Gravitational Hypothesis Due to Quadimensional Interaction of Incipient Energy

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Keywords: Gravitation. Four-dimensional interaction. Cosmological constant.

1 Introduction

To the best of our knowledge, the universe is coordinated by four fundamental forces: electromagnetism, strong nuclear force, weak nuclear force, and gravity, although this current terminology is considered by many researchers to be mistaken, as gravity is not properly understood as the "force" of the Newtonian genre, and its complexity has been challenged countless times, it was best explained by the theory of general relativity, according to Albert Einstein, 1915 [1] as the dilation of time and curvature of space, and despite all the profuse effort, even today we cannot interrelate the quartet in the quantum mold and thus obtain a unifying super theory.

Concomitantly, about elementary particles and fundamental interactions, Moreira [2], says that

> [...] The photon is the quantum of the electromagnetic field and mediates the electromagnetic interaction, the gluons are the quanta of the strong field and mediate the strong interaction, the particles called W +, W- and Zo are the quanta of the weak field and mediate the weak interaction. Such particles are called bosons, a generic term for internal spin particles (fermions is the generic term for spin particles 1 / 2,3 / 2,5 / 2 ...; leptons and quarks are fermions), and the graviton would be the quantum of the gravitational field, mediating the gravitational interaction. Of all these particles, the only one not yet detected experimentally is graviton [...].

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Another cosmological conundrum that made Einstein reflect on his own postulate of general relativity (RG) was the cosmological constant (Λ) or ΛCDM, which was inserted to symbolize the vacuum energy and thus harmonize the disparities of the formula with information from the universe, preventing its collapse upon itself, and thus invalidating its theory of RG, then, any action contributing to the density of such energy, would act as what was later rethought and renamed as dark energy in (Riess's models et al. (1998)) [3]; Perlmutter et al. (1998, 1999)) [4]; that in the formulated relationship would be a hypothetical form of energy that would be evenly distributed across space and would be responsible for a strong negative pressure, which could be one of the plausible explanations for the acceleration of the universe, by Friedmann's model (1922, 1924) [5] [6], during which Hubble 1929 [7] after observing radiation from other galaxies noted the systematic shift to red, which came to be known as redshift and thus the proof of the expansion of the universe, which along with the theory of Guth 1981 [11], validated the theoretical foundation of dark energy.

The discrepancy between the mass inferred by luminosity and the mass inferred by the dynamics of the system studied by Fritz Zwicky 1937 [8] paved the way for appreciation of new concepts that may determine the real dynamics within the cosmological groupings that would make up the known gravitational force among the relationship of mass it has.

In addition to dogma, the relationship between the gravitons, gravitation itself, the fusion of the four fundamental orders, and the fourth spatial dimension may be closer and more intricate than we imagine. Why would we be right to think of four-dimensional space and not an energy of the same degree? What would the relationship of four-dimensional energy be to the three-axis cosmos? Could this be the design of philosophical rather than scientific studies?

2 Initial Procedures

Manipulating the theoretical analysis of Newton's postulate from 1642 to 1727 from a modular point of view, the gravitational attraction of the earth gives weight to the interlocutors that oblige them to undergo mutual attractions of vectors of the same direction and opposite directions, according to the third law from Newton. From the cosmological point of view, gravity confluences matter that interacts with known elements, supporting stability.

In modern physics, Einstein's theory of relativity which is widely accepted as elucidating the description of gravity, according to which the spacetime tensor or (Ricci curvature tensor) minus half of the components of the metric tensor by the scalar curvature tensor least one cosmological constant would be equal to Einstein's gravitational constant by the Moment-Energy tensor, as shown below:

$$R_{ik} - \frac{1}{2} g_{ik} R - \Lambda g_{ik} = \frac{\kappa}{c^2} T_{ik},$$

This equation furthers how mass, energy, momentum, and pressure are distributed throughout the universe and their relationship in the manner and quantity that it can deform the tissue system of the four-dimensional universe.

Acting as a virtual mediator of gravity, the gravitons would be zero-mass particles and spin 2, in current theory, these elements are so derisive that they would be virtually undetectable according to the energy they emanate, so planetary condition interaction becomes dominant. At very high levels of energy, or mass, this condition is called Plank energy, equivalent to approximately $1.22.10^{19}$ GeV.

So far, no particle accelerator has reached energies high enough to unify the strong, weak force at the same time as electromagnetism, since they have already seen the electromagnetic force and the weak nuclear unify. At higher energies, the same thing should happen to the strong nuclear force, however, physicists believe that there may even be unification of the obscure graviton, according to a rampant increasing energy, yet it would be laborious to replicate such a task, in view of measured magnitude. The exclusion of the tie with gravity would mean a peculiarity of this agent or that physicists may just be wrong about the integral view of acting the universe.

