Quantum gravity in neoclassical physics

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Since 1905 physics lost his soul, the intimate contact with the reality and rationality. The core pillars of modern physics, the general relativity, the special relativity and the quantum mechanics contains some basics but fundamentals errors with profound consequences.

Neoclassical physics is a completion of classical Newtonian physics with a new classification of matter according to the capacity to generate a gravitational interaction: structured matter and unstructured matter. Its formalism is based on the mathematical apparatus of classical physics with the integration of some elements of quantum mechanics and relativity.

This article will show that with a modification of the Newton law, by a modification of gravitational potential, $V_{neo} = -\frac{G \cdot M \cdot m}{r} \cdot (1 + \frac{J^2}{c^2} \cdot \frac{1}{r^2})$ and $\vec{F}(r) = -\frac{G \cdot M \cdot m}{r^2} \cdot (1 + \frac{3j^2}{c^2} \cdot \frac{1}{r^2}) \cdot \vec{i_r}$ ($with\ \vec{j} = \vec{r} \times \vec{v}_m$), we will find a relation equivalent to that of the field equation in general relativity. Through out this and with a minimal modification of Maxwell laws and Lorentz transformations, neoclassical physics rediscovers all the theoretical and empirical results of modernity but with a completely different interpretation and use, all within the realistic, rational, local and deterministic framework of classicism.

We demonstrate the Newtonian limit, the advancement of Mercury's perihelion, the deviation of the light ray in gravitational fields with the phenomenon of gravitational lensing, the slowing down of measured time, the red-shift of light, the light ring for black holes, as well as the quantum nature of neoclassical gravitation with the expression of it's quantum form and Einsteinian limit.

I. HISTORICAL CONSIDERATIONS

Since the dawn of time for the humankind we have questioned our place in the universe and the functioning of it. Newton, through his genius, only crystallized and formalized an intellectual reflection of tens and perhaps hundreds of millennia. But since the beginning of the last century, we have sinned too much in self-confidence and we have belittled all the work of our predecessors.

I must admit to you straight away that young Einstein was completely i...mmature. His ideas and actions open wide the door for irrationality in science. Paraphrase Cicero, I like to call him the Helen of Troy of physics because, despite the audacity, the fantasy and the superb of his ideas, he diverted physics on the path of the unreal and the arbitrary.

A mature Einstein changed his method radically, even fighting with his contemporaries against excesses of unrealism and irrationality. Too late, too little. The damage was already done and the intellectual monster that he created, kill his creator (metaphorically speaking).

II. THE ERRORS OF GENERAL RELATIVITY

Since 1949 and Godel's solutions for general relativity, we know that the GR allows the existence of back time loops, which is, with an honest analysis, an absurdity and a proof of the incorrectness of this theory.

The GR is false, despite the fact that the field equation is correct! The GR is at least misinterpreted. It considers the Laplace potential as a real structure (which is correct!), hybrid, formed of two fields (still correct!). The movement of a particle in this potential is the consequence of the pressures (tensions) which exert these fields on it (and still correct!). Until now, it is partially joining classical gravity (which provides a single field for the potential) and completely neoclassical quantum gravity. But now, the fantasy begins. It takes for the main field, the space (which has no material expression) and for the secondary field, the time (which is a relational category and therefore without material expression either).

The space-time of GR has nothing in common neither with time nor with space. It is in reality, a material structure (a corpuscular, hybrid, Quantum and Gravitational Mfield). Gravitation is a force as Newton said, only that its mechanism of action includes a corpuscular effector Mfield (the potential in classical physics).The metric of space-time is in reality the metric of the tensions lines in this hybrid Mfield (Gravitational effector and Quantum).

The modified equation of the Newtonian gravitational potential (Newton-Lelong relation) is an axial projection of the Grossman-Einstein equation. Much simpler and much more useful.

But the most important of Einstein errors was the abolition of the ether. Not only does it exist, but it's much more complex than anyone could guess with a functional role in the mechanism of the gravitational or electromagnetic force. The failure of Michelson-like experiments can be explained by a minimal modification, in the relativistic sense, of Maxwell's equations, as we will see later.

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III. QUANTUM (RELATIVISTIC) CORRECTIONS IN NEOCLASSICAL PHYSICS

In this chapter, we will present, in a not too exact but useful manner, the genesis of certain modifications of the relations of classical physics in the quantum sense. This will very much help you, to have a correct intuition of the physical meaning of these changes.

In neoclassical physics, the relativistic attribute refers to the interaction of structured matter with a Mfield (Quantum or Magnetic) and has an antinomic meaning compared to the relativity in modern physics in which we do not have a system of privileged reference.

We will use an analogy with the free fall of bodies in the earth's atmosphere with two types of friction forces: linear and quadratic. We suppose the force field constant.

A. Linear friction

In some of the cases, the friction force is proportional to the speed:

$$\vec{f} = -k\vec{v}$$

We are talking about linear friction. k is a constant which depends on the nature of the gas or fluid and characteristics of the object. We choose a suitable constant and the equation of motion is:

$$\vec{F} - \frac{F}{c}\vec{v} = m\vec{a} \quad with\ k = \frac{F}{c}$$

We now project this relationship onto the ascending vertical Oz axis.

$$\frac{dv_z}{dt} + \frac{v_z}{\tau} = -\frac{F}{m} \qquad with\ \tau = \frac{m}{k}$$

We therefore obtain a differential equation in vz, linear of the first order with coefficients constants. We know how to solve this equation mathematically.

$$v_z = \frac{F}{m}\tau\ (\exp\left\{-\frac{t}{\tau}\right\} - 1)$$

There is a value of maximal speed which is

$$lim\ \ v_z = c$$

B. Quadratic friction

In some others cases, the friction force is proportional to the square of speed.

$$\vec{f} = -k\vec{v}^{\ 2}$$

We speak of quadratic friction. k is also a constant which depends on the nature of the gas or fluid and characteristics of the object.We choose a suitable constant and the equation of motion is:

$$\vec{F} - \frac{F}{c^2}\vec{v}^{\ 2} = m\vec{a} \quad with\ k = \frac{F}{c^2}$$

We will use a downward vertical Oz axis in order to work with a positive speed.

$$F(1 - \frac{v^2}{c^2}) = ma$$

$$F = \gamma^2 ma \ \ with\ \gamma = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}}$$

$$F = (\gamma m)(\gamma a)$$

We have an dynamic inertial apparent mass of γm and an apparent acceleration of γa.

