

About Newtons approximative theory of gravity and about paradoxes

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Comparison between Fatio's and Newton's gravity models

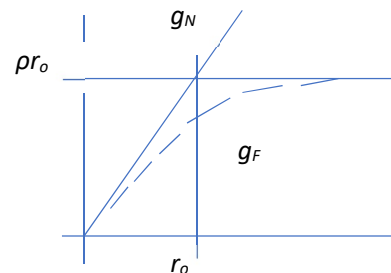
Newton regarded gravity to be caused by matter *itself*, but according to Fatio gravity is caused by a *property* of matter to attenuate a flow of fast and small ether particles. Fatio's model means that the density of particles, n , decays exponentially inside matter, since dn/dr is proportional to n itself. When n approaches zero, g approaches its max value. So, if we regard the field of gravity g on the surface of a homogenous sphere of radius r , and with density ρ , we find for Fatio's gravity that:

g_F is proportional to $\rho r_0(1 - e^{-r/r_0})$, and Newton's g_N is proportional to ρr .

We now can see that:

$\lim_{r \rightarrow 0} g_F = g_N$ and also that $\lim_{r \rightarrow \infty} g_F = \rho r_0$

and also that: $g_F < g_N$



During solar eclipses it has been observed that anomalies occur in gravity. This has been seen in a sensitive radiometer in China (vertical direction) [1] and also in a high radio tower in Romania (horizontal direction) [2]. The observed effect in the middle of observation is sometimes accompanied by opposite effects before and after the eclipse. This can be explained by a shielding effect, since the Sun's gravitational shadow from the Moon is smaller than the Earth.

The observed effect in the middle of observation is sometimes accompanied by opposite effects before and after the eclipse. This can be explained by a shielding effect, since the Sun's gravitational shadow from the Moon is smaller than the Earth.

These anomalies can be explained by Fatio's model, but *not with Newton's gravity*. Therefore, we must conclude that g_F is the correct model. Newton's model, g_N , must therefore be regarded as an approximation, just as GRT. So, Newton had a reason when he stated that he would not suggest a hypothesis. Perhaps he was thinking about Fatio's model. It is also possible that we, for extremely large bodies, must regard the difference between g_F and g_N . Another important aspect is that g_F explains gravity, but g_N is only a *description*.

Fatio is said to have communicated his ideas to Newton. Nevertheless, his ideas seem to be forgotten. This may have been a great mistake.

Another kind of anomaly is demonstrated in GPS satellites, and in geostationary satellites. The observed orbiting periods seem to be longer than expected based on radius of orbit when radius is increased. This fact has been considered as a small exponential reduction of gravity due to a very small attenuation. An alternative explanation is that effects of the gravity from the Moon can cause satellites to change speed during each orbit, thereby causing a second order effect in orbiting frequency. The motivation is that circulation in gravity from Earth means a motion up and down in gravity from Moon and Sun. If this is correct, we should expect the Sun to contribute also. The effect from the Sun should be smaller, by about 50 %, just as is observed in contributions to tides from these 2 bodies.

Michelson and Morley's experiments (MMX)

Michelson used no effect of ether wind in transverse arm of MMX in 1881. However, after a nervous breakdown, he was forced, by majority, to introduce such an effect. This was a result of a particle-based thinking in a wave context, and it was not realized that wave front normal, and **not vector sum** of ether wind and wave motion, is relevant in relation to a mirror. Mirrors are **blind** to ether wind. Aligning the MMX system makes returned wave front parallel to the distant mirror, and this fact remains unchanged during rotation. Ignorance of this fact created the wave or particle paradox and dilation of time. By the use of Fatio's gravity model we can explain gravity due to a radial ether wind of the same magnitude as the ether wind due to tangential satellite motion in a circular orbit. In this way Fatio's radial ether wind can explain the behavior of atomic clocks with *one model* instead of SRT plus GRT. MMX can be explained by Galilean transform without dilation of time. The reason to this clock effect is that bound electrons move forth and back in relation to the ether wind.