Even today we do not prove and cannot even understand the 4th spatial dimension, because it is not seen or described in our daily life, in "our world" of three dimensions, we take prisoners in the subordinate dimensions daily, we do not need have merciless natures for this, since our shadow is a perverse shape trapped in two dimensions, analogously, having four-dimensional objects, forces, and energies we might assume that a four-dimensional object would cast a three-axis shadow, but it seems impossible, but if we use the same method of the predecessor dimensions we can triumph.

Imagine that a flashlight illuminates a soccer ball, we would have an ordered, abscissa and quota object, producing a shadow of only one abscissa and an ordinate, but imagine hundreds or thousands of lanterns from all directions, including the internal part of it, illuminating a four-dimensional object called x, so that the luminosity of one does not interfere with the shadow of the others, this would be the method for drawing a sketch of a progressed object from one direction, without requiring adding time to it.

Now, assume a vector force ϱ, which acts upon us, conjecture that the energy that fuels this force is distributed throughout the universe, and that it is raised to a degree relative to the abscissa, ordinate, and cote, that we are familiar with, and equitably have the same connection as between the 3D and 2D universe, then, only a quota interact with our three degrees, however the main feature of this energy would be an intense negative pressure (however mild compared to other forces exerted matter), that is, negative vector force.

Although we had assumed a force ϱ, and not minus ϱ, however no matter how hard we fight, an energy cannot be created or destroyed, Noether's theorem [9] tells us that the conservation of energies corresponds to a continuous group of symmetries of equations, which indicates that the constitution of the force ϱ implies the genesis of the force minus ϱ, reinforcing the idea of equitably as we know Newton's 3rd law, either by dilating a spacetime quadrant and its symmetry analogy with the conservation of momentum or an unprecedented reaction of the four-dimensional nature. Making way for the possibility of quantization of graviton, as long as we have the loss ratio of a four-dimensional to three-dimensional system.

Apart from the physical actions, it would be like telling the fictional inhabitant of the inner plunger of a suctioned syringe that the force that the plunger produces on him did not exist whereas what that force implies would be a counterforce.
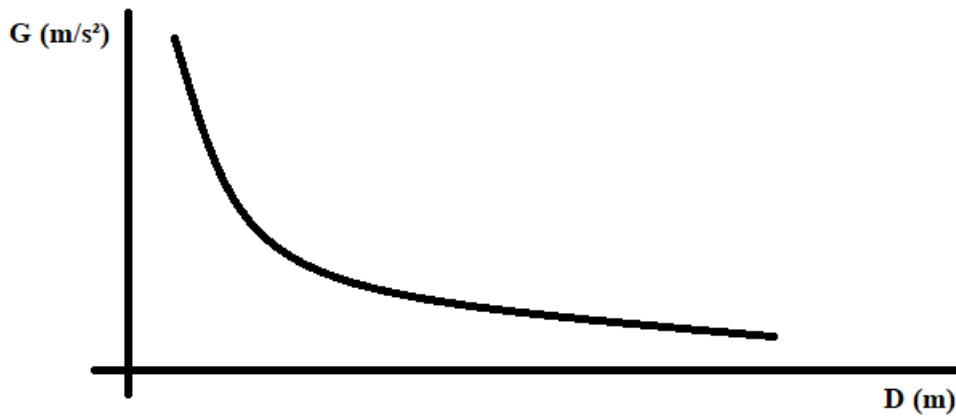
Figure 1: Gravity curve by experimentally obtained distance. Newton's law decreases for gravity results in a quadratic deceleration 1 / √ D

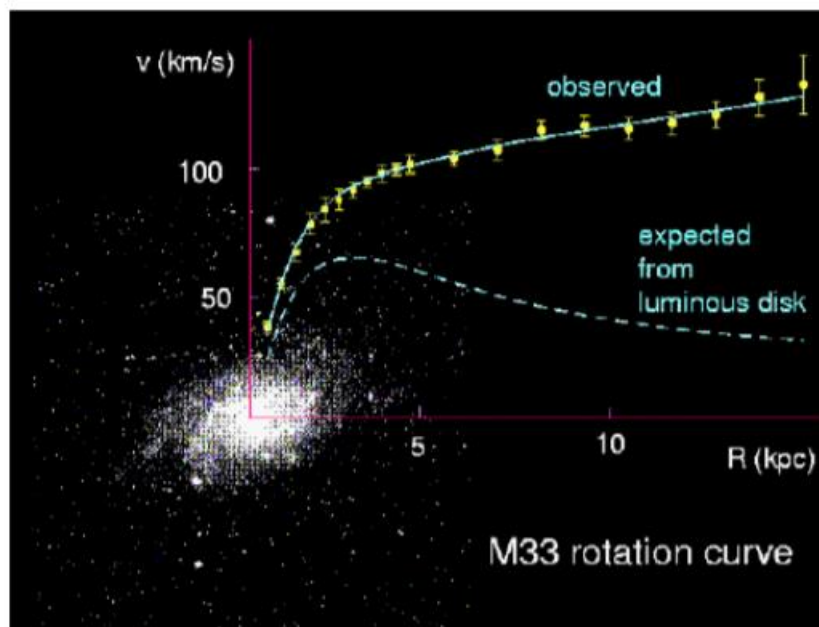Source: Prepared by the authors, 2019

Figure 2: Rotation curve of galaxy M33, yellow balls represent observed values and segmented line corresponds to theoretically expected rotation curve

