Theoretical evidence against the (special) theory of relativity

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Abstract
Experimental and logical evidences against relativity theory have accumulated over many decades. However, relativity theory still persists and this is mainly due to lack of a competing alternative theory of the speed of light that can successfully explain the apparently contradicting experimental facts of the speed of light. In fact, the lack of an alternative explanation of existing experimental facts is considered as an assurance that relativity is a correct theory. The failure of ether and emission theories is cited as one of the evidences for relativity. In this paper a compelling alternative model of the speed of light: Apparent Source Theory (AST), is proposed. The blunder in the Michelson-Morley experiment was that of considering light as ordinary, material waves. Light is not only a local phenomenon. Light is a dual phenomenon: local and non-local. There is no medium (ether) for light transmission. The flaw in the conception of Michelson-Morley experiment was this: absolute motion was/is presumed to be motion relative to the ether. The new model of the speed of light can be stated in a few words: *the speed of light is constant relative to the apparent source*. The effect of absolute motion is to create an apparent change in the position of the light source relative to the observer. Therefore, no fringe shift would occur in the Michelson- Morley experiment due to apparent change of source position relative to the detector, for the same reason that a physical/actual change of source position doesn't create any (significant) fringe shift. The speed of light is constant relative to the apparent source, but variable relative to the real source.

Introduction

The Michelson-Morley experiment was devised to detect the ether and failed to detect the ether. It has been repeated many times, including the modern Michelson-Morley experiments using optical cavity resonators. All Michelson-Morley experiments were conceived to detect the ether. The failure to detect the ether was presumed to be non-existence of absolute motion.

On the other hand, several experimental evidences exist that, unlike the Michelson-Morley experiment, indicate the existence of absolute motion. These include the Sagnac effect, the Marinov, the Silvertooth and the Roland De Witte experiments.

However, these experimental evidences have been ignored by the mainstream science community. The persistence of relativity theory is due to lack of a competing alternative theory. In fact, the lack of such an alternative theory has always been considered as an assurance that relativity is a correct theory of nature. The failure of emission and ether theories is cited as one of the evidences for the theory of relativity. Therefore, theoretical evidence is needed to completely disprove relativity.

Explanation of Michelson-Morley experiment

Consider the Michelson-Morley interferometer (fig.1) . Assume it to be at absolute rest. Let us start with a simple question. What is the effect of physically changing the source position from S to S' on the interference fringes ? Will there be any fringe shifts ? No ! This is because the path lengths of the forward and lateral beams will not be

affected by change of source position from S to S'. Changing the position of the source from S to any position doesn't (significantly) affect the path length of the forward and lateral beams and hence doesn't result in any (significant) fringe shift.

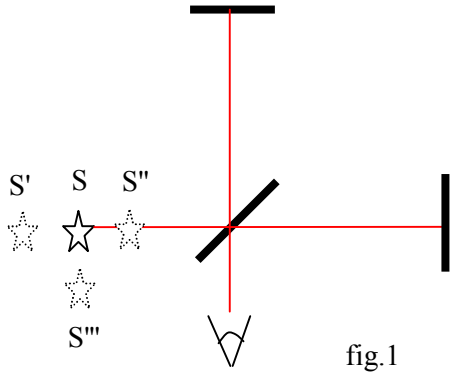

fig.1

The above argument was concerned with a change in the physical position of the source, with the MM interferometer at absolute rest. Changing the physical position of the source doesn't create any fringe shift.

Next we propose a new interpretation of absolute motion of the MM interferometer (fig.2). The effect of absolute motion on the MM interferometer is to create an *apparent* change in the position of the source *relative to the detector*. An apparent change in the position of the source caused by absolute motion will not create a fringe shift for the same reason that an actual/physical change in the position of the source will not result in any fringe shift. In fact, we can consider the apparent change in source position as an actual/ physical change in (source) position for the purpose of analysis.

To analyze the effect of absolute motion on the MM interferometer, we just replace the real source with an apparent source to account for absolute motion. We assume that light is emitted from the apparent source S' and not from the real source S.

