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Understanding the uselessness of 4D curved space, GRT, Hyperspace and String Theory

explained by the Gravitomagnetic Field Theory

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Abstract

In this paper, the effectiveness of GRT and of the use of the Riemann metrics for GRT and for the String Theory is discussed. We come to the conclusion that the invention of *dark matter* is a striking example of the incompetence of GRT and of the Riemann metric to explain many physical realities of the cosmos.
Though, the Heaviside field for gravitation (or the *gravitomagnetic* field theory, or also called *gyrogravitation*) has found the origin of the constant speed of the stars in disc galaxies.

Key words : *gravitation, gravitomagnetism, gyrogravitation, dark matter, wormholes, Heaviside gravity, Maxwell analogy, GRT, String Theory, Riemann metric.*
Method : *analytical.*

1. Short history of the progression of some mainstream fundamental physics.

1.1. The Special Relativity Theory and the Minkowski metric.

When the findings of the Special Relativity Theory (SRT), which was invented in a one-dimensional space, had to be transformed to the three-dimensional space, the Euclidean metric was insufficient to deal with. The lack of findings for the experiment of Michelson and Morley resulted in the idea that aether at a certain speed, was reducing the length of the matter in that direction. Since the speed of light was considered to be identical in all possible situations, for all possible observers, this resulted that time had to change inversely with length.
When the conservation of impulsion and of energy is applied, one finds that also mass has to be variable.
The Minkowski metric that came up was used to expand the Euclidean metric for the dimension of time. But remark that space and time are linked by the speed of light. Thus, the time dimension was not totally independent in the case of light waves. Besides, SRT considered mass only as inertial mass, not as gravitational mass. So, SRT was far from the final solution for a new gravitation theory.
Moreover, the idea of aether, whereon the experiment of Michelson and Morley was based, was now considered as superfluous because SRT didn't need it for its concept. Later, aether became simply rejected.

1.2. The Riemann metric and the General Relativity Theory.

It was time for a change of SRT into a more consequent gravitation theory. In the middle of the 19th century, the greatest genius after Gauss in mathematics, Bernhard Riemann, found the solution for the consequent expansion of the Euclidean metric for a higher number of dimensions than three.
The curvature of manifolds of some number of dimensions can be represented by Riemann metrics.
The four-dimensional Riemann metric was helpful for the development of the General Relativity Theory (GRT).
It allowed to define a geodetic, this is the shortest distance between two points on a four-dimensional surface. In the case of GRT, the surface represented space, curved under the influence of gravitational masses.
Then, the myth that space equals a curved four-dimensional surface was a small step to make for mainstream scientists. For GRT, Einstein gauged his differential equation to the value of the bending of light and the value of the perihelion advance anomaly of Mercury. Thus, GRT is not only based on the speed of light and on the gravitational constant, but also on several other empirical data.

1.3. The Riemann metric and the String Theory.

The two separate theories of GRT and electromagnetism can be represented in a single matrix and used as a global theory with five dimensions. Herein, the fifth dimension is electrical charge.
The string theory, which is supposed to gather the four main forces and the elementary particles, contains a Riemann metric of ten dimensions, containing real and imaginary variables.
And mainstream scientists are praising the string theory and hope to find the Theory of Everything.
Indeed, of the ten dimensions, only three are visible and the fourth one depends from the first three dimensions in the case of light waves. Where are the other dimensions? “Invisible”, mainstream scientist say. What they mean is that they have made a ten-dimensional world, not physically but only mathematically, just to get enough parameters in order to “describe” “everything”.
In the macroscopic world, the string theory predicts space-wormholes between parallel worlds and other creative phenomena, whereof nobody has ever seen a glimpse of it. In the microscopic world, it predicts lots of other creative things, like “negative time”.

Can these theories compete with the good old electromagnetic field theory of Faraday and Maxwell, and with the good old gravitational field theory of Heaviside? We will see below that the latter theories are much more useful. Indeed, the electromagnetic field theory of Faraday and Maxwell has been proven to be correct. How could a similar, but that much weaker force, when comparing the Newton force to the Coulomb force, possess a totally different structure ? How could the strong electromagnetic force be Euclidean, but the much weaker force be non-Euclidean? Even when it is showed that GRT and the Maxwell analogy for gravity (gravitational field theory of Heaviside) are very close to each other, GRT clearly is unable to *see* what is *really* happening.

