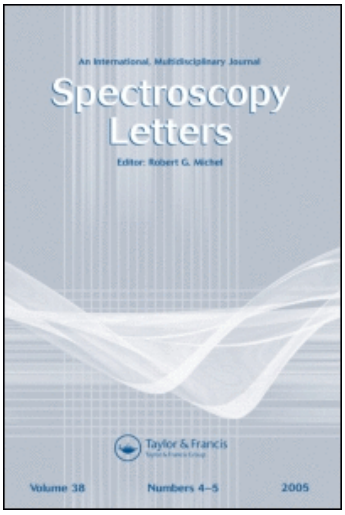

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THE ELLIPSOID THEORY OF ELECTROMAGNETIC RADIATION FROM A MOVING SOURCE

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ABSTRACT

The ellipsoid theory is a modification of the ether theory coupled with time dilation. It is not in conflict with any known observational evidence. Certain astronomical evidence, which conflicts with relativity theory, supports the ellipsoid theory. The moon laser experiment will serve as a direct test of the validity of both theories.

INTRODUCTION

The inconsistencies of relativity theory have long been referred to as "paradoxes." See, for example, Edward Eisner (1). Nevertheless, relativity theory, for all its illogic, continues to be generally accepted today. There are two principal reasons for this. The first reason is that no one has suggested a satisfactory alternative theory. The second reason is that all laboratory experiments to date seem to confirm Einstein's assumption that it is impossible to measure uniform rectilinear motion of a system by an experiment conducted within the moving system.

It is the purpose of this paper to outline very briefly an alternative theory, to show how the alternative

theory is in harmony with all known evidence, to show how relativity theory is in conflict with certain astronomical evidence, and to suggest a crucial test of both theories.

THE ELLIPSOID THEORY

Any theory is based on certain assumptions. Let our assumptions be these:

1. There is, in any given region in space, a frame of reference against which the passage of light, and motion generally, can be measured;

2. There is an upper limit (but no lower limit) on the speed of light, and on motion generally, with respect to such frame;

3. The round trip time of transit of light between two points on a platform moving in uniform rectilinear fashion with respect to such frame is, for any given speed of the platform, constant and independent of direction.

The first assumption is supported by recent measurements of the earth's absolute motion with respect to cosmological background radiation. See Conklin (2). The second assumption is apparently true, although not supported with high precision by any experiment or evidence. The third assumption is supported by the Michelson-Morley experiment and related experiments with very high precision.

Given these assumptions, there is one, and only one, way in which light can proceed when emitted in all directions from a moving source, namely, in the form of an ellipsoid as shown in Figure 1. This statement is made without rigorous proof, but it can be proved rigorously.

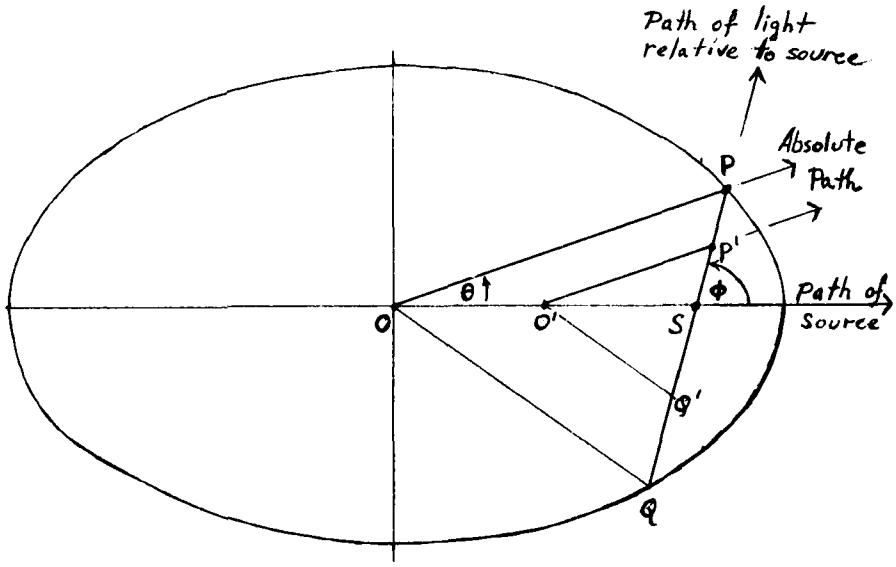

FIG. 1

The first and third assumptions require an ellipsoid, while the second assumption requires the ellipsoid shown in Figure 1 to be the only permissible ellipsoid.