Once we replace the real source S with an apparent source S', we analyze the problem by assuming that the speed of light is constant relative to the apparent source. This is analogous with conventional emission theory in which the speed of light is constant relative to the source. Emission theory is known to be the most natural explanation of the MM experiment null result.

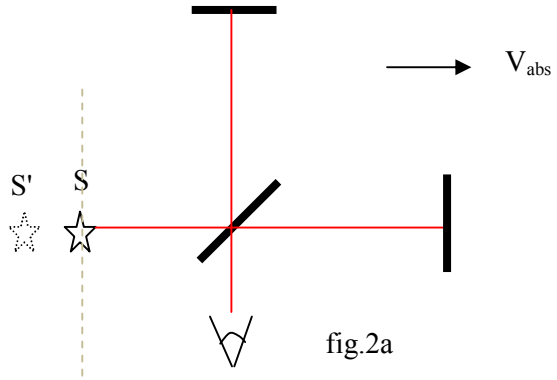

fig.2a

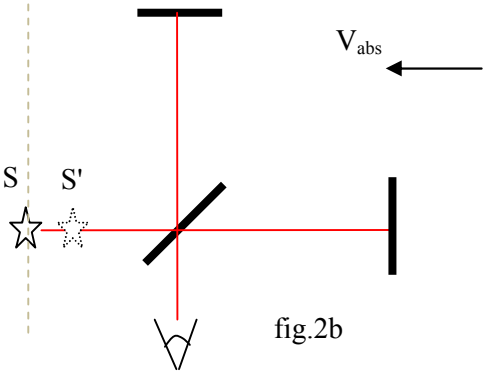

fig.2b

Now consider a hypothetical Sagnac interferometer (fig.3). Assume it to be at absolute rest (not rotating).

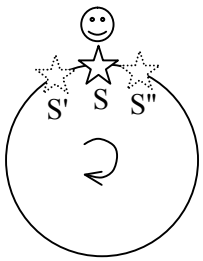

fig.3

Light is emitted tangentially forward and backward by the source. The forward and backward light beams propagate in circular paths by a circular mirror before being detected.

Let us start with a simple question again. What is the effect of changing the position of the source from S to S' or S" on the interference fringes ? Obviously there will be a fringe shift because the path of one beam will be shortened and the path of the other beam will be lengthened.

Now assume that the hypothetical Sagnac interferometer is rotating clockwise. The tangential velocity of the source will be its absolute velocity. The effect of rotation on the Sagnac interferometer will be to create an apparent change in the position of the source relative to the detector. An apparent change in the position of the source will create a fringe shift for the same reason that a physical/actual change in source position creates a fringe shift. We can analyze the Sagnac effect as an absolute translation effect.

This idea is very compelling in that it can explain *both* the MM experiment and Sagnac effect . No existing theory of the speed of light including Special Relativity, emission theory and ether theory has ever succeeded in this.

The next natural question will be: how is apparent source position determined quantitatively ? We start by considering simple and more basic cases. Consider absolutely co-moving source and observer (fig.4).

The effect of absolute motion is to create an apparent change in the position of the source relative to the observer. D is the physical distance of the source relative to the observer. We consider two cases: the observer/detector looking backward and the observer looking forward. D' is the apparent distance of the source relative to the observer, for the observer looking backward.

To determine the apparent source distance we proceed as follows.

During the time interval that light goes from S' to O, the source moves from S' to S.

