GRAVITATION WOULD PRODUCE A BLUE SHIFT IN PLACE OF A RED SHIFT ACCORDING TO GENERAL RELATIVITY

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1. Introduction.

According to the general theory of relativity, light is attracted by gravitational forces, likewise all ponderable masses. This action is supposed to have two manifestations: 1) the presence of a red shift observed in the spectrum of the waves moving in opposite direction to the gravitational forces; 2) the deviation of the rays of the stars passing in the vicinity of the Sun.

At present, the theory exists of black holes, based precisely on the point 1). It was set out by some physicists that the super-giant masses of cosmic space can produce so strong a gravitational attraction that the waves of light generated in these bodies cannot escape from them. For this reason these stars are called 'black holes'.

With respect to the second point, it is known that in 1919 a group of scientists performed a famous experiment to test the deviation of the rays. However, because of the bad conditions in which this experiment was realized, it was generally considered worthless. Therefore, to the present, there does not exist any conclusive proof to confirm this theory. We shall see in the following that there are many good reasons to doubt the veracity of the two theories mentioned in points 1) and 2).

2. A Proposed New Experiment to Test the Red Shift in Connection with Gravitation.

We consider Fig. 1. The existence of some red shift in the spectrum of the sun's light (line A-1) to earth was experimentally observed. The problem is to determine if this red shift is caused by the gravitational forces or by some other physical cause. All problems related to interferences, frequencies, wavelengths, shifts of the spectrum, etc., have a direct connection with the Doppler principle. To produce a Doppler effect, it is absolutely necessary that the source or the observer be in motion. We then ask: can the Sun's gravitation produce motion in the wavefronts in the opposite direction to that of the propagation of light? To answer this question, let us refer to Fig. 2.

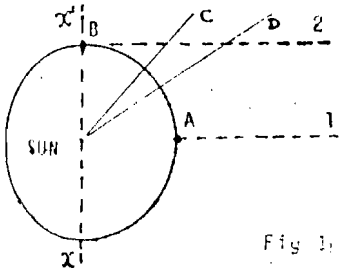

Fig 1.

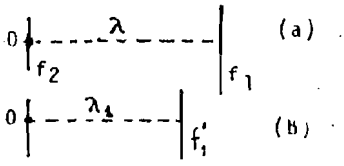

Fig 2

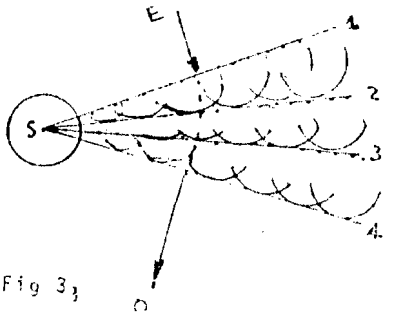

Fig 3.

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3. Gravitational Action on the Waves Emitted by the Sun Should Produce a Blue Shift and Not a Red One.

Let a point be taken on the Sun's surface, O, which is a point source of light. The front of a wave λ occupies the position f_1 after one period. At that very moment this source emits a second front in phase, f_2. If there were not any gravitational action, along the line (A1), Fig. 1, we should receive on Earth a light of wavelength λ. But now suppose the Sun exerts some attraction on the fronts already emitted, holding them back. Then the front f_1 of line (a) would occupy the position f_1' of line (b), with a shorter wavelength λ_1, Fig. 2. A shorter wavelength represents a blue shift at the point of reception, instead of a red one.

Conclusion: A gravitational attraction by a celestial body on the fronts of its own light will produce a blue shift and not a red one, as was assumed in the general theory of relativity.

4. What, Then, is the Real Cause of the Observed Red Shift?

In the author's opinion the explanation is the following: There are continuous explosions on the Sun which send out to space millions and millions of tons of incandescent particles. These particles form a dense atmosphere around the Sun and are always falling on its surface. The rain of such point sources of light moving towards the center of the Sun, would produce a red shift, to an external observer, according to the Doppler principle.

Let us return to Fig. 1. To prove this assertion, we have only to observe two points of the Sun's surface, as B and A. At A we observe the particles moving away from us while at B, the solar pole, these incandescent particles move along slanting lines across the line of vision (B2) (lines C and D, for example). Thus, we can experimentally test by means of direct observations that the red shift perceived at B would be slightly less than the red shift at A.

Another observation to confirm this theory is the following. After an explosion on the Sun, for some time the red shift would be greater, because of the increase of incandescent particles.

5. About the Deviation of Light Grazing the Sun.

Although, as was said above, the experiment of 1919 failed, in that the observations were not in agreement with Einstein's propositions, they, however, put in evidence the presence of some deviation of the rays. What, then, was the true cause of this phenomenon? Were the estimates made by Einstein altogether wrong? Is gravitation the true origin of this anomaly? Or does some other different reason exist that has not been considered until now?

The action of the gravitational forces on the wavefronts is impossible, simply because it would produce a contrary effect: a blue shift, in place of a red one.

According to our theory of the re-emission of the waves by the material particles (and also Huygens') a front like (S1) coming from the star E, will be the center of emission of elemental waves, the envelope of which at (2) represents the center of the new emitting particles. This envelope is the new front; and so on. The result is a bending of the ray in the direction of O. Of course, the fronts in the Fig. are out of scale and only a few are shown for the sake of simplicity. The deviation is caused by the different velocities of the elemental waves, because of the different densities of the transmitting medium.

Conclusion: The deviation of the rays is caused by a simple phenomenon of refraction.