2. The problem of the constancy of the velocity of stars in disc galaxies.

2.1. The observed velocity in disc galaxies.

One of the mysteries of the cosmos is the discovery that in disk galaxies, the velocity of the stars of the disk is almost constant.
In Fig.2.1, the star's velocities are shown of several disk galaxies (from Rubin, Ford, and Thonnard 1978 ApJL 225, L107, reproduced courtesy of the AAS). In general, we can say that the velocity of the stars is fairly constant, beginning at a distance of 2 or 3 kpc.

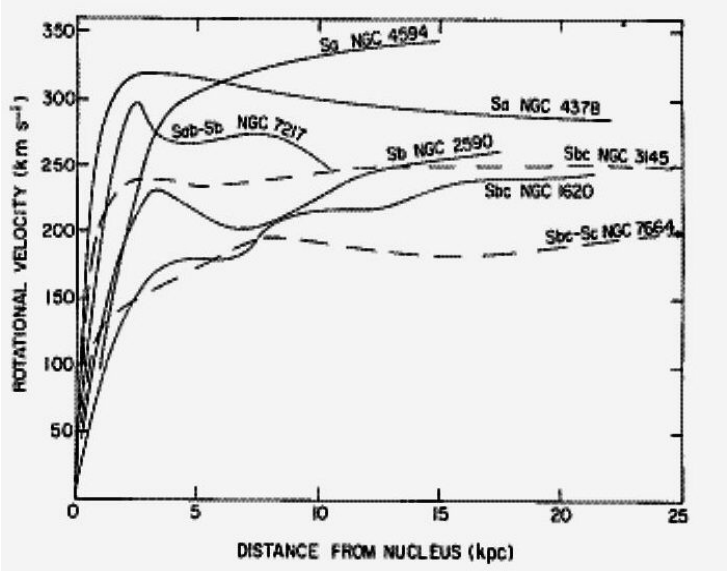

Fig. 2.1.
Rotational velocities of stars in several disk galaxies. Most of them have a similar graphic: a fast, almost linear increase near the nucleus, a small collapse of the velocity before 5 kpc, and a stabilization in the disk at (nearly) one single velocity.

The centre of the bulge has no specific (average) velocity, which result in a zero velocity on the figure. The first part of the disk outside the bulge, at nearly 2,5 kpc has often gotten a some higher velocity. And over 4 kpc, the velocity is almost linear, sometimes sinusoidal. Often, this linearity is almost constant or stays in a short range of values.

2.2. The Kepler law doesn't fit with the constancy of the velocity of the stars in disc galaxies.

In a planetary system as the solar system, the planets follow a quite simple rule. The square of the orbit velocity of the planet is inversely proportional to its distance from the sun. This law has been written down by Kepler.

$$v^2 = G\,M / r \qquad (2.1)$$

For low velocities, this law is correct and can be applied in this paper as such, even if the correct equation for higher velocities is somewhat different, as I explained in "*On the orbital velocities nearby rotary stars and black holes*" , in chapter 3, equation (3.10).

By increasing distances from the sun, planets will rapidly decrease its orbit velocity. And this law is nothing more than a geometrical one.
There is no *a priori* reason that the same law wouldn't be true for stars in a galaxy. But reality is different ! Equation (2.1) is extremely different from what is observed in galaxies.

3. Gravitomagnetic explanation of the star velocity anomaly.

3.1. Pro memore : The Heaviside (Maxwell) Analogy for gravitation (or gravitomagnetism).

Heaviside O., 1893, transposed the Electromagnetism equations of Maxwell into the Gravitation of Newton, creating so a dual field : gravitation and what we propose to call *gyrotation* (which is the gravitational equivalence of magnetism), where the last field is nothing more than an additional field caused by the velocity of the considered object against the existing gravitation fields.

