

A Coriolis Mechanism Links the Solar Parameters to the Newtonian Gravity

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ABSTRACT

The link between the Newtonian gravity is found to be linked to a Coriolis mechanism between hypothesized gravitons and spinning elementary particles made of gravitons. Inertial resistance is found to be generated by a Coriolis mechanism as well. The Solar parameters are surprisingly well linked to the gravitational constant and the to the velocity of light. The amplitude of this Coriolis mechanism is found to match the Sun's rotation frequency. The link between the solar parameter, the Newtonian gravity and the found Coriolis mechanism is a key confirmation for the hypothesized gravitons and for the origin of the gravitational constant.

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Introduction

This paper is the subject of a more fundamental research on the mechanism of gravitation.

It is well-known that trapped light is the most convenient solution for the description of matter, even if the great number of very different particles obscure the details of it. The so-called energy-matter exchanges allow for the transition of a large set of particles into others.

In this paper, I will interpret the gravitation field and inertia as Coriolis effects, applied upon trapped photons.

Gravity as a Coriolis effect

Consider a vortex of a self-trapped frequency in the sense of Louis de Broglie's and James Clerck Maxwell's insights. It is a vortex of aether that entrains the surrounding aether as well, which expresses itself as a disk, just as a disk galaxy is caused by the gravitational angular momentum of fast-spinning stars in its bulge, or similar to Saturn's rings. The vortex energy is expanding outwards, and consists of tiny energy-packets (say, gravitons) that orbit, all at the same speed at every level, just as the stars in disk galaxies orbit at the same speed everywhere.

Let C_j be an circular orbit of a trapped photon δ_j , within a finite set of orbits of photons (C_1, C_2, \dots, C_n) that forms multiple elementary particles. The orbit C_j represents a particle with a mass m_j , rotating at an orbit radius R_j with an angular velocity ω_j .

Let L_j be the path of a graviton γ that leaves that circular orbit C_j (I use the word 'graviton' in order to not interfere with the word 'photon', although both might be of the same kind). Let C_i be another photon orbit at a distance R_{ij} from C_j , with an angular

velocity ω_i and an orbit radius R_i . Let τ_{ij} be the intersection of L_j with C_i .

The vector expression for the Coriolis acceleration \vec{a}_{ij} at the intersection τ_{ij} is then given by:

$$2\vec{\omega}_j \times \vec{c} = -\vec{a}_{ij} \quad (1)$$

Where in \vec{c} is the translation velocity of the graviton.

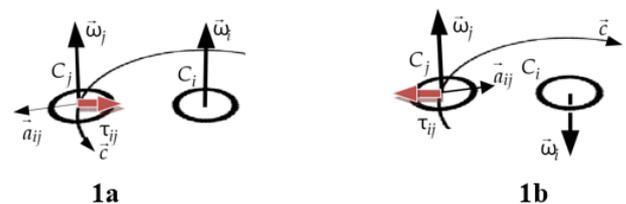


Figure 1a and b: Two cases of trapped light, hit by a graviton, radial or tangential, and undergoing a Coriolis effect.

The orbiting graviton is deviated by the Coriolis acceleration \vec{a}_{ij} and the particle that underwent the hit, will accelerate in the opposite direction (red arrow).

Hypothesis

This Coriolis acceleration engenders the gravitation acceleration of the particle C_i at a distance R_{ij} from C_j in the opposite direction due to Newton's third law (action reaction) as shown with the red arrow.

The right hand of Eq. (1) is equal to the corresponding gravity acceleration, produced by the diluted fraction Gm_j of gravitons that leave the circular photon orbit, in tangential or perpendicular directions. The gravitational acceleration flux in a point τ_{ij} at a

distance R_{ij} will be: $-Gm_i/R_{ij}^2$ (2)

The total possible number of intersections τ_{ij} is then given by $(2\pi R_i)/R_i$. Hence, from Eq. (1) and (2) follows, in totality:

$$\omega_i = \frac{2\pi Gm_i}{2c R_{ij}^2} \text{ or } v_i = \frac{Gm_i}{2c R_{ij}^2} \quad (3)$$

wherein v_i is the according rotation frequency.

It was showed that the mutual gyrotation orientations of nested particles in a rotating object, similar as ω_j and ω_i in Figure 1a, have like rotation orientations, due to the like-oriented gyrotation fields [1]. However, particles that are apart from the object always get opposite spin orientations, like ω_j and ω_i in Figure 1b.

Inertia as a Coriolis effect

A direct consequence of regarding matter as trapped light is the interpretation of the mechanism of inertia. Also, this mechanism is ruled by the Coriolis effect.

Let the trapped photon δ_j be accelerated by a force in a certain direction, as shown in Figure 2 and the photon paths will cross in τ_{jj1} and τ_{jj2} .

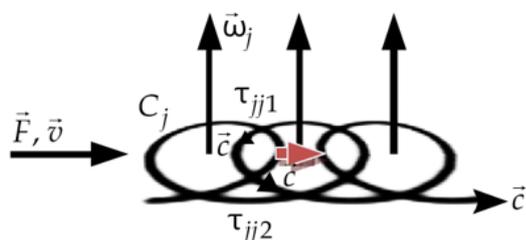


Figure 2: Trapped light under a force \vec{F} undergoes a Coriolis effect that is oriented in opposite direction. The crossing of gravitons from the old position with the vortex (particle) in its new position gives an acceleration according to the red arrow, resulting in a reaction force that decelerates the particle in its new position.