Source: S. Khalil and C. Muñoz, The Enigma of the Dark Matter, Contemp. Phys. v. 43, p. 51-62 (2002)

The Relationship between Figures 1 and 2 makes us wonder how close we are to the very relationship of gravitational force and the energy that fosters the acceleration of space tissue.

Using the dark energy assertion thermology, which was developed from the effort to systematize the RG, which Einstein himself added to his relativity as ΛCDM, we could then describe the modulus of the same force by slaughtering the term ΛCDM, that is, legitimizing dark energy as the prime motivating energy of ϱ, and yet it would no longer be an aggregate but the adjunct of the equation, however, if we conjecture that the energy coming from the force is different then we would have two deadlocks to elucidate, which infers that this proposal was not convenient, however, we will use the thesis that the end

reaction of this force ϱ would be the dark energy itself, which would comprise another axis hitherto unknown.

Pereira and Jesus 2009 [10] says that as long as at least one of its potential non-zero chemical components, dark matter appears to be strongly favored by the second law of thermodynamics over dark energy decay, as in a chemical reaction, there is flow in both directions however in the equation

$$\frac{\mu_x}{T_x} n_x \Gamma_x < -\frac{\mu_{dm}}{T_{dm}} n_{dm} \Gamma_{dm} \cdot$$

if $n_x \Gamma_x > 0$, and $n_{dm} \Gamma_{dm} < 0$, when

$\mu_x = 0$ we should have $\mu_{dm} > 0.$ which elucidates the superiority of dark energy fill capacity in the cosmos, regardless of decay rates

$$\frac{\mu_x n_x}{T_x (1 + \omega)\rho_x} < \frac{\mu_{dm}}{MT_{dm}} \cdot$$

The LHC (Large Hadron Collider), which does the experimental verification of the Higgs boson, put supersymmetry theories and the hypothesis of extra dimensions on the agenda, in case of negative result the ΛCDM model can really be in check.

Unlike holographic theory, in which a quantum theory of particles on a two-dimensional surface without gravity can act as a hologram for a three-dimensional theory of quantum gravity in curved spacetime. This means that the information contained in the 3-D universe can be printed on an enveloping 2-D surface, this proposal would be a reformatting of the gravitational hypothesis due to the four-dimensional interaction of primordial energy.

Final Considerations

To assess the sustainability of this theory we would suggest testing four evaluations that are currently tested for parallel theories of gravitation, which are generally appreciated by mathematical models in advanced programs. We would disregard the barriers and advances obtained by Einstein, as this review considers the same mathematical model, and only disagrees with the theoretical model, so the deviation in the mercury perihelion, gravitational lens, gravitational waves, and other achievements obtained from RG would be maintained.

Test of profuse aspects - Computational systems, could validate the multiple shapes of clusters and galaxies as well as their due masses framing the unique characteristic velocities of each one.

RCFM Test - Analyze the fluctuation of Cosmic Microwave Background Radiation (CMBR), which is an electromagnetic signal of cosmological origin that can be observed throughout the hyper galaxy. It is a kind of noise that permeates the entire universe at maximum intensity in the microwave range of the electromagnetic spectrum. This radiation is described by a blackbody spectrum at a temperature of 2.7K. It implies that the average temperature of the universe is approximately -270 ° C.

Macro-Structural Testing - Explaining the formation of superclusters, galaxy filaments, and walls would be the function of this assessment, and is necessary to validate entropy. The second law of thermodynamics can be stated in terms of entropy: the entropy of the universe never decreases in a closed

system, that is, which can exchange heat and work with its exterior but which has its fixed particle number, entropy may even decrease, but at the expense of proportional entropy increase elsewhere, that is, total entropy always increases ($\Delta S \geq 0$). from formation to the present point of the cosmos.

Redshift test is necessary to verify the inflation model, predicting the portion of time velocity measured between the stars, that is, their acceleration.

The hypothesis pointed out in this article must be deepened and structured in physical and mathematical terms, thus receiving a theorem, besides the obligation to be debated in the academic environment, since the point of view abstract from conservative themes, however this conjecture can make us see what was stealthy in the shadows.

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