Apparent Paradoxes in Apparent Source Theory

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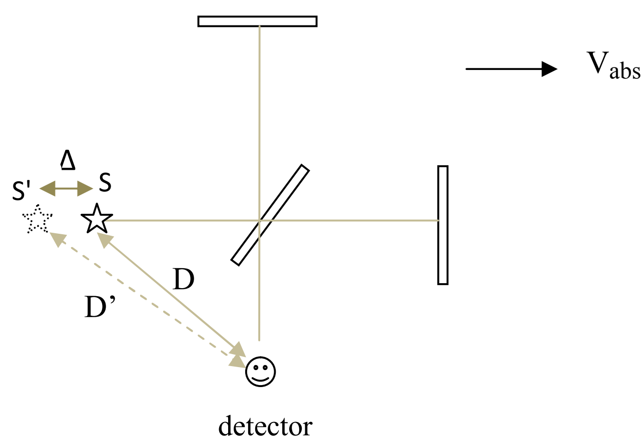
Abstract

According to Apparent Source Theory (AST), the position of a light source changes apparently relative to a co-moving observer, if the light source (and observer) is in absolute motion. Apparent Source Theory successfully explains many light speed experiments. However, there are some (apparent) paradoxes in AST. In this paper, these paradoxes are described and solutions will be proposed.

Introduction

In my previous papers[1][2], I was able to explain many speed experiments by applying Apparent Source Theory (AST). According to AST, the position of a light source changes apparently relative to a co-moving observer, due to absolute motion. For example, in the Michelson-Morley experiment, the effect of absolute velocity is just to create an apparent change in the position of the light source relative to the observer/detector. An apparent change in the position of the light source will not cause any (significant) fringe shift for the same reason that an actual /physical change of light source position will not result in any (significant) fringe shift because, intuitively, both the longitudinal and transverse light beams will be delayed or advanced by the same amount.

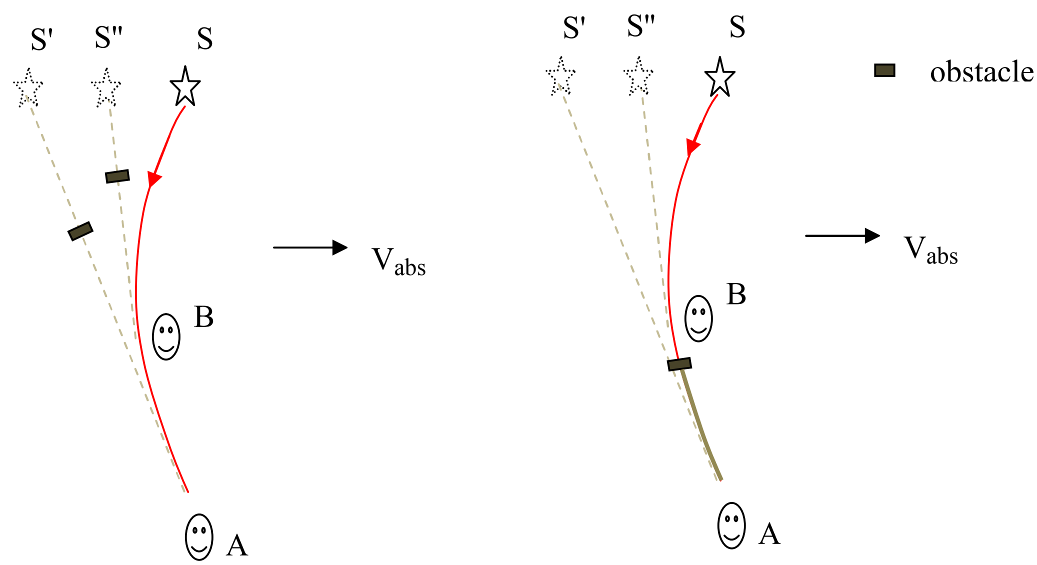


This theory (AST) enabled explanation of many light experiments: the Michelson-Morley experiment, the Kennedy-Thorndike experiment, the Sagnac effect, the Silvertooth experiment, the Marinov experiment, the Roland De Witte experiment, the Venus planet radar range data anomaly (reported by Bryan G Wallace), the A Michelson rotating mirror light speed measuring experiment, terrestrial moving source and moving mirror experiments, and so on.

Despite all these successes, there were some bizarre phenomenon predicted by AST which did not seem to exist physically.In light of the many successes of AST, these paradoxes show that the theory or its interpretation are incomplete, not wrong. We will describe some paradoxes and propose solutionsin the next section.