For the equation of motion:

$$\frac{dv_z}{dt} + \frac{v_z^2}{\tau} = -\frac{F}{m} \qquad with\ \tau = \frac{m}{k}$$

This equation is not linear , so it's not very easy to solve. We can use Euler method :

$$v_{i+1} = v_i + (Av_i^2\ +\ B)\delta t$$

But we can easily find the maximal speed:

$$lim\ \ v_z = \sqrt{\frac{F}{m}\frac{m}{k}} = c$$

C. Gravitational potential

$$V(x) = W = \int_\infty^x F \cdot dx = \int_\infty^x (f_{gr} + f_{friction}) \cdot dx =$$

$$= \int_\infty^x (f_{gr} + f_{gr}\frac{v^2}{c^2}) \cdot dx \approx (1 + \frac{v^2}{c^2}) \int_\infty^x f_{gr} \cdot dx \approx$$

$$\approx \frac{1}{m} \cdot (1 + \frac{v^2}{c^2}) \int_\infty^x \frac{GMm}{x^2} dx \approx -\frac{GMm}{x}(1 + \frac{v^2}{c^2})$$

We will modify the expression of the electric potential and the gravitational potential with a term in $\frac{v}{c}$ and with a term in $\frac{v^2}{c^2}$. For some derived relations, to simplify the comprehension, we will express the terms $k\frac{1}{r^t}\frac{v^j}{c^j}$ with $\frac{v^j}{c^j}$.

D. Relativistic energy

$$E_{total} = E_{kinetic} + E_{internal} + E_{potential} \ ;$$

$$E_{internal} = m_0 c^2 \ ;$$

$$m_i = \gamma m_0 \ ;$$

IV. NEWTON AND THE SPOOKY ACTION AT THE DISTANCE

Despite the general believe, Newton considered this action at a distance to be an inadequate model for gravity. In his words:

> It is inconceivable that inanimate Matter should, without the Mediation of something else, which is not material, operate upon, and affect other matter without mutual Contact... That Gravity should be innate, inherent and essential to Matter, so that one body may act upon another at a distance thro' a Vacuum, without the Mediation of any thing else, by and through which their Action and Force may be conveyed from one to another, is to me so great an Absurdity that I believe no Man who has in philosophical Matters a competent Faculty of thinking can ever fall into it. Gravity must be caused by an Agent acting constantly according to certain laws; but whether this Agent be material or immaterial, I have left to the Consideration of my readers.Isaac Newton, Letters to Bentley, 1692/3

Thus, in the General Scholium of Book III of the Principia, he conceives of a "kind of very subtle spirit which penetrates through all solid bodies", adding that "it is by the force and action of this spirit that the particles of bodies attract each other": a mechanical ether, filling space and permitting the transmission of gravitational force. For Newton, this ether was the same as the one that transmitted light, considered to be composed of corpuscles of different sizes and transmitting oscillations to the ether that created the colors.

V. NEOCLASSICAL QUANTUM GRAVITY

There is no other more mysterious force in the world than gravity. It connects us to the Universe, to the stars. And there has been no better studied subject in physics than this celestial force. And yet it continually eludes us. Unsurprisingly, the first law of gravity was given to us by our master of all, Sir Isaac Newton. The idea of a mechanism of action by a curvature of a potential field came out the first time by Pierre-Simon Laplace, Comte Laplace, then 1st Marquis de Laplace.

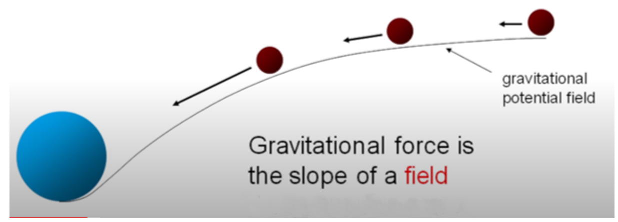

FIG. 1. The mechanism of gravitational force

To make an analogy with GR, in neoclassical quantum gravity we use a lot two Mfields: Quantum (which corresponds to the temporal dimension in GR) and Spatial or Gravitational Effector (which corresponds to the space in GR). The coupling between the two is done in a hybrid way, directional and intentional. The Quantum Mfield is said to be a modulator of the action of the Spatial Mfield. To respect the classical notations we will use $V(r) = V_{neo}$ for the gravitational potential of the Spatial Mfield (who corresponds to the potential energy in classicism), $V_{classical} = -\frac{G \cdot M \cdot m}{r}$ and $\Phi(r) = \Phi = \frac{G \cdot M}{r}$ the newtonian potential or the specific gravitational potential (for the mass m).

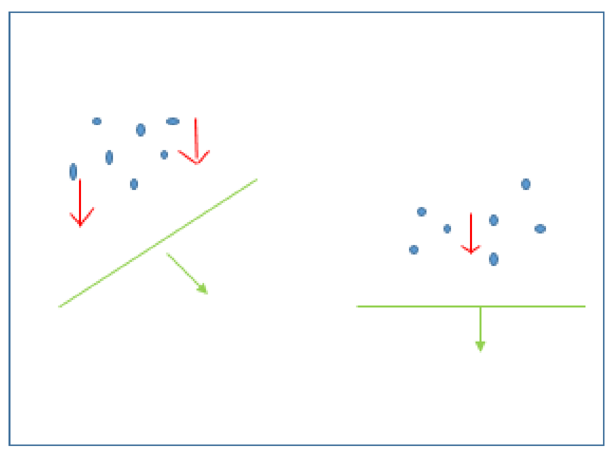

FIG. 2. The mechanism of modulation in quantum Mfield

As we will see later, it is necessary to reformulate the Lorentz transformations. For the force of gravity we take:

$$\gamma_{neo} = \frac{\sqrt{1 - \frac{2 \cdot \Phi}{c^2}}}{\sqrt{1 - \frac{v^2}{c^2}}} \ ; \ where \ \Phi = \frac{G \cdot M}{r} \ ;$$

$$t_{neo} = t \cdot \gamma_{neo} \ ;$$

This is the central relation of neoclassical gravity in canonical form, Newton-Lelong relation :

$$V_{neo} = -\frac{G \cdot M \cdot m}{r} \cdot (1 + \frac{j^2}{c^2} \cdot \frac{1}{r^2}) \tag{1}$$

$$\vec{F}(r) = -\vec{\nabla} V(r) \ ; \tag{2}$$

We obtain the central equation of neoclassical gravity, for non-spinning body, in canonical form, Lelong equation:

$$\vec{F}(r) = -\frac{G \cdot M \cdot m}{r^2} \cdot (1 + \frac{3j^2}{c^2} \cdot \frac{1}{r^2}) \cdot \vec{i_r} \tag{3}$$

$$\vec{j} = \vec{r} \times \vec{v}_m \ ; \ \vec{i_r} = \frac{\vec{r}}{r};$$

v_m *the speed of m to respect of Quantum Mfield;*

We can derive some others potential equations like **Poisson-Lelong relation :**

$$\Delta\Phi(r) = 4 \cdot \pi \cdot G \cdot \rho \cdot (1 + \frac{v^2}{c^2}) \ ; \tag{4}$$

The relation (1) is equivalent to that in tensor form of Grossmann-Einstein. It is not a linear approximation, it's an axial projection in the direction of two point masses.

