

Cosmological Model: A New Approach

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ABSTRACT: It is shown, making use of Special Relativity and applying Doppler Effect, that the motion of galaxies is not radial but transversal. Linking relativistic energy with Doppler Effect, we may explain that the Cosmic Background Radiation is produced by a sufficiently large number of distant galaxies located in accordance with the requirement of homogeneity and isotropy of the Universe. The existence of dark matter can be understood by distinguishing between a real or inertial mass, responsible for Newtonian Mechanics and Gravitation and a virtual and electromagnetic relativistic mass, which is acceptable by Quantum Theory. The so-called black holes and cosmic scale factor are not following from a correct interpretation through the Schwarzschild and Robertson-Walker metrics, respectively, which together with the inability to quantize Gravitation, introduce more than reasonable doubts about the reliability of the General Theory. The Universe does not expand, but is in a steady state, which can only be explained in the context of Quantum Theory.

INTRODUCTION

Any free scientific mind, not linked to the requirements of "theories" apparently made up at the mercy of the rush, can not remain indifferent to the spectacle of the so-called "science fiction" almost daily present in TV, whose origin is based on the undisputed acceptance of Relativity Theory, either in its Special or General formulation. There is an actual fascination with that theory, mainly in the General one, under which a mathematical arsenal is developed; with this provision we are inclined to believe us immersed in the heart of a Cosmos mathematized by Tensor algebra, based on Manifolds and therefore in Topology, apparently fulfilling the Hilbert's ideal: to mathematize a priori the whole Physics. The consequences are well known: twin paradox, mass-energy equivalence, supergeometry of curved spaces, other universes accessible through wormholes, black holes, dark matter, dark energy, etc.; intuition is lost in all of them and the mind becomes empty as a hole, making difficult, almost impossible, the understanding of physical phenomena. In this paper we are trying to demonstrate that Nature, that is, the physical laws on which it is based, can be dispensed with much of the previous fuss. To this end, we need to conduct a full review of the physical concepts contained in the mathematical equations involved; these are constructed from working hypotheses that are being considered as definite laws, following the same line of argument that it was made in the previous article: "Elementary Particles: a new approach")

FOUR-DIMENSIONAL SPACE: INTERVAL CONCEPT.-

It is very surprising how quickly H. Minkowski (1908) gave recognition to Relativity Theory (1905) accepting the four-dimensional space by setting the metric or interval from which establishes the so-called Lorentz Group. Actually, the analysis is reduced to the setting up of time equation:

$$dt = d\tau / \sqrt{1 - v^2/c^2} \quad (1)$$

this is easy to obtain from the definition of **interval**: $ds \equiv cd\tau$, which is nothing more than the distance traveled

by light or radiation from the moving frame (O'); this distance must be equal to that light emitted from the fixed frame (O), but discounting the distance traveled by moving frame (O'): $cdt - vdt$. Considering the vectorial character of \mathbf{v} , the only way to obtain (1) is by the numerical values or modules, ie, $c^2 d\tau^2 = c^2 dt^2 - v^2 dt^2 \implies dt = d\tau / \sqrt{1 - v^2/c^2}$. The experimental test by setting observers at O and O' is unfeasible, but they are replaced by the so-called "thought experiments", as it is well specified in "Classical Electricity and Magnetism" (Panofsky); therefore this expression should be interpreted as a "relationship" between a time, $d\tau$, constant, by virtue of its definition as an interval, and a time, dt , which is dependent on velocity, v . But if we stick to the concept of interval having a constant value and apply the definition $ds \equiv cd\tau$, the contradiction is obvious, since c is a universal constant (Michelson) and the time, $d\tau$ is always variable. In Addition, the proper concept of "relativity" requires that velocity, v , has to be relative, so the two frameworks are interchangeable and $d\tau = dt \sqrt{1 - v^2/c^2}$ (2) is fully equivalent to (1); now, the moving frames (O') has become the fixed one, (O), making inappropriate the designation of "proper" time to $d\tau$. The confusion established by the orthodox interpretation comes from making use of some variables, t, t', x, x' as if it were referring to the position of a material body, when in fact it is the point where the light rays converge, which are the unique physical events taking place, because the velocities of the moving frames are placed ad hoc and neither their values nor the interval, $d\tau$, can be null; otherwise, it would disappear the relativistic construction. Thus, the distinction drawn by Minkowski of the well-known diagram, called "lightcone" appears useless and we can do without it; similarly, we solve the problem of the "twin paradox", which will be recorded only in the film "Planet of the Apes". But the most important thing is that "relationship" of times corresponds to those of radiation frequency as will be discussed below.