The mistake regarding MMX is related to ignoring the fact that an ether wind can be blowing inside a wave front, and also that such an ether wind cannot change wave front orientation. So, the statement that light moves transverse to wave fronts is an approximation overruled by 10^{-6} radians in MMX. The reason is that planetary rotation produces a horizontal ether wind. The small error of 1 microradian is normally ignored, but **must be regarded** in the interpretation of the MMX experiment.

The MMX test is based on a 2-way transfer time of ether effects between mirrors. This is 2-way light speed. The atoms in a crystal control their separations by means of the ether. There is no alternative. So, a 2-way transfer of ether effects decides this separation. It seems therefore reasonable to conclude that 2-way light speed is reduced, by the ether wind, to the same amount as separation between atoms. So, no effect in the transverse arm and compensated effect in longitudinal arm makes MMX a *useless* method.

Pioneer anomaly

A radial ether wind, of about 6.7 km/s in relation to our sun, means that 2-way light speed changes beyond 20 AU just the right amount to simulate a change in speed of space station. This fact can therefore explain the Pioneer anomaly.

Atomic clocks

Atoms in atomic clocks move forth and back in relation to the ether wind. This can explain a change in frequency as a second order effect in v/c . The clock effect predicted by SRT can be regarded as motion in relation to the ether. If we substitute gravity with a radial ether wind with the same magnitude as the tangential ether wind, we also can predict the effect of GRT. This means one model instead of 2. More details regarding clock behavior is available in [3] and [4].

The global positioning system (GPS)

The introduction of Fatio's gravity model, with a radial ether wind, can be united with the very high precision in the GPS system. An ether wind in spherical symmetry in relation to Earth can fulfill GPS demands, since transmitters and receivers in GPS are positioned on two concentric spheres.

Discussions

The fact that Earth is moving in a free fall means that gravity is balanced by acceleration according to the principle of equivalence. But this balance is perfect only at the center of our planet. From 2 celestial bodies, namely Sun and Moon, this imperfection has capacity to change the form of our planet just as

much as needed to be observable, for instance in tides, and perhaps also in orbiting periods of artificial satellites. So, the method of representing a body, as having its mass concentrated in one point, is not really valid for Earth in relation to Sun and Moon. Newton's law of gravitation is an approximation.

Fatio's model of ether and gravity indicates that Newton's model can be an approximation also by another reason, namely by the fact that matter contributes to gravity in a nonlinear way. The difference between these 2 models can be too small to be detected in direct measurements. The value on the, constant of nature r_o is probably enormous. Nevertheless, *important* evidences in favor of Fatio's model are found in anomalies in gravity during solar eclipses. This means that we have very strong arguments to do more studies on gravitational anomalies. Anomalies are *very* important.

Paradoxes are also very important, and a very basic paradox is the wave or particle paradox. The relation between a wave front and a mirror seems to be fatally misinterpreted. So, in relation to a mirror ether wind is irrelevant. Therefore, we must use wave front normal - and **not** its vector sum together with ether wind – when we apply the law of reflection in a mirror. Ignorance of this fact gave us a wrong effect in the transverse arm in the Michelson and Morley test in 1887. So, this terrible year produced the wave or particle paradox and the twin paradox, that we still are suffering from. So, the most terrible year was not 1919, when the bomb exploded, since it was ignited 32 years before. These contributions were bad for science, but great for science fiction.

Anomalies and paradoxes are the important and interesting indications to where better theories are to be found. Unfortunately, physicists seem to be most interested in finding exotic waves and exotic particles, and are therefore spending lots of money to find effects that are perhaps *possible*. Instead they should concentrate on effects that are indicating something *necessary*, thereby indicating where theory must change, in order to improve science.

Results

- Different kinds of anomalies in gravity can be explained.
- Gravity itself can be explained.
- Wave or particle paradox can be explained.
- Twin paradox can be explained.

Remarks

- During a (total or partial) solar eclipse in a low elevation angle, it should be possible to observe the anomaly discussed here in the motions of an object floating in water. The test should be done in a lab with a quite environment.
- An atomic clock should increase frequency by 60 $\mu\text{s/day}$, if orientation was changed from horizontal to vertical direction.

References

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