Quantum phenomena represent perturbations (or modulations) of the Newtonian gravitational force. General Relativity is actually a hidden quantum theory of gravity but with an erroneous geometric interpretation.

Physics	CLASSICAL	NEOCLASSICAL
Author	Newton	Lelong
Gravity attribut	classical	neoclassical
Algebraic formula	$F = \frac{GMm}{r^2}$	$F = \frac{GMm}{r^2}\left(1 + \frac{3j^2}{c^2} \cdot \frac{1}{r^2}\right)$
Geometric formula (c = 1)	$R_{\mu\nu} = 8\pi G\, T_{\mu\nu}$	$R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} R = 8\pi G\, T_{\mu\nu}$
Geometric interpretation (erroneous)	Cartan	Einstein
Algebraic formula for electric force (Coulomb-Lelong)	$F = \frac{Qq}{4\pi\varepsilon_0 r^2}$	$F = \frac{Qq}{4\pi\varepsilon_0 r^2}\left(1 + \frac{3\alpha j^2}{c^2} \cdot \frac{1}{r^2}\right)$
Geometric formula for electric force (c = 1)	$R_{\mu\nu} = \frac{2}{\varepsilon_0} T_{\mu\nu}$	$R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} R = \frac{2}{\varepsilon_0} T_{\mu\nu}$

FIG. 3. Equivalence of algebraic and geometric formula

But Einstein is not the only dizzy physicist because **an equation of quantum gravity exist since ... 1745!** It can be usable in certain circumstances (in which the angular momentum is strictly conserved), like equation star (*). In N. T. Roseveare, 1982, "Mercury's perihelion from Le Verrier to Einstein" we can read:

> Clairaut, in company with d'Alembert and Euler, found in 1745 that he could not obtain the exact motion of the lunar perigee using the inverse square law.He adopted a law with a distance dependence $\frac{1}{r^2} + \frac{a}{r^4}$, where a was a small constant, which, as can be seen from the previous section, gives a motion to the perigee. However when Clairaut took the inverse square law solution to a higher order of approximation he found that the correct lunar perigee motion was in fact obtained, and the Newtonian scheme remained intact. ...There was, however, a continuing problem in the lunar theory, the secular acceleration of the Moon's mean motion, discovered by Halley in 1695. Euler ascribed the acceleration to a resisting ether in space, but Laplace in 1787 was able to show that it could be accurately accounted for by Newtonian perturbation theory.

We see that at that time physicists had very good intuitions. In order to explain some deviation from Newton law, of the orbits of the Moon and of the planet Mercury, we had, until the beginning of twenty century, a myriad of modifications (at least one hundred) of the inverse square law. Mainly we can classify them in two categories: velocity-dependent perturbation force laws and distance-dependent perturbation force laws.

It's funny and a irony of the sort to see how close they were and yet none of them did not succeed to fully explain all the phenomena. But, like in real life, the first impression was the closest to the truth. Alexis Claude Clairaut make a ingenious correction, who is equivalent in some context to the equation star (3).

However, in 1749 Clairaut discovered that his law of attraction was superfluous. Proceeding with his intention of going into further analytical detail, he took his approximation one step further and found that the Newton theory gave almost the whole motion of the lunar apogee. Unfortunately he renounce himself to this relation.

Newcomb, later in 1882, had a simple objection to Clairaut laws: there must be a good agreement between the relative magnitudes of the gravitational force as displayed in the long-range case of planetary motion and the short-range case of the Cavendish experiment, which is not the case here. It was this experimental result that ruled out the Clairaut law.

The real reasons for the dissatisfaction of this laws are in number of two. Primo : any primary gravitation relation must refer to the gravitational potential because this is a real material structure who interacts with the particle m. Secundo: quantum gravity equation is a specific angular momentum-dependent relation. You may transform it into a force relation, or into a distance-dependent relation, only if the angular momentum of the particle m is constant, which admits no extra-gravitational forces influences. These are the reasons why no one succeeded at that time to found the correct modification of Newton law that can explain the anomalous perihelion advance of Mercury.

In the present days, in order to explain at least the Dark Matter and the Dark Energy, we have again a hyperinflation with thousands of theories of gravity. **None of modern theories deserves our attention and discussion because all of them are too far away from reality, with no chance of success, no matter how much application and efforts we put into it.**

A. Newtonian limit

It's trivial to demonstrate that equation (3) become Newton law in the regimes of low speeds.

B. Schwarzschild metric equivalence

The Grossman-Einstein relation actually represents only a restrictive covariant tensor condition. Using this, Schwazsrchild and Kerr found kinematic solutions for particle motion in particular gravitational fields. Below is the Schwazsrchild metric.

$$ds^2 = -\left(1 - \frac{2GM}{rc^2}\right) c^2 dt^2 + \frac{1}{\left(1 - \frac{2GM}{rc^2}\right)} dr^2 + r^2(d\theta^2 + \sin^2\theta d\phi^2)$$

FIG. 4. Schwarzschild metric

Using it we obtain an effective potential for the movement of a mass m : $V_{eff} = \frac{j^2}{2r^2} \cdot (1 - \frac{2GM}{c^2 r}) - \frac{GM}{r}$. We deduce an equivalent gravitational potential:

$$V = -\frac{GM}{r} \cdot (1 + \frac{j^2}{c^2 r^2}); \quad (5)$$

This is identical to relation (1). Neoclassical physics obtains the same theoretical and empirical results as general relativity, as we will see in the following subsections, but in a classical frame.