DOPPLER EFFECT.-

A) Kinematic:

The only way to check the time equation is using the typical radiation wave magnitudes, frequency, w , and wave number, k , which are related by $w = ck$ (3); both parameters are defined $w = \frac{2\pi}{T}$, $k = 2\pi/\lambda$, where T is the period (time) and λ the wavelength (space) corresponding to each oscillation wave. As c is an absolute constant (not dependent on any framework), it is sufficient to consider the

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behaviour of one of the two parameters, such a w ; then, it is easy to see the equation (1) becomes $w = w_0\sqrt{(1-v^2/c^2)}$ (4). Here the frequency w will be lower than that of the source, w_0 , in line with the “red-shifted” generally observed for the stars or galaxies moving with velocity, v (running away?). On the other hand, according to the interpretation given above, both values, w and w_0 may be interchangeable, so the observer placed at the fixed frame (O), becomes moving with the same velocity, v , while the moving one (O') will be fixed; in this case the observed frequency, $w_0 > w$, ie. the spectral lines will be “blue-shifted”, (can we say the source is approaching?). However, Doppler Effect for light has been considered as a simple extension of what happened in the sound wave that comes from a traveling source, without realizing the very different nature of those and the electromagnetic waves; thus, the speed of these, c , can not relativize from any other speed, v , and to consider $c-v$ or $c+v$ has no physical meaning (Michelson-Morley experiment). Following the usual method in the literature, as a starting point it may be seen $w = w_0(1-v/c)$, where v is estimated radial, ie, at the same direction of wave propagation; then is added the relativistic correction getting the expression $w = w_0(1-v/c)/\sqrt{(1-v^2/c^2)} = w_0\sqrt{[(1-v/c)/(1+v/c)]}$ (5); this equation can also be obtained from $w = w_0\sqrt{(1-v^2/c^2)/(1+v/c)}$. But what is “surprising” the statement that velocity included in radical, v^2 is transverse to the wave propagation wave, while v was radial.

B) Dynamic:

It seems that the accepted interpretation of Doppler Effect is supported by the use of Energy Equation:

$$E^2 - c^2p^2 = (m_0c^2)^2 \quad (6)$$

If we have in mind everything should be subordinate to the establishment of the metric (interval) of the Minkowski space, which requires the existence of a new dynamical magnitude, four-momentum, p , that must be constant; so, the preceding equation may be presented:

$$p^2 \equiv E^2 - c^2p^2 = E'^2 - c^2p'^2 = \text{const} \quad (7)$$

But, if we know the constant to be m_0c^2 , it does make sense the relationship among dynamical variables (E, p) in both frames? Apparently it seems to be correct, because by applying this formula it may be proven the equation (6) referring to Doppler Effect, after using the Planck's equation $E = \hbar w$ (8)

(Quantum Theory) and considering $E = cp$ (Electromagnetism): $E' = (e-vp)/\sqrt{(1-v^2/c^2)} = (E - vE/c)/\sqrt{(1-v^2/c^2)} = E(1-v/c)/\sqrt{(1-v^2/c^2)} \implies w' = w(1-v/c)/\sqrt{(1-v^2/c^2)}$. But, as it can be shown, (6) turns out an **identity** and not an **equation**; indeed, if we put in (6) the very well-known formulas $E = m_0c^2/\sqrt{(1-v^2/c^2)}$ (9)

$$\text{and } p = m_0v/\sqrt{(1-v^2/c^2)} \quad (10)$$

$E^2 - c^2p^2 = (m_0c^2)^2/(1-v^2/c^2) - c^2m_0^2v^2/(1-v^2/c^2) = [(m_0c^2)^2 - (m_0v^2c^2)]/(1-v^2/c^2) = (m_0c^2)^2(1-v^2/c^2)/(1-v^2/c^2) = (m_0c^2)^2$. So, the celebrated equation (6) is just an “identity”, because (8) and (9) must be fulfilled. This precludes the existence of relativistic Dynamics, not allowing the existence of rest mass, m_0 , (m_0c^2 is obtained at any velocity), neither qualify the moving frames as inertial frames, which constitutes a mental relief as it turns out incomprehensible that there is two masses: one transversal and other longitudinal. (our paper: “Relativity: theory