The formulas (3.1) to (3.5) form a coherent set of equations, similar to the Maxwell equations[1]. Electrical charge is then substituted by mass, magnetic field by gyrotation, and the respective constants as well are substituted (the gravitation acceleration is written as $\boldsymbol{g}$, the "*gyrotation* field" as $\boldsymbol{\Omega}$, and the universal gravitation constant G as $G^{-1} = 4\pi\zeta$). We use sign $\Leftarrow$ instead of $=$ because the right hand of the equation induces the left hand. This sign will be used when we want to insist on the induction property in the equation.

$$\boldsymbol{F} \Leftarrow m\,(\boldsymbol{g} + \boldsymbol{v} \times \boldsymbol{\Omega}) \qquad (3.1)$$

$$\boldsymbol{\nabla} . \boldsymbol{g} \Leftarrow \rho / \zeta \qquad (3.2)$$

$$c^2 \boldsymbol{\nabla} \times \boldsymbol{\Omega} \Leftarrow \boldsymbol{j} / \zeta + \partial \boldsymbol{g} / \partial t \qquad (3.3)$$

where $\boldsymbol{j}$ is the flow of mass through a surface.

It is also expected :

$$div\ \boldsymbol{\Omega} \equiv \boldsymbol{\nabla} . \boldsymbol{\Omega} = 0 \qquad (3.4)$$

$$\boldsymbol{\nabla} \times \boldsymbol{g} \Leftarrow - \partial \boldsymbol{\Omega} / \partial t \qquad (3.5)$$

$$c^2 = 1 / (\zeta \tau) \qquad (3.6)$$

wherein $\tau = 4\pi\, G/c^2$ (3.7)

All applications of the electromagnetism can from then on be applied on the gravitomagnetism with caution.

3.2. Result of the calculations.

In my paper "*Deduction of orbital velocities in disk galaxies, or "Dark Matter" a myth?*" I deduce the following result for a simple and arbitrary chosen mass distribution, a function depending from the distance from the center of the originally spherical galaxy, whereof the center is rotating and whereof the stars are originally orbiting according the Kepler law. By the bulge's rotation, the orbits swivel into a flat disc galaxy, as proved my paper.

For the calculations, we have decided for an arbitrary mass distribution of a spherical galaxy : $\dfrac{\mathbf{d}\,\boldsymbol{M}_2(\boldsymbol{r})}{\mathbf{d}\,\boldsymbol{r}} = \dfrac{\boldsymbol{M}_0}{\boldsymbol{R}_0}$

wherein $\boldsymbol{M}_0$ and $\boldsymbol{R}_0$ are the total mass and the radius of the bulge of the disc galaxy.

The equation for the orbital velocities of the stars in the disk galaxy follows from a long calculation that is explained in that paper.

$$\boldsymbol{v}_{R,\,tot|H=0} = \sqrt{\frac{G\,\boldsymbol{M}_0}{R} + \frac{2G\,\boldsymbol{M}_0}{\pi\,\boldsymbol{R}_0}\left\{\frac{R_e}{(R_e - R)}\left[\mathbf{F}\left(\frac{-4R_e R}{(R_e - R)^2}, \frac{\pi}{2}\right)\right] - \frac{\boldsymbol{R}_0}{(\boldsymbol{R}_0 - R)}\left[\mathbf{F}\left(\frac{-4\,\boldsymbol{R}_0 R}{(\boldsymbol{R}_0 - R)^2}, \frac{\pi}{2}\right)\right]\right\}} \qquad (3.8)$$

wherein $\mathrm{F}(x, \pi/2)$ is the Complete Elliptic Integral of the First Kind.