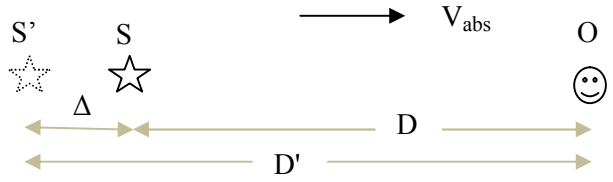

fig.4

$$\frac{D'}{c} = \frac{\Delta}{V_{abs}}$$

But

$$D' = D + \Delta$$

From the above two equations

$$D' = D\frac{c}{c - V_{abs}} \quad \text{and} \quad \Delta = D\frac{V_{abs}}{c - V_{abs}}$$

The time delay T between emission of a light pulse detection would be:

$$T = \frac{D'}{c} = \frac{D}{c - V_{abs}}$$

Similar analysis applies for an observer behind the light source, i.e. an observer 'chasing' a light source (fig.5), which is the case of the observer looking forward. In this case, the source *appears* to have shifted towards the observer by an amount Δ.

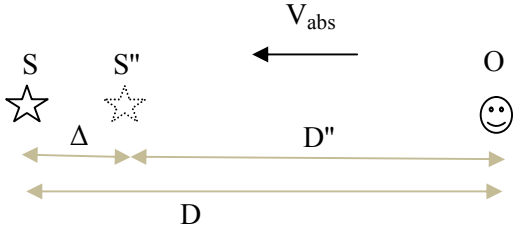

fig.5

$$\frac{D''}{c} = \frac{\Delta}{V_{abs}}$$

But,

$$D'' = D - \Delta$$

From the above two equations,

$$D'' = D\frac{c}{c + V_{abs}} \quad \text{and} \quad \Delta = D\frac{V_{abs}}{c + V_{abs}}$$

Next imagine a light source S and an observer O absolutely co-moving , with the relative position of S and O orthogonal to the direction of their common absolute velocity (fig.6).

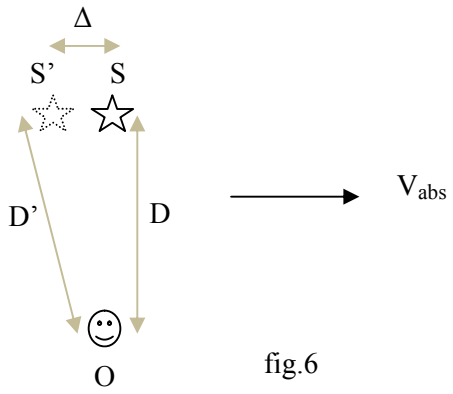

fig.6

During the time interval that the light pulse goes from S' to O, the source goes from S' to S.

$$\frac{D'}{c} = \frac{\Delta}{V_{abs}}$$

But,

$$D^2 + \Delta^2 = D'^2$$

From the above two equations

$$D' = D\frac{c}{\sqrt{c^2 - V_{abs}{}^2}}$$

A more general case is shown in (fig.7).

$$\frac{D'}{c} = \frac{\Delta}{V_{abs}}$$

But,

$$\sqrt{D'^2 - H^2} - \sqrt{D^2 - H^2} = \Delta$$

D' and Δ can be determined from the above two equations.

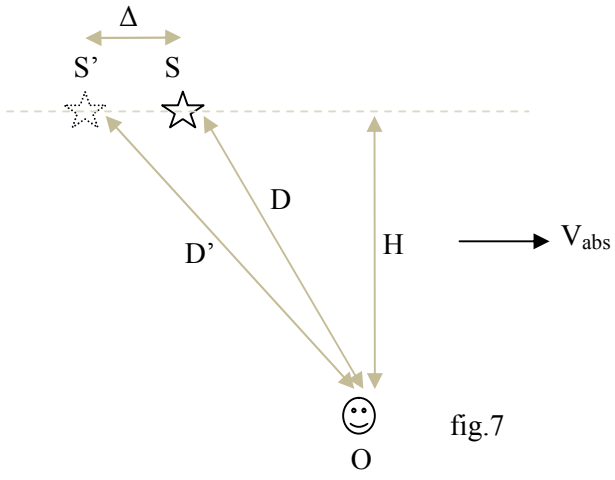

fig.7

Now we can analyze the Michelson- Morley experiment (fig.8). The last analysis applies to the Michelson-Morley experiment.