impossible”). No doubt that this “error” has been assumed by physicists in order to get the **unifying** claim of Classical Mechanics and Electromagnetism which is the objective of Relativity Theory, but this is justified by Quantum Theory, what we have seen a glimpse, through the introduction of Planck equation and the electromagnetic expression: $E = cp$ (our paper: “Charge in Quantum Theory”). Since any identity shows the equivalence between two parts, the use of (8) as the true energy equation is sufficient to explain the high energy concerned at nuclear processes (reactions); this equation is expressed as $E = mc^2$, where m is called **relativistic mass**, and defined as

$$m = m_0\sqrt{(1-v^2/c^2)} \quad (11)$$

This is similar to the expression of times relationship (1) and therefore we can apply the same interpretation, according to which m is the mass corresponding to the radiation observed (measured) from a fixed frame (O), related to m_0 , located at the moving frame (O'); viceversa, m_0 would be the mass observed in the frame (O'), considered fixed relative to (O), which now would be in movement with the same speed, v . Acknowledging this, the validity of the formula (7) is more than doubtful, as it has as starting point the interpretation of relativistic theory gives for good the expression of energy (6), ignoring the conceptual difference between “equation” and “identity”

C) Relativistic:

Following the course of the previous argument, it is easy to see the application of Quantum Theory leads to the right relationship of frequencies, of what it may be called Light Doppler Effect: Thus, we can admit that energies,

$E = \hbar w = mc^2$ and $E_0 = \hbar w_0 = m_0c^2$ may be put in (11) to obtain $v = v_0/\sqrt{(1-v^2/c^2)} \iff v_0 = v\sqrt{(1-v^2/c^2)}$ (12); with these we have come to the equivalent expression of (6), more realistic and understandable, as for lower frequency, $v_0(w)$ now it is corresponding to lower energy radiation, m_0c^2 , while the higher, $v(w_0)$ belongs to that of the source, mc^2 . The red-shifted appears as a diminishing of radiated energy on travelling through space. Furthermore, it is possible to linearize both equations using the binomial series expansion

$$= v(1-v^2/c^2)^{1/2} = v(1-v/c + \dots) \cong v(1-v/c) \quad (13)$$

where the quadratic terms, etc allow higher accuracy of the red-shifted frequency. Now, swapping fixed and moving frames:

$$v = v_0(1-v^2/c^2)^{-1/2} = v_0(1+v/c - \dots) \cong v_0(1+v/c) \quad (14)$$

ie, blue-shifted frequency. What is truly remarkable about the above deduction is that in both cases, the involved velocity is transverse, keeping unchallenged the Michelson's experiment; thus we have carried out a correct formulation of the relativistic Doppler Effect, where “running away” or “approaching” of the sources are irrelevant, since both $-v/c$ and $+v/c$ are transverse for coming directly from v^2/c^2 . This is reasonable, because is consistent with the fact that relative movements between heavenly bodies are circular or elliptical as to date has been found. Finally, we try to explain so important result regarding the Hubble law, $v = HD$ (15):

the energy, mc^2 , emitted by the “particles” of Cosmos (stars or galaxies) is detected as m_0c^2 ; the relationship between one another depends on velocity, v of the said “particles”, such that a larger value of v may implied a farther distance, D (as with electrons in atoms). In addition,

it is a phenomenological law, as evidenced by the value of the Hubble's constant, H , which is not definitely established, as it has increased from 55 to about 74 km/s/Mpc, an indication of how limited is our information of the whole Universe. The two pillars on which has been based the idea of an expanding Universe has "collapsed" because both Doppler Effect as Hubble's Law may be explained by the movements of galaxies with transverse velocities. So, we can state: there is no running away neither approaching of galaxies!

DARK MATTER.-

As we have seen, mc^2 and m_0c^2 corresponds to values of radiant energy, linked to frames with relative movement, whose mathematical relationship (11) does not allow for the velocity, v being null, although one has the temptation to make use of it as any formula. How masses, m and m_0 may be considered of the same nature of a stone, ie, being inertial if the corresponding energies are obtained by an unattainable velocity, c ?; obviously, the velocity, v must be taken into account, but not dimensionally, so c acts as a true velocity and not as a mere constant. Therefore, it appears that the only way to admit these masses is that they must not be normal or inertial, as it is required by Classical Mechanics and Gravitation and the concept of "equivalence mass-energy" together with the named "inertial frames" to moving systems, are only successful in masking the "reality" and make incomprehensible the Theory. However, the "deviation" of light produced by a gravitational field have been established a "fact", since the approval given by Eddington almost a century ago and served to agree with General Theory together with the concept of "inertia" on electromagnetic energy. But that issue should be studied in some detail:

- a) The description Eddington himself did in his article "Weighing light" can only be compared with any of the stories of Jules Verne or Wells in the previous century, since it has very little credibility: the experimental setup is very difficult to carry out because the necessary total solar eclipse takes place in a very short time and the direction of the light beam received after licking the Sun's edges has to be compared with the same ray six months later; in this case only four months passed and the two observations were made in different places.
- b) Claiming the measurements coincide with the approximated formula from General Relativity: $\Delta\phi = 4GM/c^2 r_{\min}$ (16), where M is the Sun mass and r_{\min} its radii, introduces more than reasonable doubts, since how many times have been repeated the experience if one of them requires half a year and a suitable place?
- c) Not surprisingly, almost half a century later, M. Born ("Einstein's theory of relativity") stated: "...But an exact agreement between and measurement has not yet been obtained.."

In the same sense we may find in the recent literature: "...The fact that the scientific establishment believes that light in free flight produces a gravitational field continues to be a major conceptual roadblock in the going effort to formally (mathematically) unify the forces" (J.A. Gowan: General Systems and the unified field theory". Cornell. 2005). Consequently, we believe that relativistic mass can only be assumed by Quantum Theory; thus, the associated masses for elementary particles, like electrons, and the

gauge particles (W , W^+ , Z), responsible for weak interactions must be of the same nature as that of electromagnetic radiation.

Its corresponding energies are due to "charges" and "potential" as is well shown in the chosen unit, eV (electron-Volt), which it may be only detectable by the frequency, ν ; all this is condensed in the expression: $eV = mc^2 = h\nu$ (17), where mass, m appears as a mere parameter acting as "money change" in the interactive process, and its intrinsic value is zero, which authorizes us to consider it as a virtual mass and because its origin, electromagnetic. Finally, as all the information that comes from the Universe consists of electromagnetic radiation in their multiple versions, depending on the frequency range, most of the estimated mass must be virtual, a strong candidate for dark matter.

DARK ENERGY

It turns out curious to follow the reasoning of the article "NASA's quest for dark energy" (2007): it is starting with the "fact" that Universe is expanding (Hubble's law), but necessarily has to be slowed on account of gravitational attraction produced by hundred of billions of galaxies, as it claims General Theory. Two working groups during 1990s, using computational models as a method, reported in 1998 having found the opposite effect: Universe's expansion is actually speeding up!. They state: accelerated galaxies require an unknown force and therefore exist **dark energy** in the Cosmos. A precipitated conclusion, since Gravitation may not have the fundamental role granted by General Theory (as we see below), so galaxies should not have to slow down its velocity first and then increasing it; the existence of higher velocities and therefore energies is consistent with Hubble's law, $v = HD$, but as we have shown, v , is transverse and the constant, H is not yet definitive.

COSMIC BLACKBODY RADIATION.-

As it is known, "Olberparadox" is based on the fact that the existence of billions of galaxies homogeneously distributed in space would produce a starlit sky at nights; one of the reasons for the success of an "Expanding Model" is for resolving this paradox, because the light from galaxies running away does not reach us. But there is another possibility to explain it: we may conceive a "steady state Universe" so large that light from the most distant galaxies has not yet reached. In this way, we may also receive non-visible radiation in the microwave region from numerous galaxies, homogeneous and isotropic distributed, which energetic distribution is of the type "blackbody radiation": microwave radiation background. The argument used to dismiss such an interpretation is rather curious: "...the equivalent mass of this radiation is negligible compared to those of the galaxies, which is the mass that dominates the dynamics of the Universe (as we believe), then is better to disregard the radiation in this time and consider it to be the full amount of the "fossil" radiation of the early times of Universe.." (M. Berry: "Principles of cosmology and gravitation". 1976). Cosmic archeology, where experimental science ceases to exist!.