C. The precession of Mercury's perihelion

Demonstration of the motion of precession of the perihelion of Mercury in neoclassical physics:

1. We show the conservation of angular momentum in the potential fields of some particular type:

$$V(r) = -\frac{GMm}{r}(1 + \frac{j^2}{c^2 r^2})\textbf{(Newton-Lelong relation)}$$

$$\vec{j} = \vec{r} \times \vec{v} -> \dot{\vec{j}} = \dot{\vec{r}} \times \vec{v} + \vec{r} \times \dot{\vec{v}}$$

$$\dot{\vec{j}} = \dot{\vec{r}} \times \vec{v} + \vec{r} \times \left(-\frac{GM}{r}\left(1 + 3\frac{j^2}{c^2}\frac{1}{r^2}\right)\vec{r}\right)$$

$$\dot{\vec{j}} = \dot{\vec{r}} \times \vec{v} + \left(-\frac{GM}{r}\left(1 + 3\frac{j^2}{c^2}\frac{1}{r^2}\right)\right)\vec{r} \times \vec{r}$$

$$\dot{\vec{J}} = \vec{0} + \vec{0} = \vec{0} -> \vec{j}\ constant$$

We note :

$$L = J_m = mj = mr^2\dot{\phi}\ then\ j = r^2\dot{\phi}\ and\ \dot{\phi} = \frac{j}{r^2}$$

2. Demonstration of the motion of precession

For reasons of energy conservation:

$$E_{totale} = E_{kinetique} + E_{angularmomentum} + V(r) = const.$$

$$V_{neoclassic} = (-\frac{r_s}{2r} + \frac{L^2}{2r^2})_{classic} - \frac{r_s L^2}{2r^3} = V_{GR} \quad (6)$$

$$\frac{m\dot{r}^2}{2} - \frac{GMm}{r} + \frac{m^2 j^2}{2mr^2} - \frac{GMmj^2}{c^2 r^3} = const. \qquad \cdot \frac{2}{m}$$

$$\dot{r}^2 - 2GM\frac{1}{r} + j^2\frac{1}{r^2} - 2GMj^2\frac{1}{c^2 r^3} = const.$$

We have :

$$r_s = \frac{2GM}{c^2}\ ;\ r' = \frac{dr}{d\phi} = \frac{dr}{dt} \cdot \frac{dt}{d\phi} = \frac{\dot{r}}{\dot{\phi}} = \frac{\dot{r}r^2}{j^2}\ (2*)$$

$$\dot{r}^2 - c^2 r_s\frac{1}{r} + j^2\frac{1}{r^2} - r_s j^2\frac{1}{r^3} = const. \quad (3*)$$

$$j^2(r')^2 \cdot \frac{1}{r^4} - c^2 r_s\frac{1}{r} + j^2\frac{1}{r^2} - r_s j^2\frac{1}{r^3} = const.$$

$$that\ \ (\dot{r})^2 = \frac{(jr')^2}{(r^2)^2} \quad (2*) \qquad \cdot \frac{1}{j^2}$$

$$(r')^2 \cdot \frac{1}{r^4} - \frac{c^2 r_s}{j^2} \cdot \frac{1}{r} + \frac{1}{r^2} - r_s\frac{1}{r^3} = const.$$

$$We\ note\ U = \frac{1}{r}\ then\ U' = \left(-\frac{1}{r^2}\right)\cdot r'\ and\ (U')^2 = \frac{(r')^2}{r^4}$$

$$\left((U')^2 - 2\cdot\frac{c^2 r_s}{2j^2}\cdot U + U^2\right) - r_s\cdot U^3 = const. \quad (4*)$$

The equation (4*) it is one of the harmonic oscillator with offset and a perturbation.
The perturbation will increase with $\phi(t)$.

$$We have: r = \frac{2J^2}{c^2 r_s(1+e\cdot\cos\phi)}\ ;\ U_\phi = \frac{c^2 r_s}{2j^2}\cdot(1+e\cdot\cos\phi)$$

$$We\ will\ differentiate\ the\ equation\ (4*) \quad \frac{d(4*)}{d\phi}$$

$$Then\ :\ U'' = -(U - \frac{c^2 r_s}{2j^2}) + \frac{3}{2}r_s U^2 \quad (5*)$$

$$We\ put\ U = U_\phi + \delta U$$

(little perturbation, with the resolution in δU)

$$We\ will\ differentiate\ the\ equation\ ((5*)\ \ \delta(4)\ :$$

$$\delta U'' = -\delta U + \frac{3}{2}r_s U_\phi^2$$

$$So,\ :\ \delta U'' = -\delta U + \frac{3}{8}\cdot r_s\cdot\frac{c^4\cdot r_s^2}{j^4}\cdot(1+e\cdot\cos\phi)^2$$

$$Then,\ :\ \delta U'' = -\delta U + \frac{3}{8}\cdot r_s\cdot\frac{c^4\cdot r_s^2}{j^4}\cdot(1+2\cdot e\cdot\cos\phi + e^2\cdot\cos\phi^2)$$

The $2\cdot e\cdot\cos\phi$ *it is important because it produce resonance.*

$$So,\ :\ \delta U'' = -\delta U + \frac{3}{4}\cdot\frac{c^4\cdot r_s^3}{j^4}\cdot e\cdot\cos\phi \quad (6*)$$

$$With\ \ \delta U = \frac{3}{8}\cdot\frac{c^4\cdot r_s^3}{j^4}\cdot e\cdot\phi\cdot\sin\phi\ solution\ of\ (6*)\ .$$

$$So,\ :\ U = \frac{c^2 r_s}{2j^2}\cdot(1+e\cdot\cos\phi) + \frac{3}{4}\cdot\frac{c^4\cdot r_s^3}{j^4}\cdot e\cdot\phi\cdot\sin\phi$$

$$then\ we\ have\ :\ \cos((1-\epsilon)\phi) = \cos\phi + \epsilon\cdot\phi\cdot\sin\phi$$

$$With\ approximation\ :\ U = \frac{c^2 r_s}{2j^2}\cdot(1+e\cdot\cos((1-\epsilon)\phi))$$

$where\ \epsilon = \frac{3}{4}\cdot\frac{r_s^2 c^2}{j^2}$

The angular frequency is modified with the procession of the perihelion $\Delta\phi\ /\ orbit = 2\cdot\pi\cdot\epsilon$

$$\Delta\phi/orbit = \frac{3\pi}{2}\cdot\frac{r_s^2 c^2}{j^2}\ ;\ \ \Delta\phi_{Mercury} = 43''/century \quad (7)$$

The result matches GR and all empirical data. Apparently Newton has already estimate a procession for the orbital perturbation by an additionally force with the potential inverse in r square. This result is useful in quantum gravity of spinning bodies. Holy Newton!

