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Considerations on the Fundamental Forces based upon the Coriolis Gravity Theory

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Abstract

The gravitational constant *G* is clearly not a universal constant [5]. It seems impossible to find a precise value for *G*. In this paper, I will analyze the reasons for that issue, according Gravitomagnetism and the Coriolis Gravitation Theory. In my paper "Fundamental Causes of an Attractive Gravitational Constant, Varying in Place and Time" [4], I explained that, according Gravitomagnetism and the Coriolis Gravitation Theory, the orientation of the particles' spin determines whether a set of particles attract or repel, but I proved that attraction takes the lead. Here, I show, based upon [3] , that the constant G depends from star to star. Furthermore, I generalize the Coriolis concept for the forces in electromagnetism and in quantum mechanics, as an identical process for all types of forces. I look at the meaning of matter, mass and electrical charge.

Keywords: gravitomagnetism, expanding Earth, gravitational constant, Coriolis Gravity Theory, gyrotation.

1. The Coriolis Gravitation Theory [2] [3]

1.1. Gravity between particles (trapped light) seen as a Coriolis effect

In my earlier papers [2] [3], it was explained that the gravitation field can be seen as a Coriolis effect, applied upon trapped 'light', where particles are made of. Gravitons seem to orbit about the particles or leave the particles tangentially. The relevant interactions for gravity are shown in figure 1 :

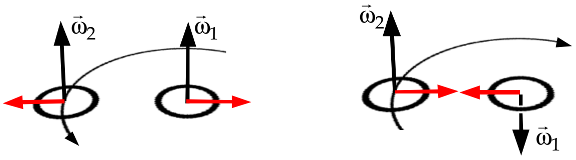

Figure 1.a. Like-oriented elementary particles of trapped 'light', hit by an orbiting graviton and undergoing a Coriolis acceleration $\vec{a}_C$. The particles repel reciprocally.

Figure 1.b. Opposite-oriented trapped 'light', hit by an orbiting graviton and undergoing a Coriolis acceleration $\vec{a}_C$. The particles attract reciprocally.

The other possibilities are shown in figure 2 and 3:

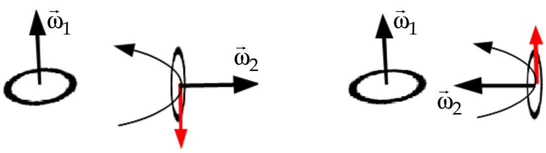

Figure 2.a. and b. Elementary particles of trapped 'light' under a right angle, hit by an orbiting graviton and undergoing a Coriolis acceleration $\vec{a}_C$. One particle accelerates tangentially. Remark that there is no reciprocity.

Figure 3.a. and b. Elementary particles of trapped 'light' under another right angle, hit by an orbiting graviton and undergoing a Coriolis acceleration $\vec{a}_C$. None of the particles get accelerated because the orbiting velocity vector of particle 1 is parallel to the spin vector of particle 2.

I symbolize the main spin orientations as ↑↓→←↙↗ and call them respectively N, S, E1, W1, E2, W2. Remark that only the combinations of ↑ (N) and ↓ (S) are relevant for the attraction and repel by Coriolis effects. Only one of the six cases gives attraction, reciprocally, and one gives repulsion.

1.2. The meaning of gravitational mass

My work on gravitomagnetism shows that the gravity constant G is not universal but its value rather a coincidence. The value of G fully depends of the sequence of the particles' spin orientations. When we start a sequence with a N particle, the possible sequences of the N and S particles are:

1 ↑ ↓ x x x x
2 ↑ x ↓ x x x
3 ↑ x x ↓ x x
4 ↑ x x x ↓ x
5 ↑ x x x x ↓

Figure 4: sequences between N and S spin-oriented particles.

Other spin orientations are between-in. But it doesn't matter which particle at which place. Thus, the idea that all particles attract identically is wrong.

The distance between two particles can be set to *r*. The acceleration between the N and the S particle of the first row is proportional to $1/r^2$. The average attraction-acceleration between the N and the S of all the rows is proportional to

$$\frac{1}{5}\sum_{r=1}^{5}\frac{1}{r^2}=\frac{1}{(1.8483)^2} \qquad (1)$$

In other words, the acceleration-related average distance to be taken into account between N and S particles is not *r* but 1.8483 *r*.

But this reasoning can also be done with E2 (↗) and W2 (↙) particles.

When we start a sequence with a N particle, the possible sequences of the N and S particles are:

1	↗ ↙ x x x x
2	↗ x ↙ x x x
3	↗ x x ↙ x x
4	↗ x x x ↙ x
5	↗ x x x x ↙

Figure 5: sequences between E2 and W2 spin-oriented particles.

Also here, the equation (1) is valid. The attraction-acceleration becomes twice the value of equation (1) so that the average distance *r* to cope with becomes $1.8483/\sqrt{2}\ r = 1.307\ r$.

By science, the gravitational constant is derived from the acceleration of an standard inertial mass under the gravitational field of the Earth, according Newton's gravity law. The masses of the Sun, the planets and the other heavenly objects are derived by using that same terrestrial gravitational constant.

