

The Connection between Gravity and Light

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Abstract. Maxwell's formula for radiation pressure provided a means for deriving the famous equation $E = mc^2$. This derivation will be examined to see if we can draw any conclusions about the physical nature of the electromagnetic wave propagation mechanism.

Radiation Pressure

I. Even though light is a wave, it exerts a force on a target, and Maxwell calculated this force to be,

$$F = (1/c)dE/dt = dp/dt \quad (1)$$

where E is energy, c is the speed of light, and p is momentum, [1]. By substituting $p = mc$ into equation (1), we obtain the relationship,

$$c^2 dm = dE \quad (2)$$

which tells us that mass is involved in electromagnetic radiation, and that this mass is related to the radiation energy in the ratio of,

$$E = mc^2 \quad (3)$$

We now need to investigate the physical significance of equation (3), and we need to discover how electromagnetic radiation possesses mass before we can understand why a photon might be affected by a gravitational field?

Dynamic Space

II. In section **VIII**, ‘*Gyroscopic Radiation*’, in the article entitled, “*The DNA of Electromagnetic Radiation*”, [2], it was proposed that electromagnetic waves constitute a plane polarized propagation of fine-grained precessional disturbances travelling through a sea of tiny orbiting pairs of electrons and positrons, and that this needs to be accompanied by an actual flow of electric fluid swirling from dipole to dipole. This electric fluid, otherwise known as the *aether*, is the fundamental substance from which everything is made, [3], and where negative particles constitute sinks in the aether, while positive particles are sources. It is therefore the flow of this electric fluid which accounts for the flow of mass in EM radiation, as is implied by the derivation of equation (3) above.

Conclusion

III. Within the current orthodoxy, in which Einstein’s theories of relativity reign supreme, the equation $E = mc^2$ is interpreted as meaning that mass and energy are equivalent *in any context*.

This situation needs to be corrected. We first of all need to restrict the application of this equation to the context of wireless electromagnetic radiation, [4], and then we need a new interpretation of the equation whereby the energy in EM radiation is specifically equivalent to the flow of mass which accompanies this radiation, and where the mass in question is that of the fundamental electric fluid, or aether, from which everything is made, [3].

Meanwhile, the EM wave-carrying medium, known to Maxwell as *the luminiferous medium*, should be understood as a dense sea of tiny dipolar aethereal vortices, [5], [6], with these vortices being interpreted as rotating electron-positron dipoles in which electrons constitute aether sinks while positrons constitute aether sources. It is proposed that wireless EM radiation is a propagated disturbance of fine-grained precession through this sea of vortices, and that the momentum and radiation pressure that accompanies this disturbance is due to a tangential overflow of pure aethereal mass, swirling from the positron of one vortex to the electron of its immediate neighbour.

The effect that gravity will have on light will therefore be indirect. Gravity is a sink-based force, transmitted by an accelerated radial inflow of aether, and this flow superimposes upon the all-pervading sea of tiny aether vortices. The effect that gravity has on light will therefore be influenced principally by the effect that it has on the luminiferous medium through

which the light is propagating. Gravity and light are both different manifestations of the flow of the same aether and they superimpose on each other according to the laws of hydrodynamics. The main difference between gravity and light is the fact that gravity is a radially accelerating inflow of aether, normally considered on the large scale, and it imparts its acceleration to particles, whereas light is a tangential curled flow of aether, probably on the pico-scale, swirling from tiny vortex to tiny vortex at a constant average speed commonly denoted by the letter 'c'.

References

[1] Zapffe, Carl A., "*A Reminder on $E = mc^2$, -----*", (1983)

See page 42 (page 8 of the pdf file)

<https://www.gsjournal.net/Science-Journals/Research%20Papers-Relativity%20Theory/Download/865>

[2] Tombe, F.D., "*The DNA of Electromagnetic Radiation*", (2006)

<https://www.gsjournal.net/Science-Journals/Research%20Papers-Mechanics%20/%20Electrodynamics/Download/221>

[3] Tesla, N., "*Man's Greatest Achievement*", (1907)

New York American, p.10, 6 July 1930, *Milwaukee Sentinel*, July 13, 1930, *San Antonio Sunday Light*, Editorial-City Life Section, July 20, 1930

O'Neill, J.J., "*PRODIGAL GENIUS, Biography of Nikola Tesla*", Fourth Part, paragraph 23, Long Island, New York, 15th July 1944

"Long ago he (mankind) recognized that all perceptible matter comes from a primary substance, of a tenuity beyond conception, filling all space, the Ākāśa or luminiferous ether, which is acted upon by the life-giving Prana or creative force, calling into existence, in never ending cycles, all things and phenomena. The primary substance, thrown into infinitesimal whirls of prodigious velocity, becomes gross matter; the force subsiding, the motion ceases and matter disappears, reverting to the primary substance."

<http://www.rastko.rs/istorija/tesla/oniell-tesla.html>

<http://www.ascension-research.org/tesla.html>

[4] Tombe, F.D., "*The Myths Surrounding Time Dilation and $E = mc^2$* ", (2023)

https://www.researchgate.net/publication/373776967_The_Myths_Surrounding_Time_Dilation_and_E_mc2

[5] Whittaker, E.T., "*A History of the Theories of Aether and Electricity*", chapter 4, pp. 100-102, (1910)

"All space, according to the younger Bernoulli, is permeated by a fluid aether, containing an immense number of excessively small whirlpools. The elasticity which the aether appears to possess, and in virtue of which it is able to transmit vibrations, is really due to the presence of these whirlpools; for, owing to centrifugal force, each

whirlpool is continually striving to dilate, and so presses against the neighbouring whirlpools.”

[6] Clerk-Maxwell, J., “*On Physical Lines of Force*”, Philosophical Magazine, vol. XXI, Fourth Series, London, (1861)

http://vacuum-physics.com/Maxwell/maxwell_oplf.pdf

[7] Lodge, Sir Oliver, “*Ether (in physics)*”, Encyclopaedia Britannica, Fourteenth Edition, vol. 8, pp. 751-755, (1937)

See pp. 6-7 in the pdf file in the link below and note that while the quote relating to the speed of light suggests that the ether is incompressible, this is almost certainly not the case.

“The most probable surmise or guess at present is that the ether is a perfectly incompressible continuous fluid, in a state of fine-grained vortex motion, circulating with that same enormous speed. For it has been partly, though as yet incompletely, shown that such a vortex fluid would transmit waves of the same general nature as light waves— i.e., periodic disturbances across the line of propagation—and would transmit them at a rate of the same order of magnitude as the vortex or circulation speed”

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