BLACK HOLES

The formulation of the General Theory follows the same guidelines as the Special one, that is, from the establishment of interval, which in this case is defined

$$ds \equiv c d\tau = g_{\mu\nu} dx^\mu \quad (18),$$

where the metric, $g_{\mu\nu}$ is not constant, as it depends on the coordinates, $\mu, \nu = 0, 1, 2, 3$ or (t, r, θ, ϕ) , setting up a curved spacetime, rejected by our "intuition". Using all the tensor algebra and starting from (18) is obtained Einstein's Equation, in which gravitational interaction takes real leadership, supported by the assumption of inertial mass by radiation and the simpler concept of curvature, $K = 1/r^2$, which relating it to Newtonian gravitational force $F = GMm/r^2$ appears as something logical. Besides, that it was admitted as indisputable if were added Mach's principle, according to which the centrifugal force causing the widening of the Earth is due to gravitational attraction by the masses of distant galaxies. How was possible to accept that interpretation?; inertia is a property due to internal forces of composite particles (our paper: "Stars: a new approach"). However, General Theory has been accepted as a "success" of the Unification paradigm between Electromagnetism and Classical Mechanics, started with the Special Theory of Relativity. But as we discussed in the preceding paragraphs, such Unification is totally "questionable", since all that is achieved with Relativity is the "union" between Electromagnetism and Quantum Theory, especially after seeing the impossibility to "quantized gravity". Following this criticism, we will see how is made the "demonstration" of Black Holes, using Schwarzschild metric, which arises from a first application of Einstein's equation:

$$ds^2 \equiv c^2 d\tau^2 = (1 - 2GM/r) dt^2 - dr^2 / (1 - 2GM/r) + r^2 d\theta^2 + r^2 \sin^2 \theta d\phi^2 \quad (19)$$

At first, it may be noted that in this equation there is a "singularity at the second term, when

$$r_s = 2GM/c^2 \quad (20)$$

which is called Schwarzschild's radius; at this "situation", the so-called "proper times", $d\tau$ (times it takes the light to travel the distance, r) is infinite, while at the first term, for $1 - 2GM/rc^2 = 0$, dt may have any value, something that it should not happen, since both times must be always be related. However, the usual explanation is that it have been reached to a situation where the gravitational force is so great (thanks to special "curve" geometry) that not even light can go out and the name of black hole will be appropriated, which as we have seen is achieved, "handling the times"! Moreover, it is stated that reaching this stage a star must possess a mass at least three times that of Sun and literally we can find: "...the star which has consumed all its fuel and not radiate more light, its mass pressure can not resist its own gravitational attraction naturally collapses to a size corresponding to Schwarzschild's radius, r_s ." (M. Berry: "Principles of cosmology and gravitation"). What about this "own" gravitational attraction mean?; what about the others (weak and electromagnetic) forces, which are of much greater intensity?; and "charges"?; all eliminated in favor of Gravity! Many questions, which together with the impossibility of a direct detection of black holes, makes its existence more than doubtful.

COSMIC SCALE FACTOR.-

It is introduced by Robertson-Walker metric:

$$ds^2 \equiv c^2 d\tau^2 = c^2 dt^2 - R(t)^2 [dr^2 / (1 - r^2/R^2)] \quad (21)$$

where it have been suppressed the angular coordinates θ, ϕ because the isotropy of cosmological model; $R(t)$ is called cosmic scale factor, as the parameter that determines the distance between astronomical objects, ie galaxies and accounts for the "expansion" of the Universe by its time dependence, $R(t)$. Examining the expression, we see it turns out to estimate the distance between two point from the interval, ds ; in order to do that it is considered $dt = 0$, $\implies t = \text{const}$; in this case, the equation may be reduced to

$$ds \equiv R(t) dr / \sqrt{1 - r^2/R^2} \quad (22)$$

Let's see the meaning of that expression. To begin with, we must understand that for each time t (constant), that is, for every moment, $R(t)$ must have a definite or constant value, while $d\tau$ vary in the same proportion than dr ; but afterwards is variable. At first glance, the "confusion" lies in the concepts of "constant" and "variable", like it happened with "equation" and "identity" in the Special Theory; but with General Theory it seems that everything is immersed in a display of juggling with mathematical concepts covered in Riemann curvature tensor, through which moving frames (co-moving), for being linked to time, $d\tau$ (interval), it seems to evolve independently of the time, dt . Finally, we believe that it is wrong to impose the condition $dt = \text{const}$. $\implies t = 0$, in the same way it would be improper to obtain the Hubble constant, from the time derivative of

$$R(t): H(t) = (dR(t)/dt)/R(t) \quad (23).$$

Therefore, the expansion of the Universe is not followed from a cosmic scale factor.

