the general science journal

The natural explanation of some of the properties of light, which are used to confirm the theory Einstein's relativity

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DOI: 10.13140/RG.2.2.27007.61607
08.03.2017

We offers in the article the solutions of the problems red shift in the spectra of stars and the curvature of a ray of light when they passing by the massive stars (the Sun). It is known that the formulas for quantitative description of these phenomena were received in Einstein's theory of relativity. It is considered, that this formulas are by two of the four major experimental confirmation of the reliability of this theory. The proposed solution in this article does not use relativity effects.They is based only on the law of universal gravitation of Isaac Newton and of the phenomenon of inertia.

The gravitational red shift in the spectra of the stars

In the spectra of the stars the gravitational redshift observed . To determine its the value, Einstein proposed the following formula [1,2]

$$\frac{\Delta\lambda}{\lambda}=\frac{fm}{r_o C^2}. \quad (1)$$

This the formula supported by the observation of the solar spectrum and of the spectrum of the Sirius satellite having a large weight and a small size. It is one of four experimental the proof of the validity of the theory of the relativity

We show that this formula can be obtained by using the concept of the light waves, consisting of a chain of the photons. The photons subject to gravity. It also shows that the cause of this the effect are well-studied the tidal forces. This the forces are causing tides of water of Earth's oceans

We assume that the light wave has a mass of uniformly distributed over its the length. In each point of the wave (Fig.1), the acceleration of gravity acts $j = fm/r^2$. As a result, the gravitational forces are stretched the wave. Here m - mass of the stars; r - the radial distance from the center of mass m to the point under consideration of the light wave. The speed of points of light wave without taking into account the forces of gravity $C = 3{\cdot}10^8$ m /s. Given the accelerating action of the gravity forces of the stars formula can be written as

$$V = C + \int_o^t \frac{fm}{r^2} dt\ , \qquad (2)$$

where

$$r = r_o + C \cdot t, \quad dt = \frac{dr}{C}\ . \qquad (3)$$

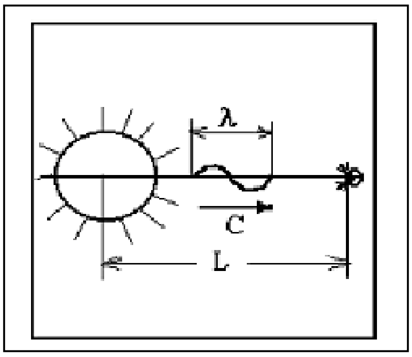

Fig.1

We substitute (3) into (2), and we will be integrate . The Integration constant is zero. Therefore

$$V = C - f \cdot m / C \cdot r \qquad (4)$$

The tidal force gravity of acts on the light wave. In consequence this the light wave tend to stretch . The speed at which the leading edge will move forward from rear, is

$$\Delta V = V_f - V_z = \left(C - \frac{f \cdot m}{C \cdot r}\right) - \left(C - \frac{f \cdot m}{C(r-\lambda)}\right) = \frac{\lambda \cdot f \cdot m}{C \cdot r^2}\ .$$

Here λ - the wavelength at the initial time in a quiet dark gas. The increment of the wavelength during the passage from the light source to the observer can be written as

$$\Delta\lambda = \int_0^t \Delta V dt = \frac{fm\lambda}{C} \int_o^t \frac{dt}{r^2} = \frac{fm\lambda}{C^2}\left(\frac{1}{r_o} - \frac{1}{L}\right). \qquad (5)$$

Given that $L >> r_o$, we obtain the formula

$$\frac{\Delta\lambda}{\lambda} = \frac{f \cdot m}{C^2 r_o}\ . \qquad (6)$$

This formula is identical to the corresponding Einstein's formula and therefore we can do not comment her, although more the rigorous view it has the formula. In passing, I note that the the explanation of "the gravitational redshift" by a well-known the practice in the Earth's tidal forces leaves no room for the effects of Einstein's the relativity, whose authenticity is proved by this effect. Otherwise would have both of these effects and increase the wavelength $\Delta\lambda$, obtained experimentally, would be 2 times more. This really is not.