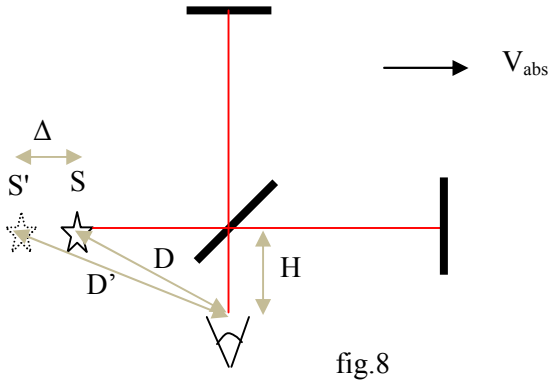

fig.8

Discussion

A helpful way to understand Apparent Source Theory (AST) is to consider it as a modified emission theory. AST turns out to be a seamless fusion between emission theory and ether theory. To account for absolute motion, we replace the real source with an apparent source and assume that the speed of light is constant relative to the apparent source. AST easily explains experiments [1] that show existence of absolute motion such as the Sagnac effect, the Silvertooth and the Marinov experiments, the Roland De Witte experiment and moving source experiments. It also explains experiments [1] supporting emission theory such as the Michelson-Morley experiment and the Bryan G.Wallace Venus radar range anomaly. It can also explain moving observer experiments. The fact that AST explains so many experiments justifies its correctness.

AST not only explains the Michelson-Morley experiment and the Sagnac effect without provoking such exotic things as ether, length contraction, time dilation etc. Some thought reveals that AST also hints on the fundamental nature of light. Light is a dual phenomenon: local and non-local (action at a distance) . Note that the apparent source position is *relative to the observer*. Every point around the source has its own apparent source.

In determining the apparent position of the source, we always used the source observer direct distance, even if there is no light is coming from the source to the point of observation directly. In the Michelson-Morley experiment, there is no direct light coming from the light source to the detector. The light at the detector comes after reflection from the mirrors. However, we use source detector direct distance to determine the apparent position of the source.

In the analysis of MM experiment, we don't consider the (absolute) motion of the mirrors, once we replace the real source with an apparent source to account for absolute motion.

In this paper, a model of the speed of light that can predict and explain experimental results has been proposed. However, the question 'relative to what is absolute velocity determined? ' has not been addressed. A proposal has been made in [1].

AST has been discussed as a new model of the speed of light that can be used to predict and explain light speed experiments. But the apparent source is not real/physical and this raises the question about the physical meaning of AST. I would like to advise that the physical meaning is only meant for some intuitive understanding of the phenomenon and is basically not helpful in the analysis of experiments. AST can be stated somehow intuitively as follows. The speed of light is $c - V_{abs}$ in the forward direction and $c + V_{abs}$ in the backward direction, *relative to the (real) source*. Compare this with conventional emission theory in which the speed of light is constant *c* relative to the source in every direction. We can now understand why the speed of light is independent of the velocity of the source. Consider a source moving with velocity V_{abs} towards a stationary observer. The velocity of light relative to the observer is the sum of the velocity of light *relative to the source* and the velocity of the source relative to the observer: $(c - V_{abs}) + V_{abs} = c$ In the lateral directions AST implies bending of light rays. The speed of light is constant relative to the apparent source but variable relative to the real/physical source.

Conclusion

Experimental and logical evidences against relativity theory have accumulated over time. However, there has been no model of the speed of light for a whole century that can truly explain even two experiments: the Michelson-Morley experiment and the Sagnac effect. The lack of an alternative, competing explanation to experimental

facts has always been taken for granted as an assurance that relativity is a correct theory. This paper proposes a very compelling alternative model of the speed of light which can be stated in a few words: *the speed of light is constant relative to the apparent source*. Therefore, relativity has been disproved both experimentally and theoretically.

References

1. Absolute/Relative Motion and the Speed of Light, Electromagnetism, Inertia and Universal Speed Limit *c* - an Alternative Interpretation and Theoretical Framework, by Henok Tadesse, Vixra

Thanks to God and His Mother, Our Lady Saint Virgin Mary