

Influence of physical "fields" on speed of light in vacuum

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By one of the important postulates of GR is a postulate about invariance of speed of light in inertial systems. This implies a constancy of speed of light in vacuum. Whether so it? The certain attention among the researchers is given to the problem of dependence of speed of light from physical conditions of vacuum, in which the transfers of gravitational interactions between bodies, electrical and magnetic strength are carried out, [1, 2, 3]. The importance of the decision of the specified problem is doubtless. Its results will influence many fundamental aspects of knowledge of our world.

The speed of light depends on acceleration and, in particular, of gravitational acceleration. Change of speed of light by such gravitating objects as the Sun results in factor of refraction according to the wave theory of light (Huygens, Fresnel):

$$n = \frac{c_0}{c_e} = \frac{\sin(i_0)}{\sin(90^\circ + i_e)} = \frac{1}{\cos(i_e)}, \text{ Where } (1)$$

c_0 – Speed of light in open space,

c_e – The speed of light is direct at a surface of space object,

i_0 and i_e - Corners of fall and deviation of beams of light (EMW).

The dependence of speed of light pays off under the formula [1]:

$$c_g = c_0 \sqrt{1 - \left(\frac{\alpha^{-1}}{r_e}\right)^2 \frac{g}{4\pi E_\sigma S}}. (2)$$

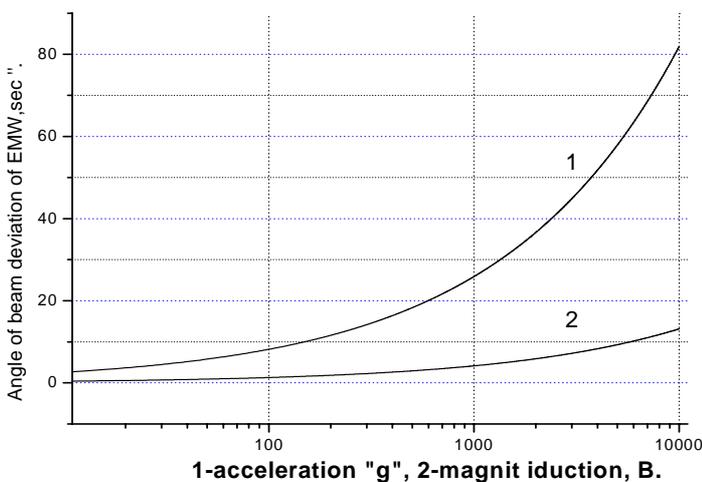
Formula includes parameters of structure of vacuum alongside with number of constant thin structure. The exception makes g - acceleration. The acceleration varies depending on mass of object and distance down to its center.

Magnetic "field" also renders influence on structure of vacuum and changes speed of light. The account of influence of a magnetic field on speed is made under the formula similar (2):

$$c_g = c_0 \sqrt{1 - \left(\frac{\alpha^{-1}}{r_e}\right)^2 \frac{\sqrt{G \eta B}}{4\pi E_\sigma S}}, \text{ Where } (3)$$

G – Gravitational constant,

η – Magnetic constant of vacuum equal to return size of magnetic permeability,



B – magnetic induction of magnetic "field".

On the diagrams fig.1 the dependencies of corners of a deviation of beams of light are given at passage of gravitational and magnetic "prisms". The diagram above concerns to a deviation of beams of light by gravitation. The bottom diagram concerns to a deviation of beams of light by magnetic "field".

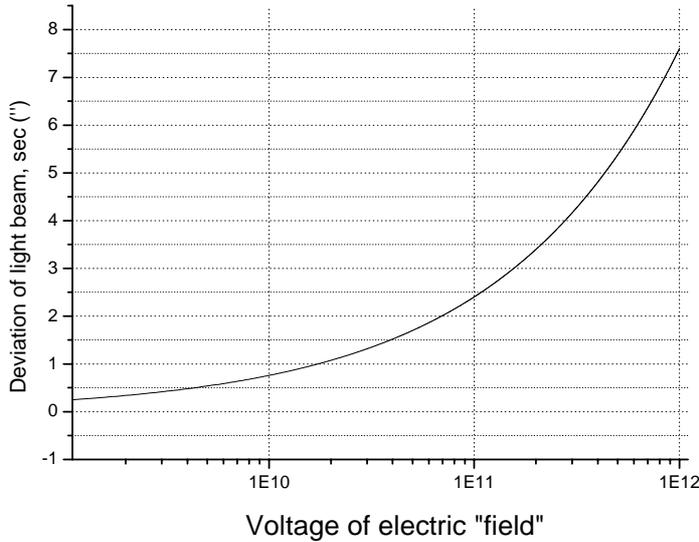
The similar accounts are carried out for an electrical field. They give the following formula of dependence of speed of light from a voltage of an electrical field E :

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$$c_{\xi} = c_o \sqrt{1 - \left(\frac{\alpha^{-1}}{r_e}\right)^2 \frac{\rho E}{4\pi E_{\sigma} S}}, \text{ where } (4)$$

$\rho = 8.6164135 \cdot 10^{-11} [q/kg]$ – Ratio of an electrical charge and mass.



The account of a corner of a deviation of a beam of light in electrical "prism" is shown as the diagram on figs 2.

Pays on itself the surprising fact. It is known those forces of magnetism approximately on two orders of more poorly electrical forces. In turn gravitational forces more poorly electromagnetic approximately on 40 orders.

However, we see, that the greatest influence on speed of light has the gravitation. This influence it is not enough at magnetic forces and absolutely weak it appears at electrical forces.

The nature is arranged in such a manner that the seen world is submitted to us with the minimal distortions. If was on the contrary so that the deviation of beams was to proportionally working electrical, magnetic and gravitational forces, all alive creatures could not exist in similar deformed the seen world.

The literature

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