D. Deviation of the light ray in a gravitational field

In his article "On the Deviation of a Light Ray from its Motion along a straight line trough the attraction of a Celestial Body which it passes close by, Berlin, mach 1801, Berliner Astronomisches Jahrbuch, 1801-1804, p. 161–172. , von Soldner finds an angle of deviation:

$$\delta\phi_{newtonian} \approx \frac{2GM}{Rc^2}$$

With a much rigor method Henry Cavendish (1731–1810) obtain the same result.
With the Lelong-Newton relationship for quantum gravity, we find, for particles with zero gravitational mass but a non-zero inertial mass, using the relationship (3*):

$$\frac{d^2u}{d\phi^2} + u = \frac{3GM}{c^2}u^2\ ;\ with\ u = \frac{1}{r}; \quad (8)$$

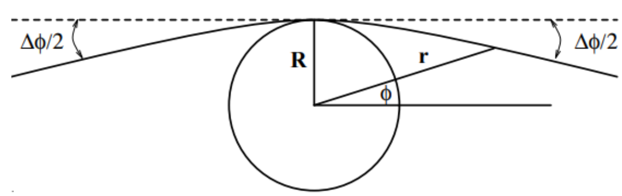

FIG. 5. Deviation of a Light Ray

Referring to Fig.5, we can see that a suitable first solution in which the term 3GMu2/c2 is completely ignored, is :

$$u = \frac{sin\phi}{R};$$

where R is the radius of the body the gravitational deflection due to which we wish to work out. We iterate this equation by replacing u in (8):

$$\frac{d^2u}{d\phi^2} + u = \frac{3GM}{c^2R^2}\sin\phi^2\ ;$$

This is satisfied by the particular integral:

$$u_1 = \frac{3GM}{2c^2R^2}(1 + \frac{1}{3}\cos 2\phi);$$

and adding this into the original solution yields

$$u = \frac{\sin\phi}{R} + \frac{3GM}{2c^2R^2}(1 + \frac{1}{3}\cos 2\phi);$$

Now consider the limit $r \to \infty$, *i.e.* $u \to 0$. Now we take $\sin\phi \approx \phi$, $\cos 2\phi \approx 1$ *and we obtain* $\phi = -2GM/(c^2R)$ *so the total deflaction is* :

$$\delta\phi_{neoclassical} \approx \frac{4GM}{Rc^2}\ ; \qquad (9)$$

The result was considered a pure coincidence, until now. **This matches GR and empirical data and is twice the value calculated in Newtonian physics. All, so called, positives tests of GR are in reality the proofs for neoclassical quantum gravity**.

E. The slowing down of measured time

The slowing down of measured time is a direct consequence of Lelong transformations ((25) and (26)) who replace those of Lorentz in electromagnetism as we will see later.

$$dt_{mesured} = dt_N \cdot \sqrt{1 - \frac{2\Phi}{c^2}}\ ;\ where\ \Phi = \frac{G \cdot M}{r}\ ; \qquad (10)$$

The time measured has only a mathematical meaning, intervening in the laws of electromagnetism. If we enter a black hole with an electronic or atomic clock, we will find that it stops. But a mechanical device will work just about fine.

F. The red-shift in light emitted

The red-shift in light emitted is observed because in neoclassical physics we have a modification of laws of electromagnetism.

$$\nu_{mesured} = \nu \cdot \frac{1}{\sqrt{1 - \frac{2\Phi}{c^2}}}\ ; \qquad (11)$$

G. Kerr metric

Below is the Kerr metric. where $a = (J_M/Mc)$ is the angular momentum of the black hole per unit mass (and has the dimensions of distance), $\Delta = r^2 - \frac{2GM}{c^2} + a^2$ *and* $\rho = r^2 + a^2\cos\theta$. *We note* $k = \frac{E_m}{mc^2}$.

$$ds^2 = \left(1 - \frac{2GMr}{\rho c^2}\right)dt^2 - \frac{1}{c^2}\left[\frac{-4GMra\sin^2\theta}{\rho c}dtd\phi + \frac{\rho}{\Delta}dr^2 + \rho d\theta^2 + \left(r^2 + a^2 + \frac{2GMra^2\sin^2\theta}{\rho c^2}\right)\sin^2\theta d\phi^2\right]$$

FIG. 6. Kerr metric

For the effective potential we obtain:

$$V_{effKerr} = -\frac{GMm}{r} + \frac{mc^2}{2r^2}(\frac{j^2}{c^2} - a^2(k^2-1)) - \frac{GMm}{r^3}(\frac{j}{c} - ak)^2$$

Despite the increased complexity of the Kerr metric, the effective potential has terms in just 1/r, 1/r2 and 1/r3 as before, resulting in overall similar behaviour as in the schwarzschild metric(at least for small a). A difference, however, is that now the coefficients of the second and third terms depend on the particle energy as well as the angular momentum.

H. Neoclassical gravity for spinning bodies

We deduce the following **Lelong relation for the neoclassical gravitational potential of spinning bodies:**

$$V_{neo} = -\frac{GMm}{r} + \frac{m(ca)^2(k^2-1)}{2r^2} - \frac{GMm}{r^3}(\frac{j}{c} - ak)^2 \qquad (12)$$

And now we can state the **Lelong equation for the neoclassical gravitational force of spinning bodies:**

$$\vec{F}(r) = -(\frac{GMm}{r^2} + \frac{GMm}{r^4}\cdot\frac{3j^2}{c^2} + \frac{mc^2a^2\cos^2 A}{r^3})\cdot\vec{i_r} \qquad (13)$$

where A is the angle between the line M-m and the plane of rotation of M;

We can observe that the gravitational force has 3 components which depend respectively on the mass M, the orbital angular momentum of mass m, and the rotational angular momentum of mass M.

I. Quantification of gravity force

The quantification of the gravitational force will be carried out according to Max Planck's black body radiation model which represents the beginnings of quantum mechanics. The specific gravitational potential becomes **Lelong relation**:

$$\Phi = lhc \cdot \frac{1}{e^{\frac{lhc \cdot r}{GM}} - 1} \tag{14}$$

where $h = 6,62607015 \cdot 10^{-34}$ *is the Planck constant* ;

l *is a unitary constant* ;

We obtain the **Lelong equation for the neoclassic quantum gravitational force** :

$$\vec{F}(r) = -lhc \cdot m \cdot \frac{1}{e^{\frac{lhc \cdot r}{GM}} - 1}(1 + \frac{3j^2}{r^2c^2}) \cdot \vec{i_r} \tag{15}$$

J. Einsteinian limit

Obviously, under the usual astrophysical conditions we have an Einsteinian metric.

VI. MFIELDS

Matter is classified in neoclassical physics into two major classes: macroscopic matter (baryonic, structured) and inframatter. Most infrascopic matter is found in the form of **particles fields: the Mfields** (Marianicfield or Materialfield).The photon it's border line in this classification because it has a structure well defined, but has no gravitational mass, it is not a source of gravity. This classes are just sub-categories of a larger category: the matter.

Our universe is isomorphic with a physics of category three: two objectives (material and nonmaterial) and one relational. Les categories of physics are: the matter, the space and the time. Physics is the science who study the time.

Field in modern physics	Mfield in neoclassical physics
Intangible, immaterial	Material
Continuous	Corpuscular (discrete)

The notion of field was introduced by Michel Faraday for the magnetic phenomena, but as a material structure. In fact he imagined some sort of resorts full filling the space, interacting with matter. He was somewhat partially right, if we consider a activated gluonic Mfield, which inspire String Theory. The mathematical formalism of electromagnetism was made by Maxwell, who imagined the fields always with a material existence, that of a particles flux.