The movement of the light wave about a massive body About the curved space

In the astronomy, was found that a beam of light is bent passing by the massive bodies. In the theory of relativity, a formula was proposed to calculate the angle of deflection of the beam of light passing from the star to the observer about a body with mass M [1,2]:

$$\psi = \frac{4f \cdot M}{h \cdot C^2} \tag{7}$$

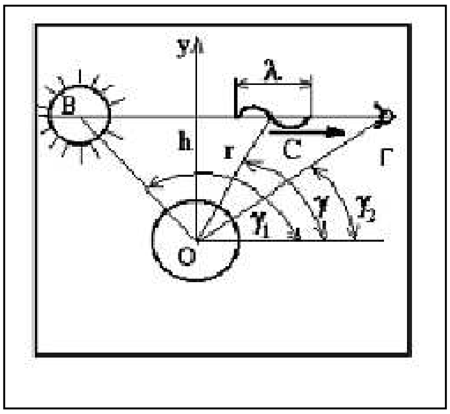

Fig.2

where h - the distance between the center of a massive body and of the light beam (Fig.2). f - is a constant of the gravitation C- the velocity of the light in the vacuum. We one can to check this the formula only for the Sun. Therefore, it usually is written for the mass and radius of the sun. If a ray of the light passes directly next to the surface of the sun ($h = r_o$, where r_o - the radius of the Sun), the maximum deflection of the a ray of the light beam $\psi_o = 1{,}75''$. For other a distances, this the value should be corrected by an amount h/r_o.

$$\psi_C = \psi_o / (h / r_o) \tag{8}$$

It is known that Zoldner [1,2] was gave the solution of the problem of the bending of the light rays when it passes near a massive body, based on the Newton's law, in submitting that the wave of the light has a mass. He got the result is half the angle ψ_o predicted by Einstein

$$\psi_1 = 2fM/(hC^2) , \tag{9}$$

$$\psi_{o1} = 0{,}5 \cdot \psi_o = 0{,}875'' \tag{10}$$

Indeed, in accordance with Fig.2 at any time interval dt the light wave passes the distance $dx = C \cdot dt$ and moves in the direction perpendicular to the distance $dy = -V_r \cdot dt$. There is the acceleration of the gravity of bodies towards the center of the sun $j_r = f\frac{M}{r^2}$. f - is a constant of the gravitation. The rate of the displacement of the light wave in the direction of the negative axis y is $dV_r = -j_r \sin\gamma \cdot dt$. Taking into account considered the relations, the increment of the angle of inclination of the tangent to the trajectory of the light beam $d\psi_1$ will be equal to the derivative of speed V_r by coordinate X multiplied on the elementary time dt

$$d\psi_1 = \frac{dV_r}{dx} \cdot dt = -\frac{j_r \sin\gamma \cdot dt}{C \cdot dt} \cdot dt = -\frac{f \cdot M \cdot \sin\gamma}{C \cdot r^2} dt \qquad (11)$$

Referring to Fig.2

$$r = \frac{h}{\sin\gamma}, \quad tg\gamma = \frac{h}{L} = \frac{h}{C \cdot t}. \text{ from whence } \quad t = \frac{h}{C \cdot tg\gamma}. \quad dt = -\frac{h \cdot d\gamma}{C \cdot \sin^2\gamma}. \qquad (12)$$

We substitute them into expression (11) for $d\psi_1$ and we shall integrate it within the range of $\gamma_1=\pi$ to $\gamma_2=0$.