Apparent paradoxes

Let us see a strange phenomenon of light predicted by AST(according to the interpretation in my previous papers). Consider a light source and an observer co-moving with absolute velocity V_{abs} . The light rays from this source will be curved lines. The observer has to point his telescope towards the apparent source to see the light.



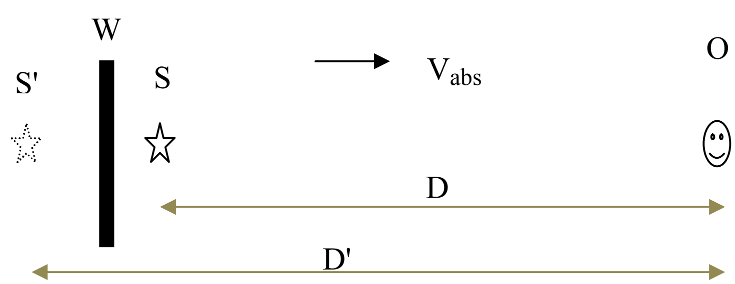
The puzzle is as follows. In the case of co-moving source and observer at absolute rest, placing an obstacle on the source -observer line will block the light going to the observer. What about the case of co-moving source and observer moving with some absolute velocity ? Will placing an obstacle along the (straight) line connecting the apparent source and the observer block the light going to the observer? What about placing an obstacle along the curved light rays ? What about placing an obstacle along the straight line directly connecting the observer and the real source ?

After much puzzlement over this and other paradoxes, the following solution was discovered. This paradox arose and was difficult to resolve because I was not willing to accept that the bending of light which occurs due to absolute motion of the co-moving source and observer.

Placing an obstacle on the line connecting the observer and the apparent source will not block light. And placing an obstacle on the straight line connecting the real source and the observer will also not block the light. Placing an obstacle along the curved light ray will block the light going to the observer.

The apparent source, as its name implies, is only apparent. The apparent source relative to an observer at a given point is only used to calculate the time delay of light and the direction of arrival of light relative to that observer. Light originates from its physical source and not from the apparent source. But light emitted from the physical source behaves as if it started from the apparent source. Therefore, although the observer has to look in the direction of the apparent source to see light, putting an obstacle between the line connecting the observer and the apparent source will not block light coming to the observer.

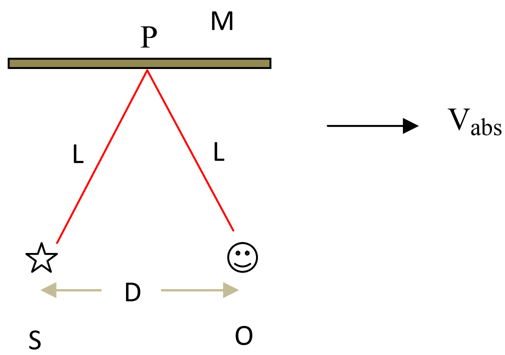
As another example of apparent paradoxes, consider absolutely co-moving source, observer and an opaque wall, as shown below.



With zero absolute velocity, the observer sees light coming from the real source. With large enough absolute velocity, the apparent position of the source can be behind the wall. Will the observer see light now ? The answer is 'yes' because, as we have stated above, only an obstacle on the straight line connecting the physical/real source and the observer will block light coming to the observer. Since the wall is not between the real source and the observer, the observer will see light coming from S'. We stress again that light physically originates from the physical source, but it behaves as if it was emitted by the apparent source. The apparent source seen from a given point is used only to determine the time delay and direction of arrival of light relative to that point.

I faced yet another problem regarding experiments involving mirrors. Consider a light source S, an observer O and a mirror M , co-moving to the right with absolute velocity V_{abs}.

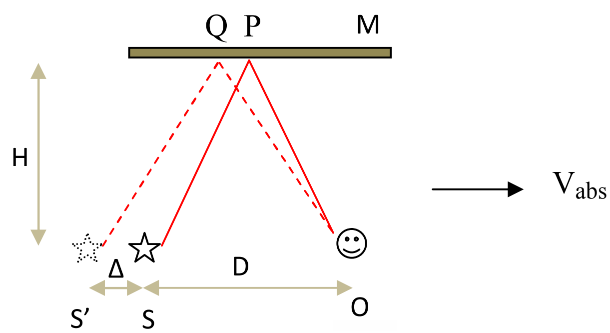
With the system (the light source, the mirror, the observer) at absolute rest, light will reach the observer after reflection from the mirror, as shown below.



