About the law of gravity

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This short paper is a contribution to the gravity group of NPA. Robert de Hilster wanted opinions about Newton's law of gravity. It is therefore important that *all* members try to contribute since this is the motivation for membership. It is very important that we discuss with those who have opinions different in relation to our own. If we only talk to those who have the same opinions as we, there will be no advancement. If we sometimes should be happy to find something new we can expect this idea to be in contrast to other dissidents as well as to mainstream. Most probably this idea will not be understood. Remember that physics has been in a chaotic state for about 100 years. It is therefore a very good idea that NPA and GSJournal has no reviewing *before* publishing. We must accept that this leads to a diversified quality in the contributions. However, it is very important that we have extensive reviewing *after* publication. We must not be afraid of telling what we cannot accept. Instead we should consider it as our *duty* to do so. Remember that it is such *negative* critique that has the *positive* effects. Going forwards means that someone must change his mind, and we do not know who. The only way to help each other is to tell where we find others to be wrong.

Robert de H raised the question: What is the problem with this law?

$$g \sim \frac{F}{m} \sim \frac{M}{r^2}$$

The correct expression should contain a summation. Summation is important when we want to find the *cause* of gravity, although in many practical applications we can forget the summation. Newton's gravity is:

$$g(\bar{r}=0) \sim \sum_n \frac{M_n}{r^2} \sim \sum_n \frac{\rho_n V_n}{r^2} \sim \iiint \frac{\rho(\bar{r})}{r^2}\frac{\bar{r}}{r} dV \sim \iiint \rho(\bar{r})\frac{\bar{r}}{r} dr d\theta d\varphi$$

The first summation demands spherical symmetry in density and the second demands homogenous density. To speculate about the most general case we must use integrations instead. The integrations are in agreement to Newton's gravity but in a more general form. This effect can be regarded as caused by the *existence* of matter, and addition of more matter increases gravity in a linear way and superposition by summation is valid. LeSage's gravity looks almost the same:

$$g(\bar{r}=0) \sim \iiint \alpha(\bar{r})\frac{\bar{r}}{r} dr d\theta d\varphi$$

The difference is very small. Since we have substituted density by an attenuated flow of particles we can conclude that Le Sage's gravity should contain an exponential function of range that is missing in Newton's linear model. This means a *very* small deviation from linearity. Le Sage assumes an attenuation caused by matter, that is, a *property* of matter instead of by matter itself. Gravity is represented by those ether particles that are *missing* in the flow, since they are absorbed in the Sun. Since reduction in flow is proportional to flow itself we get an exponential decrease and we must integrate this exponential function along a direction representing the flow in two opposite directions before integration in relation the two angular variables. This means that the field of gravity according to Le Sage also has a maximal value, as we can see by assuming a very large mass in one direction and no mass in opposite direction.

We can describe this exponential relation easily by considering the field of gravity on the surface of a homogenous sphere. Newton's gravity is just a straight line with radius and density, but Le Sage's model is an exponential function, in relation to range, that goes asymptotically towards a maximal value. However this value is many orders of magnitude larger than the size on our planet. The deviation is therefore very small on our planet. With *n* as the number of particles we get for the homogenous sphere:

$$\frac{dn}{dr} \sim n \; for \; LeSage \; and \; constant \; for \; Newton$$

$$g(Newton) \sim \rho r$$

$$g(LeSage) \sim \rho R\left(1 - e^{-r/R}\right) \; approximately \; equal \; to \; \rho r$$

Here R is an extremely large value that perhaps can have relevance in relation to the existence of black holes. The deviation from linearity in LeSage's model is roughly estimated in my article to NPA 2013 called *The Falling ether* [1]. Since apparent sizes of Sun and Moon is only 10^{-2} radians we can use a model in only one dimension (since we only need a difference). The calculation in [1] stated that during a solar eclipse the combined gravity from Sun and Moon should decrease by about 10^{-9} to 10^{-8} in relation to the sum of the two components. So far a solar eclipse is the best known way to observe shielding in gravity. The effect from the Moon is reduced in relation to how many particles are passing the Sun. In this way we regard the exponential relation. We can also reduce the effect of the Sun in proportion to how many particles are passing the Moon. This difference is expressed in relation to gravity on Earth. The effect has been expected to increase the indication in a gravimeter. This is not observable during the eclipse since the same effect acts on nearby parts of our planet. Since the effect on our planet reaches over a larger region than the effect on the gravimeter mass we can observe two negative indications instead of one positive. Interaction between different parts of our planet can explain this phenomenon. Therefore, the Wang eclipse, observed in China 1997, supports the idea that linear gravity according to Newton and Einstein is *only an approximation* to pushing (and exponential) gravity, as explained by Fatio and LeSage. It was therefore correct of Newton not to build a hypothesis on this approximation. The Fatio/LeSage model can be united with the speed *c* of ether particles and apparent zero speed of gravity in itself in relation to the source of gravity. The particle model for gravity predicts no aberration in *solar* gravity. This follows from the fact that the ether has a property to be super fluid and the Earth generates a wave function in the ether. An observer on the Earth (in free fall) will only see the planets own gravity. Gravity becomes a *stationary* condition in relation to Earth. This means, the difference between the flows in two opposite directions called 'falling' ether. This vertical ether wind is many orders of magnitude smaller than c the speed of individual ether particles. *Observed* gravity is therefore a condition that is constant and stationary in relation to our free falling planet. This explains why we cannot observe any aberration in gravity from our sun. Gravity is produced by mass in ether particles and light waves in the polarization of these particles.

The gravity model according to Fatio and LeSage implies a maximal value on the force of gravity (That perhaps can have relevance for the existence of black holes). Another implication is a vertical ether wind that can explain cosmological red shift without Big Bang. The cosmological red shift is not considered here to be caused by the celestial body itself, but by the ether surrounding the body and Big Bang can be an illusion.

The simple form of Newton's law is misleading. Gravity produces spherical symmetry so we can *handle* gravity. This means, however, that it is difficult to *understand* gravity. Gravity means also that it is difficult to measure two-way light speed in vertical direction. Such an effect is real as is demonstrated in [1], where we also can see that the ether wind causes a first order effect (called local time in error) in the GPS system (Sagnac effect) and a second order effect in atomic clocks (called time dilation in error). We can also see in [1] that the separation between the two negative bumps is at least two times too big to be explained by the corona of the Sun.

Reference

[1] John-Erik Persson, *The Falling Ether,* NPA proceedings 2013 available at www.worldsci.org/people/john-erik_persson

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I have a hope that this article can provoke some people to state a different opinion. Perhaps some people also will be interested enough to take look at [1], where more details is available.

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The interpretation of the Wang eclipse given here implies that the small of the form of our planet should be caused during an eclipse. An interesting question is therefore a consequence. Are these changes of the form of our planet large enough to be detected by VLBI measurements?