In our days the notion was perverted by a excess of mathematization without caring of the resonance with reality. **Every physical phenomena has a material substrate!** The physicists must pay attention to always relay mathematical structures to the physical reality, cause sometimes this link it is very subtle and eventually with some other intermediate causal chains. And every Mfield has different characteristics, structure and effects.

Concerning gravity, int the mechanism of this force there is four Mfields who are intervening: a radiant, an intentional, a modulator and an effector. The first is formed by a flux of gravitons. The second is a scalar kinetic one, formed by products of decay of gravitons (let's name them gravitonions). The third one is the Quantum one who is identified as the temporal dimension in GR and who are responsible for quantum effects in the wave mechanics. The last one is that who is responsible for the pressure (tension) exerted over a mass and accelerate it. We gonna call it Spatial. In GR it is identified mistakenly to the space itself.

VII. MAXWELL-LELONG EQUATIONS FOR ELECTROMAGNETISM

The Maxwell laws are determined in a frame at rest. If we take in account the relativistic modification of electric potential, we have **Lelong relation**:

$$\vec{V_e}(r) = -\frac{1}{4\pi\epsilon_0}\frac{Q \cdot q}{r}(1 + \beta \cdot \frac{v}{c} \cdot \vec{i_x} + \frac{\alpha}{r^2} \cdot \frac{j^2}{c^2}) \tag{16}$$

where β *depends of the magnetic Mfield and the spin*

angular momentum of Q ; *for our goals here we will take* $\beta = 0$; α *is a universal constant* ; *with* $\vec{i_x} = \frac{\vec{v} \times \vec{r}}{v \cdot r}$; $j = j_q$;

$$\vec{F_e}(r) = -\vec{\nabla} V_e(r) \ ;$$

$$\vec{F_e}(r) = -\frac{Q \cdot q}{4\pi\epsilon_0 r^2}(1 + \frac{\alpha}{r^2} \cdot \frac{j^2}{c^2}) \cdot \vec{i_r} \ \textbf{Lelong equation} \tag{17}$$

$$\Delta\Phi_e(r) \approx \frac{\rho}{\epsilon_0} \cdot (1 + \frac{\alpha v^2}{c^2}) \textbf{Poisson-Lelong relation} \tag{18}$$

$$\nabla \cdot \vec{E} \approx -\frac{\rho}{\epsilon_0} \cdot (1 + \alpha \cdot \frac{v^2}{c^2}) \ \textbf{Gauss-Lelong relation} \tag{19}$$

Analogous we have for the electromagnetism the **Maxwell-Lelong relations**:

$$\nabla_{neo} \cdot \vec{E}_{neo} = -\frac{\rho}{\epsilon_0} \cdot (1 + \alpha \cdot \frac{v^2}{c^2}) \; ; \tag{20}$$

$$\nabla_{neo} \cdot \vec{B}_{neo} = 0 \; ; \tag{21}$$

$$\nabla_{neo} \times \vec{E}_{neo} = -\frac{\partial \vec{B}_{neo}}{\partial t_{neo}}; \tag{22}$$

;

$$\nabla_{neo} \times \vec{B}_{neo} = J + \frac{1}{c^2} \cdot \frac{\partial \vec{E}_{neo}}{\partial t_{neo}} \; ; \tag{23}$$

;

$$\vec{E}_{neo}(x,t) = E_0 \cdot \cos{(\vec{k} \cdot \vec{x}_{neo} - \omega \cdot t_{neo})} \tag{24}$$

At every change of propagation's direction, the wave change also his phase accordingly. For every interferometric optical experiment, we add the asymmetric waves. The interference patterns only look like the wave have a invariant speed. **Unfortunately Einstein took this result "ad literam" and proclaimed this invariance but which is of course an absurdity. That's the reason for the failure of Michelson-like experiments.**

VIII. LELONG TRANSFORMATIONS

The relativistic laws of electromagnetism use some parameters who have just an mathematical utility like substitutions. Henri Poincaré a demonstrate that Lorentz transformations must have this form in order to preserve the laws invariant to any inertial frame:

$$\gamma = \frac{l}{\sqrt{1 + \mu \cdot v^2}};$$

In special relativity we take $\mu = -\frac{1}{c^2}$ which maintain an apparent constant c to any inertial frame. **In neoclassical physics we modify the constant l and we have the Lelong transformations:**

$$\gamma_{neo} = \frac{\sqrt{1 - \frac{2\Phi}{c^2}}}{\sqrt{1 - \frac{v^2}{c^2}}} \tag{25}$$

$$t_{neo} = \gamma_{neo} \cdot t \tag{26}$$

$$\vec{x}_{neo} = \gamma_{neo} \cdot (\vec{x} - t\vec{v}) \tag{27}$$

We find the quasi Lorentz transformations, modifing the laws of electromagnetism, but here **they only have a mathematical significance , without any physical meaning, exactly as their inventor thought.** The laws of electromagnetism have "buid-in" this transformations and in which it represents a distorted mirror of reality.

IX. LELONG METRIC FOR ELECTRIC FORCE

Equation (17) represents a completion of Coulomb's law and like each expression of a force can be associated with a metric that reflects its mechanism of action. To do this, simply replace in the Schwarzschild metric:

$$\frac{2GM}{rc^2} \quad by \quad \frac{Qq\alpha}{2\pi\epsilon_0 m_q rc^2}$$

X. SOMMERFELD-LELONG MODEL OF THE ATOM

The equation (16) is very important for quantum mechanics because this modifies the model for the atom. If in the Sommerfeld model, we have planar orbits, in neoclassical physics they present complex spatial orbits. In the passage through the Quantum and Spatial Mfields the electron generates a wave (De Broglie-Lelong's wave) who by interference will give the orbitals. The wave mechanics it's a indirect method to study the macroscopic matter.