If V_{abs} is zero, then the time delay between emission and reception of a light pulse will be

$$t_d = \frac{2L}{c}$$

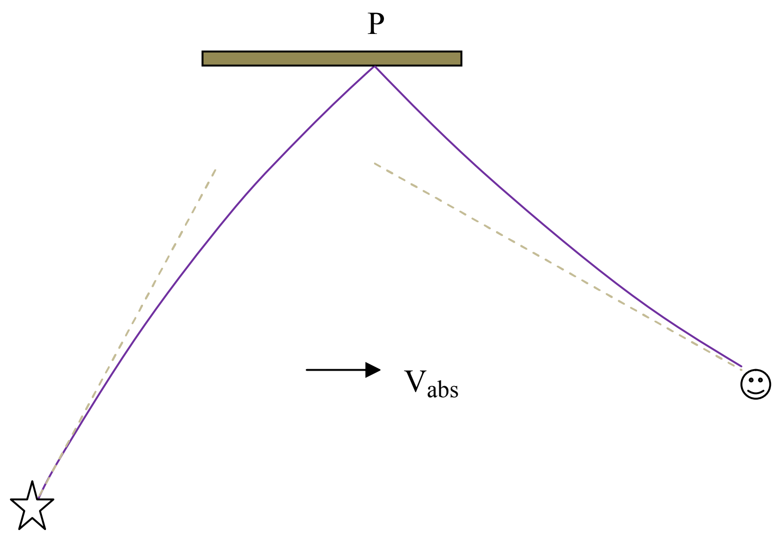
If V_{abs} is not zero, then the source S appears to have shifted away from the observer O by an amount Δ, as shown below.



$$\Delta = D\,\frac{V_{abs}}{c - V_{abs}}$$

We can see from the figure above that the apparent light (dashed red line)coming from the apparent source S' will reflect from the mirror at (virtual) point Q. The question is : will the observer see light if part of the mirror at point Q was missing ? What about placing an obstacle along the red dashed lines connecting the observer and the apparent source ? What about placing an obstacle along the solid red lines ?

The solution is as follows. Light will be blocked neither by an obstacle along the solid lines nor by an obstacle along the dashed lines. Light going to the observer will be blocked only if there is an obstacle along the curved light path starting from the real /physical source and passing through the observation point. The procedure of construction of the curved light rays has been explained in [1]. Note that the drawing below is only meant to be qualitative illustration and is not accurate.



The other puzzle is:

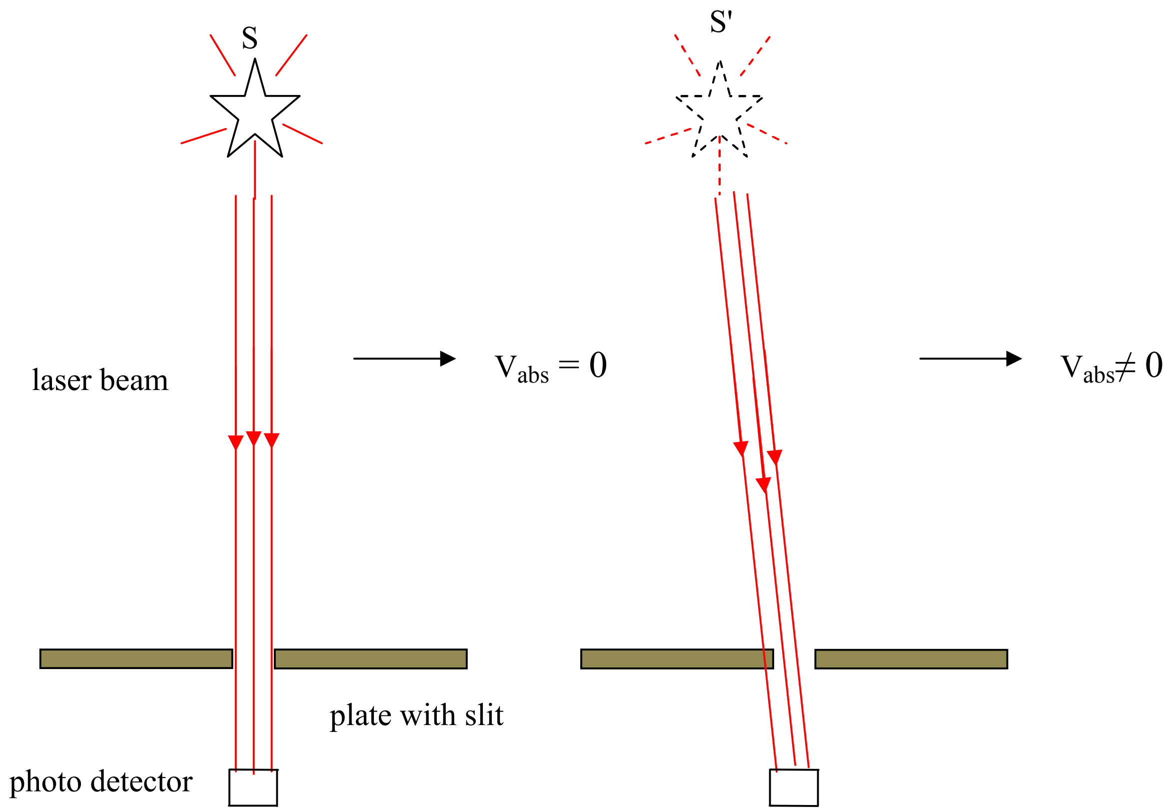
Should there be a physical mirror at the virtual reflection point Q for light to reach the observer ?

