

Empirical Theory of Gravity

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According to the law of gravity, the gravitational strength of a mass is inversely proportional to the square of the distance and directly proportional to the mass. This means that gravitational strength increases according to a superposition principle and must be defined everywhere in space, if space can be understood as a continuum. With a quantized space, the gravitational strength of any size of mass would disappear after a finite distance value dependant on the mass, i.e. $F(m, r) = 0$ for $r > R_o$.

To change the state of motion of a mass, a force $F = ma$ must be applied, which leads to the principle of “action-reaction”, of the conservation of linear momentum and preservation of motion of the centre of mass. Since the gravitational strength acts only attractively, it can be concluded that two masses affect their surrounding area in such a way that within the intermediate range a “negative pressure” develops, which forces the masses to move toward each other. If the gravitational strength would be produced by Hook tensions of distortion of a solid lattice, two masses in such a system would have to repel each other because the distortions within the intermediate range would be the strongest (Hook’s law). Thus one can conclude that the cause of gravitation cannot be a solid body medium, and that between the “particles” of the medium, no attractive forces are present.

From the law of gravitation, it follows further that the gravitational strength acts only in a perpendicular direction to each individual particle of a massive object and becomes “passed on” by the solid particles themselves, as if they were not at all present - a vector field develops. That means the same strength, which affects a body, also affects the surrounding gravitational medium. Since these “micro forces” simply add themselves, it follows that in a homogeneous spherical solid body no tangential net gravitational force can exist. The same is also valid for the inside of a solid hollow ball.

The law of inertia shows that the masses move through the space without any resistance. That means the gravitational strength must be produced by the characteristics of an ideal, massless, flexible and immovable “vector liquid”, so that in this “liquid” the disturbances are “created”, which are proportional to the mass of each elementary particle, whereby the strength of the disturbance diminishes with the square of the distance of the mass, as is also to be expected. Thus it affects each spherical surface, which surrounds the mass with a equally large total force (Gauss' law), wherefore the material environment of a mass (luminiferous ethers) must move along with the mass. However, as long as in the environment no electromagnetic mass (electromagnetic field) exists, there is no centrifugal force which acts on the entrained medium, because the medium is moved in the same “massless” medium. Only the disturbances of the medium, e.g. the photons (field quanta) can be affected by the centrifugal force, as well as by the gravitation force like every other mass. This fact means that the mass can be understood as one “disturbance size” of the “gravitational medium”, i.e. the greater the disturbance the greater the mass. Thus it also becomes

clear that many elementary particles as e.g. Muons are to be interpreted only as disturbances of the ether environment of other particles (electrons or positrons) and that they do not exist as independent particles at all, because among other things they return to the initial state within the shortest time. In exactly the same way, the mass defect can be understood as a decrease of the total disturbance of the gravitation medium through a “combination” of particles (the volume of the disturbance is reduced).

If a mass rests in the gravitational medium or if it moves uniformly, the gravitational medium, pressure on the mass is equal from all directions and the mass persists in its momentary state of motion. If an additional force is impressed on the mass, the mass accelerates in exactly the same way as if in the gravitational medium, a pressure gradient is produced by another mass. Thus so-called “gravitational“ and “inertial” mass are absolutely identical, because both result from an unbalance of the pressure distribution around a body.

This view shows that gravity and electromagnetism are completely different in their nature and that the propagation speed of gravity does not need to have any similarities with the propagation of electromagnetic fields. Rather, it can be concluded that the speed of gravity must be extremely high, because its medium does not seem to possess mass. In contrast to it, luminiferous ether possesses a certain mass as soon as an electromagnetic field is present in it, ($m = E / c^2$). That means that at least two ethers must exist to explain all physical laws (light ether and gravitational ether). It seems that Einstein was right with his demand that the gravitational ether must be immovable [1].

References

1. Albert Einstein: ”Äther und Relativitätstheorie“. Rede gehalten an der Universität Leiden (Springer Verlag, Berlin, 1920).