Hence, the gravitational mass, considered as part of an attraction , depends of the number of hits between particles with opposed spins.

1.3. The meaning of the gravitational constant

Another factor that influences the value of the attraction between particles, and especially the constant G is the amplitude of the huge voids between the particles in a three-dimensional structure. The figures 4 and 5 are idealized and the chance of gravitons to hit other particles is very low in reality. In fact, the distance between single-bound atoms are of the order of 1.5 Å for carbon (1 Å = 10^{-10} m) or larger for atoms with a higher number of electrons, whereas the nuclei diameters are of the order of 1.75 fm (1 fm = 10^{-15} m). Due to the electrons about the nuclei, the number of atoms nearby a given atom is very restricted.

1.4. The meaning of inertial mass

One could wonder why we represent matter as trapped "light". In fact, the idea is old and came from Louis de Broglie, who supposed that the matter-wave duality lay in the electromagnetic nature of electrons.

Light has an energy of $E = h\nu$, wherein *h* is the Plank constant and ν the frequency of the wave. For an uniform motion, the rest mass of a wave is zero, but for trapped light, there is a rest mass that is not zero. The equivalent mass can be found out of the classical wave theory : $c = \sqrt{E/m}$ which is equivalent to $E = mc^2$. Thus, $m = h\nu/c^2$. This equation is the definition of inertial mass, in the sense of "Is the Differential Rotation of the Sun Caused by a Coriolis Graviton Engine?" [3]. By science, the definition of inertial mass is derived from the volume of a liter of water.

1.5. The early Earth and its particles' orientation

From the general point of view, one could say that the particles in the early Earth probably were oriented randomly. But the Earth was formed from a certain physical process. Although I am won for the idea of a solar protuberance that formed the Earth, any other process could result in some global orientation distribution of the particles.

It will be shown below that there always occurs attraction between particles, according to the figure 1.b.

1.6. Why the preferential orientation of the Earth's particles is attractive

Why is the preferential orientation of the Earth's particles attractive? Imagine several particles side by side that are oriented upwards or downwards: ↑↓↓↑. The particles that are oriented differently, → or ← , do not affect this reasoning because they don't interact much with ↑ and ↓ (thus, the reasoning for ↑↓↓↑ is similar to that of ↑←↓←↓→↑). As we saw earlier [2], opposite oriented particles attract and like oriented particles repel. The final situation of the example is given by ↑↓ ↓↑. Between the two downwards oriented particles of this example, the space between them increased and some room is created for another particle to fill it. We have a probability of at least 1/6 that this will be a ↑ , because ↑ is attracted by ↓ , resulting in a double attraction (left side and right side). In this example, we obtain a higher probability for ↑↓↑↓↑, which globally is a group that is oriented upwards ▲. The same reasoning is possible for groups : ▼▲▲▼ will result in ▼▲ ▲▼ , and then in a higher distribution probability of ▼▲↓▲▼ or ▼▲▼▲▼, which here gives a downwards super-group. These super-groups on their turn form hyper-groups the same way. However you look at it, one always gets a majority of attraction-oriented compositions.

Now we know why the heavenly bodies are attractive, despite the fact that the Coriolis Gravity Theory allows both attraction and repulsion of particles. We also found the first reason why the Gravitational Constant isn't identical everywhere, because the super-groups' orientations are random after all and don't allow new settings if they became solid or crystallized.

Hereafter, we will see how the Earth's rotation can also affect the Gravitational Constant value.

2. The internal gyrotation field of a rotating body [1]

2.1. Global Gyrotation fields of the Earth

Rotation creates a field in addition to gravity. I called this second field: *gyrotation*, which is the 'magnetic'-analog equivalence in gravitomagnetism. The gyrotation of a rotating body provides a magnetic-like field that acts internally on the individual particles of the spinning body.

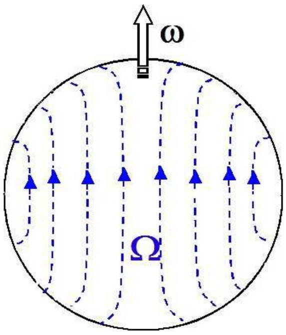

Figure 2. Internal gyrotation equipotentials Ω of a spinning body at a spinning rate ω.

In the figure 4 , the internal gyrotation-equipotentials Ω of a spinning body at a spinning rate ω are shown. The gyrotation fields are parallel and oriented like the rotation vector [1].

2.2. Detailed Gyrotation fields of the Earth

The actual Earth rotates at a certain rate, which creates a gyrotation field. (This rotation probably comes from the expulsion process out of the Sun, as I explained in my Solar Protuberance Theory in earlier papers.)

Hereafter, I will analyze the possible outcome of the Gravitational Constant issue.