The ellipse, which is the cross-section of the ellipsoid, has the following specifications:

Equation of the ellipse: $(x^2) + (y^2/1-\beta^2) = 1$

Semi-major axis = 1

Semi-minor axis = $(1-\beta^2)^{\frac{1}{2}}$

Eccentricity = $\beta = v/c$

SP (speed of light relative to source) = $\frac{1-\beta^2}{1+\beta\cos\phi}\,c$

OP (absolute speed of light) $\sqrt{\frac{1-\beta^2}{1-(\beta\cos\theta)^2}}\,c$

The line OP represents the path of a single pulse emitted at O, while the line O'P' represents the path of a pulse emitted subsequently at O'. From the point of view of an observer moving with the source, the path of the light appears to be along the line SP'P.

These lines describe the course of single pulses aimed in the direction SP, while the ellipsoid depicted in Figure 1 is the locus of an infinite number of pulses emitted in all directions from the origin, O, after a time, t. It assumes that measurements of length are constant in all systems, that c is the speed of light from a body at rest, and that time is measured by a clock at rest. Under these conditions, the round trip time of light from the source, S, to a point, P, and back to the source is:

$$t_1 + t_2 = \frac{L}{SP} + \frac{L}{SQ} = \frac{2L}{(1-\beta^2)c}$$

which is independent of direction as required by the Michelson-Morley experiment.

But we have not considered time dilation. If we make the further assumption that clocks moving in an absolute sense slow down with respect to clocks at rest by the alpha factor, we have, for the round trip time of light as measured by the moving clock:

$$t_1 + t_2 = \frac{2L}{(1-\beta^2)^{\frac{1}{2}}c}$$

Consequences of the Theory

The theory predicts almost as many null results as does relativity. It is impossible under the ellipsoid theory to measure any difference in round trip time of

light for a given absolute speed of the platform. It is therefore impossible to measure any change in frequency, phase, or speed of light by means of a two-way measurement of light. Furthermore, it can be shown rigorously under the theory that we can never measure a time or phase difference in light which originates at one point and terminates at another point, notwithstanding the light is split and travels over different paths. Finally, we can never measure a frequency difference under any conditions if both source and observer are moving in the same direction at the same speed. All experiments to date fall under one or another of these categories, and consequently all have produced null results.

On the other hand, the theory does predict certain results which seem to be confirmed by the evidence. It will be noted that the speed of light emitted transversely from a moving source travels at a speed smaller than c, while light emitted in a forward or rearward direction travels at the same speed as light from a body at rest. It follows, therefore, that light from double stars moving across the line of sight travels more slowly than light from the same stars moving toward or away from the observer. As a consequence the shifting spectral lines that characterize spectroscopic binaries should not be observed at very great distances. Light from various points of the orbit will arrive at once, and the spectral lines will appear as broad stationary lines.

This prediction is in fact supported by the evidence, for the shifting spectral lines that characterize spectroscopic binaries are not observed in any stars at very great distances, notwithstanding such stars have been resolved and studied for decades through our largest telescopes, and notwithstanding that a large number of them are the bright B-type stars, one-third of which are found to be spectroscopic binaries in the neighborhood of the sun. Kopal (3).

By contrast, the prediction of relativity with respect to aberration of light from binary stars is grossly wrong. See Edward Eisner (1).

Another consequence of the ellipsoid theory is that, although round trip time of light is constant for a given absolute speed of the platform, round trip time of light varies as speed of the platform varies. If we consider the earth-moon system as a moving platform whose speed varies sinusoidally during the course of a year, we ought to be able to measure a difference in the round trip time of light by means of the moon laser experiment. If Conklin's determination of absolute speed and direction is reasonably accurate (see Nature, 7 June 1969), the difference in measured round trip time of light between the earth and the moon should vary from January to July by an amount equivalent to more than 30 meters. Since measurements of distance to the laser beam reflector on the moon will be accurate to 6 inches eventually, a variation of 30 meters or more ought to be detected very easily after several years of observation.

Under relativity, there should be no variation in transit time whatsoever. The moon laser experiment, therefore, is a crucial test of both theories.

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