Speed of Light is Constant Relative to the Apparent Source - a fusion between ether theory and emission theory !

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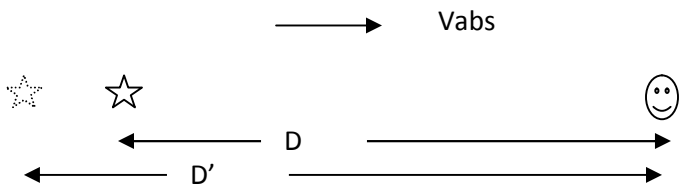
Abstract

Most of the experiments and phenomena on the speed of light can be explained either by the ether theory or the emission theory. The emission theory can explain the Michelson-Morley experiment. The ether theory can explain the Sagnac and Michelson-Gale experiments, moving source experiments, the Silvertooth experiment and Bradely Stellar Aberration. Therefore, it is highly likely that a single theory can be formulated which is a fusion of the emission theory and the ether theory. Neither does the ether exist, nor is the ballistic theory correct. The emission theory and the ether theory are not wrong but incomplete separately. This paper proposes a theory which seamlessly fuses the two into one. *The speed of light is constant relative to the apparent source*. A consequence of this is that it is impossible to detect absolute motion by phase comparison using a single light source. The fallacy with the Michelson Morley experiment was that a single light source was used. Modern Michelson Morley experiments use two light sources but then compare frequencies (not phases) which will not change for co-moving source and observer[3]. All of the known light speed experiments agree with this theory. We call the new theory the Apparent Source Theory. A direct evidence of the two-source claim made above is Ronald de Witte's experimental detection of absolute motion by comparing the phases of two independent Cesium clock stabilized signal sources.

Introduction

In my previous papers [1] [2] I proposed that the speed of light is constant relative to the apparent source. This theory turned out to be a fusion of the ether theory and the emission theory. But these papers need further clarifications because the new theory may not be easily distinguished from the emission theory and, especially from the ether theory.

Consider the optical experiment below. Assume absolutely co-moving source and observer.



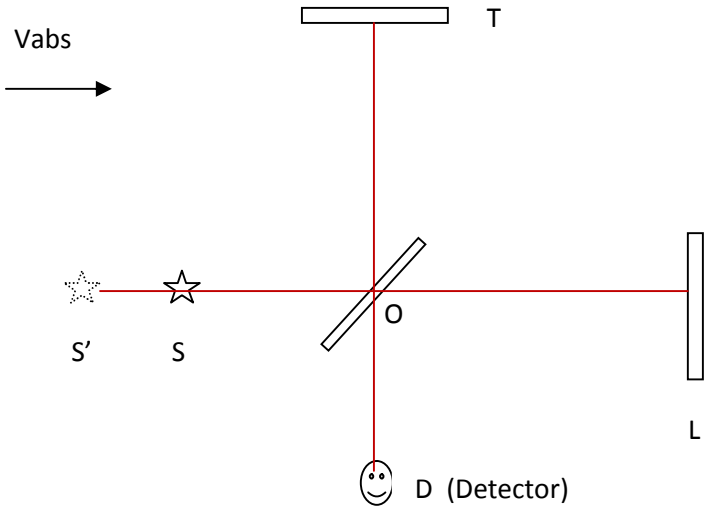
The effect of absolute motion is to create a change in path length and not the speed of light. The procedure to analyze the above experiment is to *replace the real source with an apparent source and then use emission theory, by assuming an empty space.*

The determination of the position of S' (i.e. the amount by which the source S shifts apparently) is determined as:

$$D'/c = (D' - D)/Vabs$$

The detail explanation has been presented in my previous papers [1] [2].

We now apply this theory to explain the null result of Michelson-Morley experiment.



Remember the procedure : *replace the real source with an apparent source and then use emission theory.* Since the effect of absolute motion has been taken into consideration by replacing S with S', now we analyze the experiment as if the light started from position S' , by assuming an empty space.