QUANTUM UNIVERSE

"Time" and "space" become relevant as physical variables in Classical Mechanics and Gravitation, which are made to the "measure of human being" as the ancient proverb stated. When we are forced to handle intervals of times and space extremely small (nuclei, atoms) or very large (stars, galaxies), those are difficult, if not impossible to digest; for this reason, Quantum Theory is presented as the appropriate framework, where both space and time are blurred (indetermined) versus "energy" and "velocity", which happen to be well defined quantities. Following this approach, stars in our Galaxy behave as particles in a similar way to electrons inside an atom, whose existence is evidenced thanks to the emission of electromagnetic radiation; they could be characterized by its energy and angular momentum, so its movement relative to our Solar System will be circular or elliptic, making them to appear as fixed or static. Likewise, the rest of countless galaxies, that by virtue of its remoteness appear as stars, which detection is possible thanks to the emission of electromagnetic energy; they will be found distributed homogeneously and isotropically, in accordance with Quantum Theory's laws, so a Model suitable to Cosmos should be the "steady state". The enormous energy existing in the Universe is due mainly to forces produced by strong, weak and electromagnetic interactions and to a much lesser amount to gravitation. The energy due to the first two interactions have to be confined in an inner space, where "quanta particles" may act; such particles are characterized by their "charges" (coupling constants), such as "color charges" related to "quarks", which together with and interactive network (gluons) are responsible for strong interaction; "quarks" are

the "charge's carrier" which cannot go out the inner space on account of the so-called "confinement". Weak interaction gives rise to "atomic nuclei", thanks to the exchange of the "particles gauge (W^-, W^+, Z); their energies may be obtained from "weak charges" and the corresponding fields (potentials). (our paper: "Charge in Quantum Theory"). The relativistic mass associated with the aforementioned "quantum particles", causing the interactive forces, are virtual as we have shown above. The translation of these energies in ordinary or exterior space may take place:

- a) Under the formation of protons, neutrons and atomic nuclei, whose masses are real or inertial, because they have internal structure. These constitute, after building the atoms, the "sources" of gravitational interaction, responsible for Solar System or others Planetary Systems, which could be repeated in all stars; the very small value of G make the scope of this interaction very limited, withing cosmic scale distances.
- b) Thanks to quarks, the released charges such as electrons and positrons in beta decay, whose coincidence may result as a gamma rays, a energetic version of electroagnetic radiation; elementary particles (electron, positron) together with radiation are the representation of "quanta particles" at the exterior or ordinary space and their associated relativistic masses are virtual and electromagnetic.
- c) Stars more massive than our Sun, have a greater extension at the initial energy levels (higher potential), with which may be obtained elements of higher atomic mass number; these require greater "inner space" to accommodate strong a weak energies, so that atomic nuclei may be unstable. Thus, we can explain the most striking case of Supernovae, whose explosion due to the emergence of such enormous energy and the projection in exterior or common space of many cosmic rays (protons, muons, electrons, etc.) apart of others bodies.

Finally, Hubbles's law, $v = HD$, is compatible with Quantum Theory, as the distance must be understood regardless the distance travelled by galaxies, because its velocity, v is transverse (not radial); however, this will be greater the farthest they are, which it corresponds to a higher relativistic energy, mc^2 .

CONCLUSION

The stubborn insistence in the literature to provide actual (inertial) mass to light, collides head-on with a much simpler approach, as it would require the principle of "Occam's razor"; in this regard, we have conducted a thorough analysis of Relativity Theory and a result thereof, both Doppler Effect as Hubble's law can be explained without running away or approaching of galaxies, since the velocities are transverse and not radial. The Universe is not expanding, but it is in a "steady state", which at first eliminates the problem of dark energy. Similarly, the assumption of virtual mass to that involved in the relativistic energy equation facilitates a strong candidate for the so-called dark matter (mass). On the other hand, it has been demonstrated the inconsistencies of black holes as well the cosmic scale factor, analyzing the relevant metrics, derived from the Einstein's General Theory. Moreover, with the impossibility of quantized gravity, Gravitation Theory is reduced to the limit established by Newtonian Classical

Mechanics. The study of Cosmos, in which distances and times are unusually large, can only be approached by Quantum Theory, like atomic and subatomic world; in both cases the physical important magnitudes are energy and velocity, while time and space are highly indefinite (uncertainty). It seems logical the the origin of the Universe would be associated with the establishment of the "electric charge", which is not far from the ancient's wisdom if we remember the maximum power of Zeus or Jupiter laid in the domain of "lightning"; this coincides with the episode of Prometheus who was punished for "having stolen the fire to the gods". Finally, a metaphorical digression extracted from classical literature: "Life (Cosmos's expansion) is a tale told by an idiot (General Relativity Theory), full of sound and fury (mathematical display) signifying nothing" (Macbeth).

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