “every gravitational centre of the contracting universe is massive and cold. This is plausible once the planet Earth is inserted, forming part of the contracting universe itself. As an example, stars may have their nuclei less hot than their peripheries and black holes, they are certainly most massive, cold and black gravitational centers of the contracting universe”.

The black holes can only be seen trough telescopes because of the magnificent glare of the quasars that surround them. The quasar, in this case, is formed by the cloud of light particles from its arrival to the black holes coming from the stars, observable to the telescope.

Hawking (1971) reported that through a cosmic collision process he termed the big crunch, like the collision that is scheduled to take place between the Andromeda Galaxy and the Milky Way, the universe can be reduced to a point of singularity. The big crunch process (Hawking 1971) is a consequence of the implosion of the space-time-mass caused by the gravitational attraction.

The point of singularity, which coincides with the big hole at the end of the contracting universe, explodes in the Big Bang event, giving rise to the expanding universe, ciclically, over and over again.

The Big Bang explosion occurs due to the non-existence of a second material body, when the contracting universe is only the inside. In this case, the trigger is fired when the force of gravitational attraction, reversing its vector sense, turns into a force of repulsion by absence of gravity.

The redish color of the doppler effect observed by Hubble (1929) means that the galaxies were in front of the point of observation, that it was the Earth and moving away from it (Figure 4).

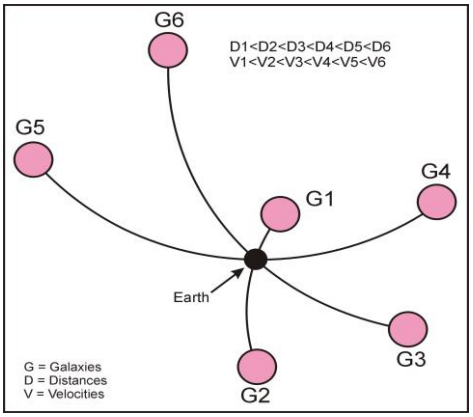

Figure 4 – The galaxies were in front of the point of observation, that it was the Earth and moving away from it.

The very large and ever-increasing velocity observed by Hubble (1929) is the mathematical proof, based on equation (13), that the galaxies were gravitating in a contractive, implosive and cold way towards the big hole, located in the gravitational centre of the contracting universe (Figures 2 and 4).

Just as the Earth is not flat (Pythagoras), nor as a planet is it the centre of the universe (Galileo 1610), so the universe itself is not expanding but is in the inexorable state of permanent cooling, contraction, implosion, collision and cosmic blackout (Adalberto da Costa Dias, this article).

Prediction based on the presente work

1 – Dark energy does not exist.

2 - It is possible that, the phenomenon of gravity can finally be quantified.

3 - It is possible that, the unified fields theory can finally be deciphered.

As a suggestion, use the following mathematical relationships:

$$\overline{\nabla} \times \overline{\nabla} \times \overline{F} = \overline{\nabla}\,\overline{\nabla} \bullet \overline{F} - \overline{\nabla}^2 \overline{F} \qquad \overline{g} = G\frac{m}{s^2}\left(\frac{\overline{s}}{s}\right)$$

$$\overline{E} = \frac{q}{4\pi\varepsilon_0 s^2}\left(\frac{\overline{s}}{s}\right) \qquad \overline{\nabla}\times\overline{\nabla}\times\overline{E} = -\frac{\partial}{\partial t}\left(\overline{\nabla}\times\overline{B}\right)$$

Conclusions

Einstein´s equation (1905) provides mathematical support for the physical law of conservation of the mass and the energy. Says this law that in the universe, mass and energy can not be created or destroyed, they can only be transformed into one another. The mode with this transformation is made, according to Einstein´s equation (1905), determines the state, expansive or contractive, of the universe in the fifth dimension. When mass is transformed into energy in the absence of gravity, occurs a process of wave nature, expansive and hot, like the one that originated the universe in the Big Bang. Such a process that started from a point of singularity to propagate, creating the space and the time, ended with the formation of stars, closing the expansive cycle of the universe. When energy is transformed into mass in the periphery of the stars, a process of contractive, implosive and cold nature occurs, resulting in the appearance of gravity and electromagnetism, starting the contractive cycle of the universe.

Gravity is the physical phenomenon, which has its origin in the attraction among masses, which gravitate in the contracting universe in the fifth dimension, deforming the space, the time and even the mass causing the celestial bodies to acquire the spherical form. The deformation caused by gravity corresponds to a hyperboloid of revolution, this being the same figure as that Albert Einstein designed to represent the own gravity. This deformation is complete when a force of gravitational attraction of contractive, implosive and cold nature pulls the attracted masses that gravitate the space and the time towards the attractive centre of mass, taken as reference.

It is the black hole called the big hole located in the gravitational center of the contracting universe, which maintains, by extreme attraction, the universe gathered forming a constellation of galaxies. If the big hole did not exist, the universe would not exist either, because in this case the galaxies would all come out of their universal constellation out of the universe itself, which would be absurd.

The time count is regressive, meaning that the contracting universe is coming from the future and going towards the past, until it is completely annihilated in the big hole.

The enigma is explained that, the observable mass of the contracting universe represents something around 5% of the total mass, as follows: the remaining 95% of the universal mass has already been swallowed by the black holes, being invisible within them, in the form of particles of light, which are colds and do not occupy free spaces.

It is possible to make the following bold prediction based on the consolidated inner core of plane Earth: every gravitational centre of the contracting universe is massive and cold or less hot than its periphery.

Through the big crunch process, the big hole, which is a galactic swallower, coincides with the point of singularity at the end of the contracting universe, storing the whole universal mass in the form of particles of light.

The Big Bang explosion occurs due to the non-existence of a second material body, when the contracting universe is only the inside. In this case, the trigger is fired when the force of gravitational attraction, reversing its vector sense, turns into a force of repulsion by absence of gravity.

The expansive cycle of the universe ended when the energy emanating from the Big Bang formed the stars. From there, black holes appeared and the stars grouped together forming galaxies, which, in turn, the galaxies grouped together forming the contracting universe by attraction of the big hole, which at the end of its evolution coincides with the point of singularity.

The universe, which has the form of a hiperboloid, is in an inexorable state of cooling, contraction, implosion, collision and cosmic blackout.

The point of singularity explodes in the Big Bang event, giving rise to the expanding universe, cyclically, over and over again, indefinitely.

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