We obtain the rotation angle of the light beam due to the gravity to center of the star.

$$\psi_1 = -\frac{fM}{hC^2} \int_{\pi}^{0} \sin\gamma \cdot d\gamma = \frac{2fM}{hC^2}. \qquad (13)$$

As a result, we obtained the expression for the rotation angle of the light beam similar the expression Zoldner light, which also saw the light wave subjected to the force of gravity. He examined the movement of the waves of light as the motion of a material point in gravity field of the star. However, it was not considered that the weight of the light wave being continuously and evenly distributed along the length of the wave in the form of a chain of photons. When you change the angle of rotation of the wave it acquired the rotational inertia. During the transit time from the star to the Earth the wave of light in the addition to its the motion along the trajectory by the inertia revolved. Zoldner and the physicists - his the contemporaries did not realized it.

To understand this, we let us return to the Fig.2 and to the expression (11) for the elementary rotation angle $d\psi_1$ of the light wave in the time dt. These the values determine the angular velocity of the rotation of the wave at any point of the light beam $\omega = \frac{d\psi_1}{dt}$

$$\omega = \frac{d\psi_1}{dt} = -\frac{f \cdot M \cdot \sin\gamma}{C \cdot r^2} = -\frac{f \cdot M \cdot \sin^3\gamma}{C \cdot h^2} \qquad (14)$$

From (14) we are geting an expression for the incremental angle at changing the angle, which occurs as a result of rotation of the light wave

$$d\psi_2 = \omega \cdot dt = -\frac{f \cdot M \cdot \sin^3\gamma}{C \cdot h^2} dt \qquad (15)$$

Substituting in (14) into the value (12) we finally obtain an expression to increase of the angle as a result of the rotation of the light wave

$$d\psi_2 = \omega \cdot dt = -\frac{f \cdot M \cdot \sin^3 \gamma}{C \cdot h^2} dt = -\frac{f \cdot M \cdot \sin \gamma}{C^2 \cdot h} d\gamma \qquad (16)$$

Integrating this the expression between and . We get the value of the rotation angle of the waves of light for all the time of its motion from a stars near the Sun to the observer on Earth, caused by inertia of the rotation of the material wave of a light

$$\psi_2 = \frac{f \cdot M}{C^2 \cdot h} \int_{-180^o}^{180^o} \sin \gamma \cdot d\gamma = -\frac{2 f \cdot M}{C^2 \cdot h} \qquad (17)$$

Sign (-) on the right side shows that a light beam was passing over the Sun and deflected downward and is added to the corner .ψ_1. As a result, the total rotation angle of the beam is equal to the sum of the moduli of these the angles

$$\psi = \psi_1 + \psi_2 = \frac{4 f \cdot M}{C^2 \cdot h} \qquad (18)$$

The obtained formula (18) coincides with (7) Einstein's the relativity theory, and hence does not require additional the experimental verification and the confirmation. This the result was obtained on the basis of well-known in the human practice of Newton's the law of gravity and the concept of the rotational inertia of a massive bodies. He no leaves room for the effects of the relativity, whose the authenticity is proved by this the effect. Otherwise would have both of these the effects, and the rotation of the light beam when passing about a massive body, obtained experimentally, would be 2 times more. This really is not.

In the conclusion, I note that it is the effect of the curvature of the light beam the relativists explain the curvature of the space around a massive cosmic bodies. They believe that the light travels along the curved space. It is not entirely clear why the light can not move laterally or why he can not move in a straight direction, crossing the curved space. After all, even in understanding of the relativists the curved space is not one-dimensional or two-dimensional?

In other words, the relativists went through quite to the exotic way, instead of to understand the properties of the light. In its the reasoning it was easier to squeeze all the matter and the energy of the universe to the incredibly huge density in a small volume of an elementary particle, then blow it up,to expand the space-time, to bend the space around the stars. They explained the universal gravitation by the curvature of the space. In according with which by curved space falls down to earth thrown up the ball? Why this does not bother them that all this is contrary to the practice of the earth man. As if the some laws of the nature act on Earth and in the solar system, but quite other laws related to the rate of bodies act in the distant parts of the universe from us? This is contrary to the common sense and the experience of humanity.

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