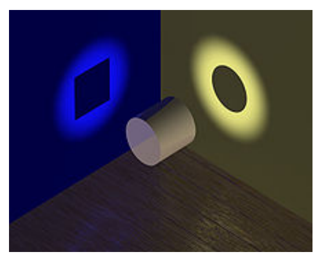

FIG. 7. The wave mechanics it's a indirect method of study

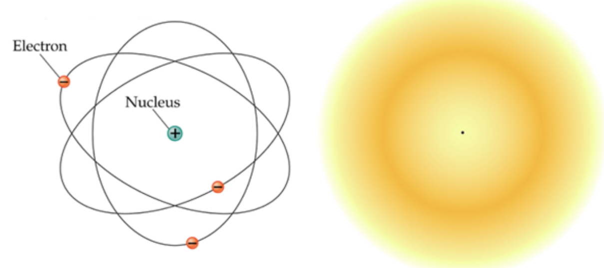

FIG. 8. The real model of the atom and the quantum-spatial waves interferences (orbitals)

XI. THE THEORY OF EVERYTHING

One of the first attempts to unify gravitation with electromagnetism, based on the similarity between the literal aspect of the two forces, or at least to find some Maxwell-like equations for gravity, was made by Oliver Heaviside in 1893. Closer to our time we can quote O. Jefimenko, M. Tajmar, C.J. de Matos and others. Their efforts fail primarily because they consider only two fields participating in the causal chain. The reality is, like usually, a little bit much more complex. By taking into account the relativistic modifications of the potentials, we can estimate some equations up to a few constants and to a permutation.

The following relations of this chapter are just as title of analogies:

$$\nabla \cdot \vec{S} = -4\pi G\rho(1+\frac{v^2}{c^2}) \textbf{ Gauss-Lelong relation} \quad (28)$$

$$\nabla' \cdot \vec{Q} = 0 \ ;$$

$$\nabla' \times \vec{S} = \vec{Q}$$

$$\nabla' \times \vec{Q} = -\frac{4\pi G}{c^2} \cdot j_m + \ i \cdot \frac{1}{c^2}\frac{\partial \vec{S}}{\partial t}$$

But for every vector $\vec{A}$ we have:

$$\nabla \times (\nabla \times \vec{A}) = \vec{\nabla} \cdot (\nabla \cdot \vec{A}) - \Delta \vec{A}$$

We obtain two Schrodinger-like equations:

$$\Delta \vec{Q} + i \cdot \frac{1}{c^2}\frac{\partial \vec{Q}}{\partial t} = 0$$

$$\Delta \vec{S} + i \cdot \frac{1}{c^2}\frac{\partial \vec{S}}{\partial t} = 0$$

We can deduce that **the solution of Schrodinger's equation is a description (modelization) of the interference of hybrid waves Quantum-Spatial who have a physical expression in reality.** A moving particle produces this type of wave which can modify its trajectory (by interference) and give us indirect information on baryonic matter.

By taking into account the relativistic modifications of the potentials and the Lelong transformations, we can estimate a modified solution up to a few constants, **Schrodinger-Lelong relation**:

$$\Psi(x,t) = A \cdot e^{i(\vec{k}\cdot\vec{x}_{neo} - \omega \cdot t_{neo})} \quad (29)$$

FIG. 9. De Broglie-Lelong's wave

The difference with the Bohm-De Broglie theory is that our theory is local.

In what concern the mechanism of the force, we have for the gravitational and electric force the same Mfield effector. The unification has taken place over the short distances.

We can estimate a expression up to a few constants, **Lelong relation**:

$$V\vec{(r)} = -\frac{GMm}{r}(1+const_1+const_2 \cdot \frac{v}{c} \cdot \vec{i_x} + \frac{j^2}{r^2c^2}) \cdot \vec{i_r} \quad (30)$$

There is some of the Mfields who are ubiquitous (like Higgs, Quantum, Magnetic, Spatial and Gluonic) , others are locally small distances (like Electric radiant) and others locally very large distances (like Gravitational radiant).

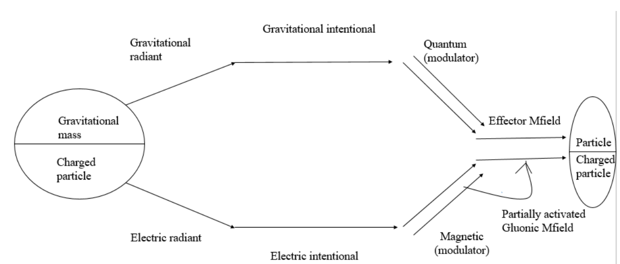

FIG. 10. The mechanism of the force

XII. TIME

Time is the relation between the matter and space (Newton-Lelong relation). Newtonian time, or the scale of time, is a linear function which creates cuts (like Dedekind cuts) in this relational category.

Aristotle said that the time question is the most difficult who was posed to the manhood. There are only two persons who have the correct answer: Newton and me.

To describe the intensity of phenomena in a portion of the universe (a system), we must compare to a universal, global parameter. Newton found such a parameter, which is a function derived from time. It is the flow of time, or the time scale, or even Newtonian time. Considering the law of conservation of momentum, if we suppose the existence of the atoms (of Democritus), we obtain that the cumulative distance traveled by the particles is a linear, one-to-one relationship over large domains with free motion (at its spatial scale). **A past second of Newtonian time tells you that matter has cumulatively traveled "one meter" on a universal scale. (Lelong-Newton relation)**

XIII. BLACK HOLES

Black holes are vortices of the Spatial Quantum Mfield. Nothing special about. Inside them, there is the most boring place in the Universe, because only direct interactions takes place. For the supermassive black holes who are located in the middle of galaxies is formed by early vortex in the primordial Mfield, it is a nonsense to speak of their initial mass. We can see that with the JWT.

XIV. THE SINGULARITIES PROBLEM

The resolution of singularities (a subject of controversy for decades) is relatively simple if we understand that the density of an Mfield is a finite value and even that **we can have almost "infinite" curvatures of the Spatial Quantum Mfield.**

But even in GR this problem can be avoided with the same method with which Max Planck eliminated the ultraviolet catastrophe by replacing:

$$\frac{r_s}{r} \quad by \quad lhc \cdot \frac{1}{e^{\frac{lhc \cdot r}{r_s}} - 1} \quad in\ Schwarzschild\ metric\ ;$$

XV. VISIBLE LIGHT

Visible light (the photon) has a exclusive corpuscular nature (Newton-Lelong relation). His passage will generate a electromagnetic wave "the meta-light".