We found in [1] that the internal gyrotation $\vec{\Omega}$ of a sphere is given by:

$$\vec{\Omega}_{\text{int}} = -\frac{3Gm}{c^2 R^3}\left(\vec{\omega}\left(\frac{2}{5}r^2 - \frac{R^2}{3}\right) - \frac{\vec{r}\,(\vec{r}\bullet\vec{\omega})}{5}\right) \qquad (1)$$

wherein R is the radius of the sphere, r the local radius of a point inside the sphere and $\vec{\omega}$ its angular velocity.

The 'vertical' (y-) and 'horizontal' (x-) components are given by the following expressions, derived from (1).

$$\Omega_y = -\frac{3Gm\omega}{5c^2 R^3}\left(2x^2 + y^2 - R^2\right) \qquad (2)$$

and

$$\Omega_x = \frac{3Gm\omega}{5c^2 R^3}\,x\,y \qquad (3)$$

These equations are visualized in the figure 3.

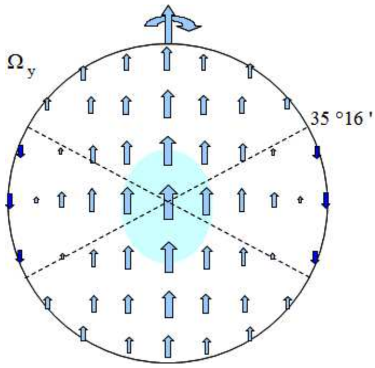

Figure 3.a. Vector topology of the gyrotation along the spin axis of a spinning sphere. The spin axis contains the highest amplitude of gyrotation. At the latitude of 35°16', the gyrotation becomes zero. At the equator, gyrotation is inversed, and one gets a local increase of the global attraction!

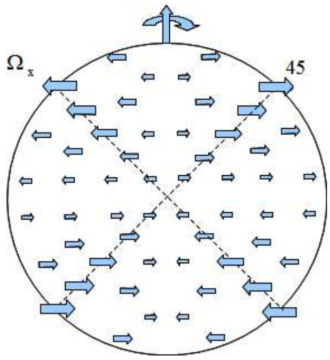

Figure 3.b. Rotating vector topology of the gyrotation along the equatorial axis of a spinning sphere. At the longitude of 45°, the gyrotation is maximal. Near the center, the gyrotation is zero. Since particles continuously rotate with the Earth's spin, their original spin orientation will not be affected that easily.

The gyrotational vector topology along the spin axis shows a maximal gyrotation near the spin-axis and the center of the globe (figure 3.a). Near the latitude of 35°16', the gyrotation becomes zero. In the equatorial direction, gyrotation is maximal at a latitude of 45° and zero near the center of the sphere (figure 3.b). However, since particles continuously rotate with the Earth's spin, the gyrotational orientation is spinning as well in a plane that is parallel to the equator and their original spin orientation will not be affected that easily.

2.3. The preferential orientation of particles under a gyrotation field

The Earth's spin is responsible of the formation of gyrotation equipotential lines as shown in the figure 2. In analogy with electromagnetism, particles will have the tendency to orientate along the equipotentials of gyrotation. After time, the particles will have the tendency to re-orientate along the spin axis, parallel to it, at the amplitudes represented in figure 3.a. The gyrotation field shown in figure 3.b will almost not affect the particles, but a more detailed study should be done to confirm this.

Inversely, opposite spinning particles will be repulsive. These proprieties are valid for large bodies as well as for smaller particles, as shown in [2]. In order to meet this latter condition, we need to consider particles as being spinning, which is met if we accept the concept of matter that consists of trapped light.

3. Conclusions

In my former papers, I found that the gravitation fundaments are relational. That was expressed in the Coriolis Gravity Theory.

The first important discovery in this paper is the fact that, spites the alike occurrence of attracting and repelling particles at the origin of the Earth, attraction became the main pattern due to the creation of new space between the repelling particles, which is preferentially filled up by particles with an opposite spin. Groups of particles are randomly distributed, which causes local changes of the Gravitational Constant. Crystallized and solid matter will stop reorganize its attracting particles' distribution. Only liquids and gasses can still continue adapting its structure.

It follows that the values of the Gravitational Constant are also determined by the location where the materials have been mined from, and whereof the measuring equipment is built.

A second important discovery is that the Earth's spin changes bit by bit the particles' orientation distribution in the fluid parts of the Earth. About the Earth's axis, the strongest repel gyrotation field is generated, which has effects upon the value of the internal Gravitational Constant, where the Gravitational Constant increases or decreases with depth, especially in the deeper liquid and gas zones near the poles. The increase or decrease don't only depend from the value of the local particles' spin orientation, but also from the interacting orientations between large hyper-groups of different layers in the Earth. Near the Earth's surface, this latter interaction is preponderant.

The consequence is that the Earth expands with time in the whole central region and along the whole spin axis. The poles are an excellent probe region to evaluate the progress of the value decrease of the Gravitational Constant.

At the equator, the global attraction effect between the surface and the inner layers is slightly augmented, with can create an slightly increased Gravitational Constant value between hyper-groups over time.

Finally, I can state that it must be possible to find a way to 'distillate' particle spin-orientation groups that are oriented in a particular way, in order to form an artificial attraction reduction, possibly a repel and consequently, weightlessness.

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