Thus we replace S with S' and apply emission theory. The result is as if we placed a real source at the position of S' and space was empty. Assuming empty space, now a simple question : does moving the source S to position S' affect the result of the experiment? No!

How does this theory differ from ether theory?

In ether theory, the time elapsed between emission of light from source S and detection at detector D is determined as (assuming distance OD to be zero for simplicity):

For the lateral beam: $\tau_{lat} = \tau_{SO} + \tau_{OT} + \tau_{TO}$

For the longitudinal beam: $\tau_{long} = \tau_{SO} + \tau_{OL} + \tau_{LO}$

τ_{OT} = is the time of flight from mirror O to mirror L

τ_{TO} = is the time of flight from mirror L back to mirror O etc.

In the case of ether, we know that the lateral paths are slant, the longitudinal path lengths (forward and backward) are unequal. The conventional analysis of Michelson-Morley experiment (assuming the ether) is well known.

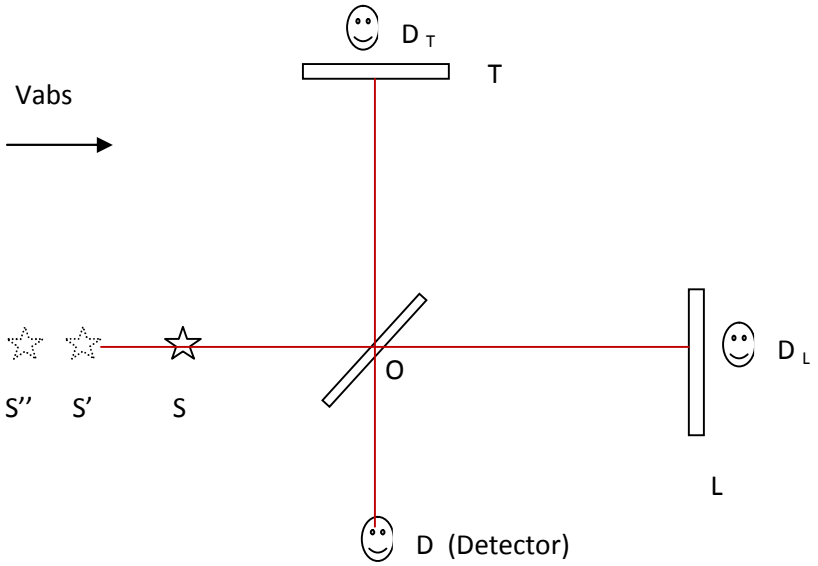
Therefore, according to ether theory, if detectors D_T and D_L were put also at the two mirrors (T and L) and record the time of arrival of the light pulse, it would be possible to predict the phase shift between the lateral and longitudinal beams by adding the time delay (between mirrors) of the incident and reflected beams.

Let us see a simple distinction between ether theory and the Apparent Source Theory.
According to ether theory, the time delay (τ_{ST}) for light to travel from source S to detector D_T is the sum of the time delay between S and mirror O and the delay between mirror O and mirror T

$$\tau_{ST} = \tau_{SO} + \tau_{OT} \quad .$$

In the Apparent Source Theory (AST), the time delay for light to be detected at D_T is determined as follows: replace the source S with S''. Then apply emission theory, i.e. assuming empty space. Note that S' is the apparent source for detector D while S'' is the apparent source for detector D_T Detail explanation has been given in [1] [2].

According to AST : $\tau_{ST} \neq \tau_{SO} + \tau_{OT}$ but $\tau_{S''T} = \tau_{S''O} + \tau_{OT}$



According to Apparent Source Theory (AST), the time delay $\tau_{S'T}$ for light to be detected at detector D is:

$$\tau_{S'T} = \tau_{S'O} + \tau_{OT} + \tau_{TO}$$

Unlike ether theory, we cannot use the time recorded at the mirrors to determine the time delay for the detector D.

References

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2. Light Aberration Without Source Observer Relative Motion Solving the Contradiction Between the Michelson-Morley and the Sagnac Experiments Making Special Relativity Unnecessary
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