

Gravitational Induction

Special Relativity, General Relativity, Gravito-Electromagnetism, Gravitomagnetism

State of research

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Abstract: This article gives the state of research about Special Relativity, General Relativity, Gravito-Electromagnetism, and Gravitomagnetism, and concludes that Gravitational induction, which is not understood by relativists but mathematically applied, though, is a physical reality.

I realized that in Special Relativity, the reciprocity of inertial reference frames gives the following impossibility: each frame can pretend that it is standing still and that the other is moving, so, each frame can pretend that the other's mass is increasing. Hence, the outcomes of Special Relativity are no physical realities w.r.t. the objects themselves. Hence, the Lorentz invariance is false.

In General Relativity, there are three arguments: the Newtonian limit, the bending of light, and Mercury's advance.

The linearized equations, named gravito-electromagnetism (by the relativists) are allegedly "deduced" by the Perturbation Theory. This Perturbation Theory however needs spinning oblate spheres in order to get (only) *similar* equations.

So, according to the relativists, there is no second (magnetic-like) gravity field that can be deduced from Einstein's General Relativity, but only an analogy between the Perturbation Theory and gravitomagnetism, which is allegedly due to an anisotropy of the gravity field. The Kerr metric is also such a modified General Relativity approach, in which by magic, the forces are defined to be maximal in the equatorial plane of the spinning object. (Examples: flat planetary systems, disc galaxies).

However, the equations of gravito-electromagnetism (supported by relativists in the form of PPN, Post-Post-Newton equations) show a second gravitational field B , that has not been deduced at all, but postulated by the similarity of the Perturbation Theory -equations and Maxwell's equations for gravity. Relativists still see the field B in the equations as an expression of the oblateness of spheres rather than a real, speed-dependent induction field.

This gives the following problems for gravito-electromagnetism (= from the relativists):

- Mercurius' advance cannot be deduced by it straightforwardly, like with Schwarzschild's solution.
- The bending of light cannot be deduced straightforwardly.

So, why is there still an interest from the mainstream?

In fact, gravito-electromagnetism (when used as non-Lorentz invariant, but with preferred inertial reference frames, becoming by that identical to gravitomagnetism) explains many cosmic events, and also the Gravity Probe B experiment. (The consequences of the results

of the latter experiment were more or less hidden by the mainstream, and then, they claimed it to be a proof of "Einstein right"!)

Hence, the second, magnetic-like gravity field can be used to correctly describe gravity. However, is the B field just a suitable description, or is it really a second, induction field?

On the other hand, the original gravitomagnetism, as proposed by Oliver Heaviside in 1893, does not include any Lorentz invariance, since clearly the frame that is really moving gives a magnetic-like gravitational induction to the surroundings, and not the one that is standing still.

The definition of velocity is not 'at wish', but must be seen w.r.t. non-spinning masses as references (like relativists spontaneously apply as well). Since the effect of gravity $\sim 1/R^2$, distant masses either give an uniform field and/or a very weak field, both resulting in no effect within the observed system.

Oleg Jefimenko developed (around 1990) gravitomagnetism for moving frames, and confirmed that the effect of relativity is only due to the retardation of the fields at a distance, by the speed of light. He however found that Einstein's Special Relativity doesn't include the induction part by the second field.

I am an experimentalist and the cosmos is my lab. Gravity is too weak for small scale experiments, except with highly specialized top-equipment, and even then, not all the issues can easily be demonstrated, like the proof that there is gravitational induction, and not just gravitational anisotropy due to oblateness.

The cosmos as a lab however can prove that *Mercury's advance is solely due to the induction of the Sun*, by its speed in the Milky Way. The result is equal to the one from Schwarzschild's relativity. (Many other qualitative and quantitative examples can be found in my papers.)

This proves that the second gravity field is really inductive, and not just due to oblate spheres.

Compare it to the following: is the magnetic field about electrons due to the oblateness of electrons, or is the magnetic field a really velocity-dependent second field? It is clearly the same for gravity.

In fact, what is important in gravitomagnetism, is that real forces occur, due to the motion of masses. They result in Lorentz-forces for gravity that act upon masses, which is something that relativists do not see.

Reference: [Mercury's perihelion advance is caused by our Milky Way](#)

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The link below gives the theoretical and experimental findings about gravitomagnetism.

[Gravito-Magnetism - Including an introduction to the Coriolis Gravity Theory](#)