the general science journal

On the Velocity Transmission of Moving Masses by Gravity

Gravitomagnetism for everyone - Part I

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Nobody ever told you, but there exists a velocity-dependent gravity field that is never explained. However, the theory exists, and a certain version of it is even part of the official mainstream gravity theories. That velocity-dependent field explains many issues in the cosmos, such as the expansion of stars to red giants, and the collapse next to it into a white dwarf. It explains Mercury's perihelion advance, the disc galaxies and spiral galaxies, the "missing windings" in spiral galaxies, the shape of some supernova explosions and the bursts of black holes. The number of solved issues is too long to be listed here.

In order to understand this velocity-dependent gravity field, we start to explain the meaning of velocity, and apply it to the second gravity field. Then, we explain all the cases that are resolved by it, one by one.

Keywords: velocity, electromagnetism, gravitomagnetism, second gravity field.

1. The definition of velocity in electromagnetism

An electric wire that transports a continuous current, contains moving electrons. The rest of the wire is charged positively, and thus, emits an electric field, external to the moving electrons.

When performing a test of two parallel wires, which both carry a current, either in the same direction, or in opposite directions, the forces can be calculated between both wires by applying the Maxwell equations in which it is assumed that the velocity of the electrons is indeed given by the current, which expresses the flow of electrons through the wire.

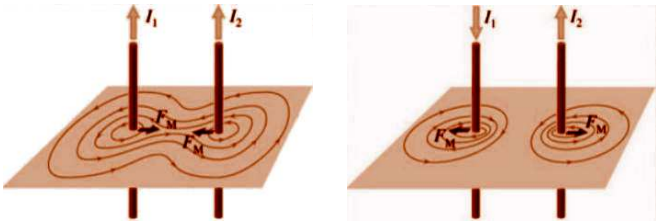

Fig. 1. Forces between electric wires that carry a current in the same direction and in opposite directions. Due to the velocity, a magnetic field is induced that interacts with the moving electrons of the other electric wire, and cause the wires to attract or to repel.

Due to the electrons' velocity inside the wire, a magnetic field is induced that interacts with the moving electrons of the other, parallel electric wire, and creates forces that cause the wires to attract or to repel. The magnetic field is perpendicular to the motion, and is circularly decreasing with the distance from the wires.

Hence, it is correct to define the velocity of the electrons as the relative velocity between the electrons and the positively-charged wire. It appears maybe to be exaggerated to insist on that, but we will see further that it is important, when we will talk of velocities in gravity.

2. The definition of velocity in gravity

When one takes a small mass on the surface of the Earth, this mass is moving with the rotation speed of the Earth at the latitude where the experiment occurs. Thus, that mass is moving with respect to the non-rotating gravity field of the Earth. Here, the velocity is thus easy to define: it is the velocity with respect to the non-moving external gravity field.

However, when there are three bodies freely moving in space, without other bodies present, we get the following situation.

The first mass will move with respect to the second mass' steady gravity field. This is its first velocity. The second velocity is the one between the first mass and the third mass' steady gravity field. This is valid for all three masses, mutually, and it results in six velocities. Remark that we also can replace the term "mass' steady gravity field" by "mass", in terms of determining velocities. It is important to notice the above, because it will be recalled when we are talking of the fields and the forces that are involved.

3. The creation of a motion-dependent gravity field

In 1893, O. Heaviside deduced the second gravity field due to motion. He was the scientist who reduced the 20 Maxwell equa-

tions to four, and found the transmission theory of waves through wires, laying at the basis of modern computer chips. The gravity theory was further developed by O. Jefimenko in several books.

The existence of the second, velocity dependent gravity field is suggested by the following. When one takes the energy balance of non-moving masses, and that of moving masses, they are evidently different. It is not likely that both systems can be considered gravitationally identical, as Newton supposed.

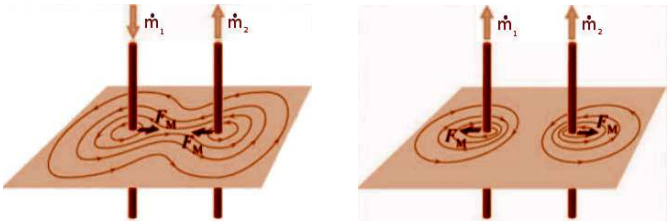

Fig. 3. Forces between "mass-wires" moving in opposite directions and in the same direction. Due to the velocity, a magnetic-like field is induced that interacts with the moving mass, and cause the wires to attract or to repel. Remark that the effect is opposite as with electromagnetism.

Due to the similarity of Newton's gravity law and Coulomb's law, it is suggested that also the velocity-dependent field is alike.

Hence, it is suggested that a second gravity field, due to motion, appears everywhere in the universe. It is perpendicular to the motion, and circularly decreasing in amplitude with the distance from the moving mass.

When two long parallel wires are moving in the same direction, they will attract a little more than Newton's law. When they are moving in opposite directions, they will attract a little less than Newton's law.

The decision if like-moving masses are more attracting or less attracting, and the opposite moving masses inversely, is a provisional decision, and should be confirmed by observation.