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Universal Environment as the Source of Gravity and the Propagation of Light

A.V.Rykov
rykov@uipe-ras.scgis.ru

The general theory of relativity (GR) cannot be considered a true representation of physical reality. It is executed in the tradition of Newton as a mathematical description and cannot therefore capture the essence of gravitational phenomena. Propagation of electromagnetic waves also remains a riddle. How can there be a connection between vectors E and B without currents? We are given a most unintelligible answer to this question in the form of the material propagation of fields E and B, in an immaterial vacuum. It is poposed that these questions may be resolved only through accepting the existence of a substansive universal continuum (the environment) as the source of gravity and as the condition for the propagation of light.

In article [1] the source of gravitation and inertia is given as *the* ***environment*** having an electric charge, distinct from zero. According to Faraday's law of inertia, this charge causes the polarization of all material bodies, which attracts them to one another. Newton's law formulated as the polarization of the ***environment*** becomes,

$$F = G\frac{M_1 M_2}{R^2} = \xi(4\pi R)^2 \sigma_{12}\sigma_{21} \quad \textbf{(1)}$$

where

$\xi = \frac{1}{\varepsilon_o} = 8{,}98755179 \cdot 10^9 [a^{-2}m^3 kg \cdot s^{-4}]$ - The electric constant of the ***environment***,

$G = 6{,}67259 \cdot 10^{-11} [m^3 kg^{-1} s^{-2}]$ - The gravitational constant.

Polarization $\sigma_{12} = \frac{\rho M_1}{R^2}$ is created by the first body directed at the second body and polarization $\sigma_{21} = \frac{\rho M_2}{R^2}$ is created by the second body directed at the first. Acceleration due to the force of gravity is

$$g = 4\pi E_e S(\Delta r)^2; \quad E = \sqrt{G\xi} = 0{,}774404859 \text{ [m}^3 \text{ a}^{-1}\text{.s}^{-3}\text{]}. \quad \textbf{(2)}$$

Where,

$S = \frac{e_o}{4\pi\alpha^2 r_e^4} = 6{,}25456357 \cdot 10^{43}$ - Polarization factor of the ***environment***,

$e_o = \pm 1{,}602117733 \cdot 10^{-19} [Q]$ - Elementary charge of the structure of the ***environment***,

$\alpha^{-1} = 137{,}0359998$ - The fine structure constant,

$r_e = 1{,}3987631 \cdot 10^{-15} [m]$ - Distance between charges in structure of the ***environment***,

$\Delta r_{\gamma\partial} = 1{,}020726744 \cdot 10^{-17}\ [m]$ - A limiting deformation of the structure of the ***environment***.

All parameters of environmental structure are determined from transformation of a photon with an energy 1,022 MeV into an electron and a positron. The probable value of the gravitational constant which can be determined independent of the laws of Newton and Colomb is,

$$G = \xi\left(\frac{e_o}{m_e}\frac{1}{k}\right) = 6{,}67258923 \cdot 10^{-11}; \qquad k = \frac{1}{(1{,}01355000 \cdot \alpha)^{10}} = 2{,}0412441174322 \cdot 10^{21}$$

The value of "k" differs from unit by a few digits and has a deviation overall of only 1,355 % in expressions under degree 10.

Propagation of light in space is provided by the crystal lattice structure of the environment having elementary massless charges. The displacement of charges in the lattice generates the currents necessary for propagation of an electromagnetic wave and agrees with Maxwell's formulas:

$\Delta\overline{\Phi} + \frac{1}{c^2}\frac{\partial^2\overline{\Phi}}{\partial t^2} = \frac{1}{\eta}rot\,\overline{j} = \frac{1}{\eta}rot\frac{\partial\overline{E}}{\partial t}$, Where , $\overline{\Phi} = s\,\overline{B}$ **(3)** - Laplace operator, **(3)**

$$\eta = \frac{1}{\mu_o} = 10^7[a^2m^{-1}kg^{-1}s^2]$$

.

The distortion of the environment due to propagation of light results in the appearance of the displacement currents and hence, j=0 leads to liquidation of a vector of E and the distortion of the electromagnetic wave itself.

Experimental confirmation of existence of the environment follows from the application of Huygen's rule on the refraction of light in space:

$$n = \frac{\sin(90^o)}{\sin(i)} = \frac{1}{\sin(i)} = \frac{c}{c_g} \quad \textbf{(4)}$$

The factor of refraction is equal to the relation of speeds of light in free space and the proximity of gravitational bodies. The peed of light is not constant and depends on gravity or on the deformation of the structure of the environment:

$$c_g = c\sqrt{1 - \frac{1}{(\alpha r_e)^2}\frac{g}{4\pi E_o S}} \quad \textbf{(5)}$$

Finally, the formula for the deviation of light in space is,

$$i = \left(\frac{1}{\pi\alpha^{-1}}\frac{g_x}{g_{sun}}\right) \cdot arcSin\left(\sqrt{1 - \frac{1}{(\alpha r_e)^2}\frac{GM_x}{4\pi E_o S R_x^2}}\right) \cdot 2{,}062648 \cdot 10^5\,[angl.\sec] \quad \textbf{(6)}$$

The calculation of the deviation of an electromagnetic wave due to the sun is shown in the following graph: The data coincides with experiment 1998[2].

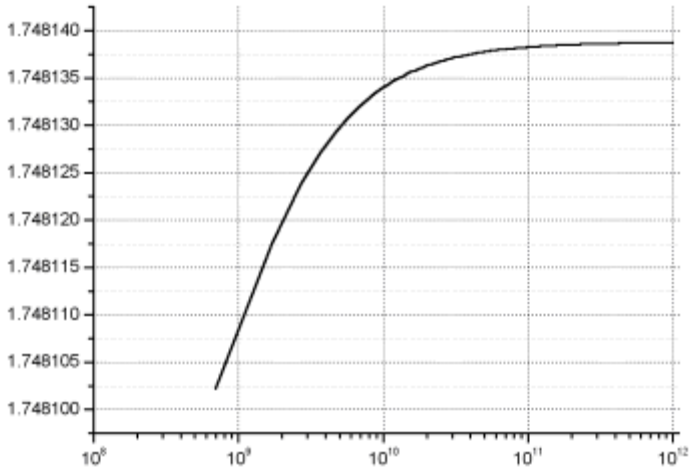

Fig.1.

The axis abscissa represents the separation of the Sun and an observer in meters. The axis of ordinates represents the angle of deflection of a ray of light in angular seconds.

Conclusion

The introduction of a universal environment in researching physical phenomena is necessary for the understanding of gravity, electromagnetic phenomena, the deflection of light in space, the reasons for the "red shift" in the radiation spectrum of stars, and the conditions on the border of "black holes". The application of mathematics to phenomena without a proper physical model is erroneous.

The literature

1. 1. A.V. Rykov. Nature of Gravitation, // arXiv:physics/0112055 v1 18 Dec 2001, p.5.
2. 2. Cliford M. Will. Department of Physics Washington University, St. Louis MO 63130. The confrontation between General Relativity and Experiment // p.103. arXiv:gr-qc/0103036 v1 12 Mar 2001