The crossing of gravitons from the old position with the vortex (particle) in its new position gives an acceleration according to the red arrow, resulting in a reaction force that decelerates the particle when it is in its new position.

There are six possible orientations of $\vec{\omega}_j$ (like the sides of a dice) whereof four results in the same orientation of the Coriolis acceleration $-a_{ij} = 2\omega_j c$, and two of them that have a screwing shape (right of left screwing) don't undergo any Coriolis effect at all.

Derivation of the Sun's Rotation Equation

It will be shown below that Eq. (3), when applied to the Sun as a whole, gets a special meaning, due to the like orientation of particles by the Sun's rotation.

Since the gravitons are leaving the Sun in radial or tangential way, or any situation between-in, there is a net gravitational and rotational effect.

Hence, when applying Eq. (3) for gravitons that leave the Sun along the equator, we find:

$$v_{eq} = \frac{Gm_{Sun}}{2cR_{eq}^2} \quad (4)$$

Herein: $G = 6.67 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$,
 $c = 3.00 \times 10^8 \text{ m s}^{-1}$

and for the Sun, $m_{Sun} = 1.98 \times 10^{30} \text{ kg}$
 $R_{eq} = 6.96 \times 10^8 \text{ m}$.

What I suggest here, is that the Sun's angular velocity might be defined, due to a law of nature, by its gravitational properties.

By applying the figures above, this can immediately be checked.

However, when it comes to the entrainment of matter by gravitons, a minimum of viscosity is required. The Dalsgaard model for the solar density shows a hyperbolic-like function, where of the asymptotes intersect at about $0.98 R_{eq}$: at first, there occurs a very quick density increase from 10^{-6} g/cm^3 at R_{eq} until 10^{-2} g/cm^3 at nearly $0.95 R_{eq}$ and next a slow, almost linear density increase until $1.5 \times 10^2 \text{ g/cm}^3$ at the Sun's center [2]. On the other hand, S. Korzennik et al. found that the highest value of the Sun's rotation is located at about $0.94 R_{eq}$, where the corresponding density is 10^{-2} g/cm^3 [3].

When applying Eq. (4) by using a corrected radius, somewhere between 0.98 and $0.94 R_{eq}$, and when assuming that the total mass may be kept alike, the result for the Sun's rotation frequency v_{eq} is somewhere between 460 and 475 nHz , or a corresponding sidereal period between 24.36 and 25.16 days, which is very close to the measured Sun's sidereal period of 24.47 days at the equatorial photosphere [3]. This result suggests that the equatorial disc of the Sun maintains and controls the rotation frequency of the Sun ever since the Sun started to rotate in some initial direction.

Derivation of the Sun's Differential Rotation Equation

When a graviton quits the Sun at any latitude α , it will cause an acceleration as well, based on Eq. (4), but whereby the spin ω will be inclined at an angle α (the equator is 0 rad) and whereby the radius R_{eq} remains to same for all latitudes.

In a first approach, I reason as follows. The average direction between the Sun's equatorial, graviton-induced spin, name it ω_{eq} , and the inclined spin, name it ω_α , is $\alpha/2$. The value of ω_α should, in addition, be reduced by the cosine of $\alpha/2$ towards the rotation axis because we only observe the component at the angle $\pi/2$.

Hence $\omega_\alpha = \omega_{eq} \cos(\alpha/2)$ (5)

This result is a raw equation for the differential rotation under the effect of gravitons but it doesn't indeed take into account the centrifugal flow inside the Sun's Convection Zone. This flow engenders a Coriolis effect up to the surface which attenuates the angular velocity, especially in a range around the angle of $\pi/4$. It could be possible to extract a semi-empiric equation from Eq. (5) that takes in account this motion, but this is not the prime purpose of this paper.

Discussion

The parity of the Coriolis acceleration with the Sun's gravity acceleration, under the action of escaping gravitons, is remarkable. Gravitons at any latitude produce the same rotation value, which, combined with the global spin of the Sun, result in a differential rotation. The equator is the place where gravitons propel the Sun at the largest resulting velocity.

According to S. Korzennik et al., the measured differential rotation at the solar surface shows a wide range of rotation frequencies between nearly 337 nHz (rotation period of 34.3 days at the poles) and 473 nHz (rotation period of 24.47 days at the equator) [3]. With Eq. (5) we got a raw equation, without solar convection corrections, of the expected differential rotations at places, other than at the equator. For example, the calculated result –by using $0.98 R_{eq}$ and without further corrections– for the poles is 34.56 days, which comply very well with the measured rotation period of 34.3 days.

The expression “Graviton Engine” follows from the mechanical Coriolis-process that is at the origin of Eq. (4).

Conclusion

Our Sun seems to behave like a giant particle whereof any place on the surface is propelled by gravitons that quit the Sun at a speed c . Its motion may confirm our gravitomagnetic interaction-model between particles, shaped as circular trapped light, wherein the Coriolis effect by gravitons generates gravitation by a purely mechanical process. Other latitudes on the Sun’s surface, where the same process occur, directly contribute to the measured differential rotation.

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