This equation (3.8) gives the orbital velocity equation in the disk's plane for $R_0 < R < R_e$, where R_e is the external border radius of the disk. Remark that these velocities are only initial velocities, just after the orbit swivelling.
Transformed in relative figures, this gives Tab. 3.1 below.

$$\frac{\mathbf{d}\,M_2(r)}{\mathbf{d}\,r} = \frac{M_0}{R_0} \Rightarrow$$

R	1	1,2	2	3	4	5	6	7	8	9	10
v	1	0,83	1,54	1,75	1,84	1,92	2	2,07	2,17	2,34	2,78

Tab.3.1: *Relative values of the star's velocities of the galaxy's disc at a relative radius from the bulge.*

The values of $\mathbf{R}$ are multiples of the bulge's radius R_0 , and $\mathbf{v}$ is the found velocity of the stars at that radius, with a normalisation to $\mathbf{v} = 1$ at the bulge's radius R_0 .
Comparing the figures in tab.3.1 suggests that the galaxies NGC 4594 , NGC 2590 and NGC 1620 (see fig.2.1) respond quite well to the mass distribution of tab.3.1. Other mass distributions will result in other velocity distributions.

4. Discussion and conclusions.

4.1. The masking of GRT's and the Riemann metric's failure : the invention of "dark matter".

Although F. Zwicky had a respectable insight in the real meaning of the Hubble constant, he made the great mistake to mother the "dark matter" as a reply on what was seen as "missing mass" in order to see disk galaxies as somewhat more spherical objects than was really visible. Some more matter above and under the disk would be very welcome to get a better Kepler-like match of the constancy of the velocity of the stars.
Although GRT was known and commonly accepted at that time, no better idea was found than to mystify space even more than Einstein did.
Couldn't GRT explain it anyway? GRT contains the white and the yolk of the gravitation egg, but they are not easy to separate. Above, we have seen that there exists an easy solution for the star's velocity in disc galaxies.

4.2. The masking of global incompetence in a huge Riemann metric of String Theory.

Nothing is more easy than to invent a mathematical theory of ten dimensions (or more) with enough variable parameters to explain the four fundamental forces and (hopefully) all the elementary particles. It's only a hell of a job to find those parameters (see fig.4.1).

Fig.4.1: *An artistic view of the Riemann hyperspace with the String Theory (Riemann manifold) as the rubbish.*

But how much more interesting would it be to really understand the underlying physics and to reduce the theory to the core of it, independently from a parching metric that is completely alienated from what we currently see in daily life?
The excuse of mainstream is that the reduction of a Riemann metric to Euclidean subspaces of three dimensions, timeless or not, is always possible. But, in reality, the subspace we live in might be the only one that is needed to explain the four fundamental forces and all the elementary particles.
That means that we need the three dimensions of distance, the dimension of time (independent from distance, as in classical physics) only. The entities of mass and electrical charge are the only other variables we need.
For the issue of the velocity anomaly of disc galaxies, it is shown above that the sole Heaviside equations (the Maxwell Analogy for Gravitation) are capable to explain it, by using physical insight instead of geometrical-mathematical magic tricks.

Hypothetical *negative time* and *wormholes* between universes are other examples of creative nonsense. These pure inventions show another danger : spoiling the common sense of thousands of young scientists in endless pseudo-science.

4.3. The effectiveness of gravitomagnetism.

Once more, it is clear that the scientific community is not able to use GRT at all to find what happens in the universe. GRT is limited to speculate on the Big Bang theory, the expanding of the universe, the curvature of the universe and so on. We proved here that the invention of "dark matter" was a sad mistake. The restoration of the disc galaxies' loyalty against the Kepler law can easily be realized by using gravitomagnetism.

In my earlier papers, I showed the fantastic power of gravitomagnetism to explain :
- Fast spinning stars don't explode easily due to gravitomagnetic self-compression - as observed.
- Nearby fast spinning stars, Kepler's law is superposed with an extra attracting gravitomagnetic force - as observed.
- Motions of the asteroids of the Main Asteroid Belt.
- Supernovae explode sometimes as two opposite shells with an equatorial explosion - as observed.
- High speed mesons live longer by gravitomagnetic self-compression - as observed.
- Disc galaxies are compressed to a plane due to the spinning black holes of the bulge by gravitomagnetic compression.
- The constancy of stars in disc galaxies comes from the compression of spherical galaxies into disc galaxies. No dark matter needed.
- Light is more attracted by the spinning sun at its left side and less attracted at its right side (as seen from Earth). Thus, cosmic lenses are not symmetric.
- Mercury's remaining perihelion advance could be due by an extra gravitomagnetic attraction from the sun (due to its motion in the Milky Way).

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