XVI. REDSHIFT OF VISIBLE LIGHT

This is a subtle problem that astrophysicists are not even aware of. In order to measure the speed of the distant galaxies (v_r), using visible light, they use a relativistic Doppler effect like in the formula:

$$\frac{\lambda - \lambda_0}{\lambda_0} = \frac{v_r}{c}$$

In stead they should employ the classic Doppler effect:

$$\frac{\lambda - \lambda_0}{\lambda_0} = \frac{v_r}{c - v_r} \tag{31}$$

XVII. HUBBLE CONSTANT TENSIONS

In this moment we notice a mini crisis in astrophysics due to the fact that the value of the Hubble constant is different depending on the method used for the calculation. It is nothing other than a consequence of the error discussed in the previous chapter. **The result obtained by the red-shift of supernove is overestimated.**

XVIII. DARK MATTER

There is no additional source of gravity in a galaxy and dark matter is an illusion. There are two types of Effector Mfield for gravitation and therefore **two gravitational forces: Newtonian gravitation and Marianic gravitation!** The **Lelong relations** for the second law of quantum gravity is:

$$V(r) = -\frac{G \cdot M \cdot m}{r} \cdot l(r) \cdot (1 + \frac{j^2}{r^2 c^2})\ ; \tag{32}$$

$l(r) = \frac{r}{r_M} \cdot \ln\left(\frac{r}{r_M}\right)$ is the Lelong Modification Index; where $r_M = \sqrt{\frac{GM}{a_M}}$; *and* a_M *is Milgrom constant* ;

$$\vec{F}(r) = -\vec{\nabla} V(r)\ ; \tag{33}$$

$$\vec{F}(r) = -\frac{G \cdot M \cdot m}{r} \cdot \frac{1}{r_M} \cdot [1 + (1 + 2\ln\left(\frac{r}{r_M}\right)) \cdot \frac{j^2}{r^2 c^2}] \cdot \vec{i_r}\ ; \tag{34}$$

The second type of Effector Gravitational Mfield is more sensitive than the first to the intermediate Mfield. Galaxies form by following the distribution of this type of inframatter, the type II Gravitational Effector Mfield. He is the master of the galaxies. Ordinary matter just follows.

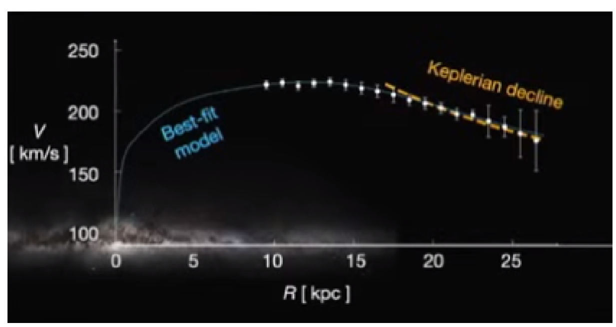

FIG. 11. The Gaia mission seems to prove the second law

This new law of gravity respects the C.M.B. data, Bullet Cluster observations, the Tully-Fisher relation etc. Gaia is a space observatory of the European Space Agency (ESA), launched in 2013. The first results, concerning the distribution of the stars and baryonic matter speeds in Milky Way, show a hallow of the type II Gravitational Effector Mfield (regions of marianic gravitation) and then there are the regions of Newtonian gravity.

FIG. 12. The structure of spiral galaxies

A. Tully-Fisher relation demonstration

For stable orbits we have:

$$Force_{central} = \frac{mv^2}{r} \; ; \frac{GMm}{r \cdot r_M} = \frac{mv^2}{r} \; ; \sqrt{GMa_M} = v^2 \; ;$$

$$v^4 = M \cdot Ga_M \; ;$$

B. Lelong metric for second law of gravity

We replace in Schwarzschild metric $\frac{2GM}{rc^2}$ by $\frac{2\Phi_l}{c^2}$, where $\Phi_l = \frac{G \cdot M \cdot l(r)}{r}$;

C. Quantification of second law of gravity

We quantify the specific gravitational potential in the force equation (34) with its quantum expression (relation 14).

XIX. THREE-BODY PROBLEM

The gravitational problem of three bodies in its traditional sense dates in substance from 1687, when Isaac Newton published his Philosophiæ Naturalis Principia Mathematica, and was trying to figure out if any long term stability is possible, especially the system of our Earth, the Moon, and the Sun.In 1890 Henri Poincaré discovered chaotic dynamics within the three-body problem and that rise some questions concerning the stability of the solar system. But Newton answer to this problem was absolutely genius: he suggested that the system was given a little push periodically by God, preventing its demise. I do not know if it is God or the Nature her self, but the things happens a little bit like that, with **the type II Gravitational Effector Mfield who do actually the push.**

XX. DARK ENERGY

Dark energy is the biggest mistake in human history. At what point? Big as three quarters of the universe. Johann Sebastian Bach famously quoted :

" Me, when i want to be an idiot, i am."

It happens to me very often. It seems that there are some persons who have this power collectively. Only a voluntary act can explain such a blunder.

The theoretic physics has intrenches itself in a cognitive bubble with the external relations determined by this intellectual conditioning of a century of collective delirium.

Trying to determine the speed of light by electromagnetic interferometric methods is like trying to get the speed of an airplane with a microphone. We obtain an extraordinary result: an invariant speed of 340 m/s.

Looking at distant supernovae, astrophysicists have concluded that the universe is expanding, accelerated by an unknown energy that arises out of nothingness.If predecessors searched for the Perpetuum Mobile over the centuries, physicists struck much harder by finding an infinite source of energy.

This is again an aberrant interpretation of the experimental data by underestimating the relative speed of light that comes to us from distant stars and the superestimation of the speed of their removal (of the galaxies). We take into calculation a constant speed, with the use of relativistic addition of speeds. All we have to do is the normalisation of the data accordingly to the classical Doppler relation and as by miracle the expansion of the universe will once again become linear.

XXI. EPISTEMOLOGICAL CONSIDERATIONS

History shows that science is a mirror of its time.

In intellectually hollow periods, man has always explained the real by the unreal, with the Middle Ages as a caricature example. We are going through a similar period today. It began in 1905, when the guardrails of reason were lifted by an incorrect addition: c + c = c, equivalent to 1 = 0. This is the very definition in logic of a lie, perpetrated by scientific propaganda which served all the salads as truth and we, the pigeons, all swallowed it.

We have marched reason against sensation. We are perhaps a little happier but a little less intelligent. Questioning ourselves and accepting that **we are less minded than previous generations** is the price that we must pay for knowledge and truth. Is the theoretical physics community capable of questioning itself? Is modern society able and willing to pay the price? Personally, i doubt it.

XXII. CONCLUSIONS

Today, in modern physics, the numbers don't add up anymore. But good old classical physics, supplemented by the aether substrate, can give a simple and elegant answer to any physical phenomenon. This happens for a very good reason: it represents the correct modeling of the world. Perhaps it is time for the theoretical physics community to come to its senses, break free from its cognitive bubble and reestablish reasonable behavior. In the quest of a coherent theory of reality, we have fallowed Newton footsteps, his way of reasoning. As he used to say, I saw deep in the sky, far far away, sitting on his shoulders, the shoulders of a giant. A third of a millennium has passed since his Principia. This is the frequency of appearance of a intellectual lookalike, capable of understanding the beauty of his spirit. Any attempt to a theory of everything can only pass through his work, because as we have seen in this article, his system provide a adequate framework to the most difficult problems.

Physics needs a paradigm shift with the restoration of ancient principles, because the nature of the physical reality is (neo)classical !

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