OR

Should there be a mirror at the physical reflection point P where the curved light ray reflects from the mirror, for light to reach the observer ?

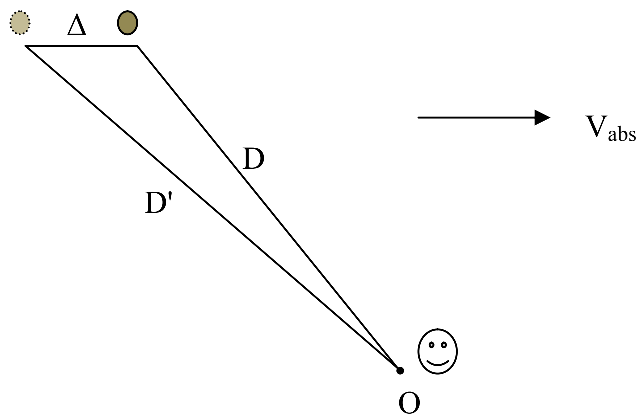
I propose that physical mirror must be present at the point P where the (physical) curved light rays reflect from the mirror. If there was only an infinitesimal mirror at point P, then this infinitesimal mirror is extended in the plane of the mirror to infinity to construct the curved physical light rays. Point Q is only a virtual, not physical, reflection point and hence only a virtual mirror needs to be present at point Q

As another apparent paradox, let us consider an experiment consisting of co-moving light source, plate with slit and photo detector. Assume the light source to be an isotropic point source. At zero absolute velocity, the light source, the slit and the photo detector are aligned for optimum photo detector output. When the system is set in to absolute motion to the right, as shown below, the position of the light source apparently shifts towards the left (from S to S') relative to an absorbing atom of the photo detector. Then one could think that, according to AST, part of the light that reached the photo detector when $V_{abs} = 0$ will be blocked by the plate due to misalignment caused by absolute motion and that the photo detector output will vary with change in absolute velocity.



Now consider real light sources with finite size, with billions of emitting atoms. In this case the principle (Apparent Change of Source Position Relative to Co-moving Observer Due to Absolute Motion) is applied to every infinitesimal element of the source. In this case not only will the position of the source change apparently relative to the detector, but both the shape and the position of the source will change apparently. Therefore, the photo detector output may vary with absolute velocity for real sources.

Consider an infinitesimal element S of the light source (for example an infinitesimal element of the radiating wire of an incandescent lamp) and an observer (photo detector) O at arbitrary point O .



D is the distance between the observer O and the infinitesimal element S when both are at rest ($V_{abs} = 0$). If the infinitesimal element S and observer O are in absolute motion, the position of S changes apparently relative to the observer. The apparent position of the infinitesimal element is determined from the following vector equations:

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

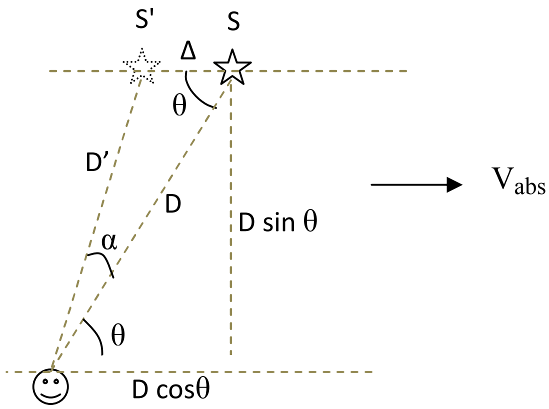
and

$$\boldsymbol{D} + \Delta = \boldsymbol{D'}$$

where c is the speed of light.

The above equations are for infinitesimal element. For the whole light source, AST will be applied to every infinitesimal element of the light source. The apparent position of every infinitesimal light emitting element is determined, from which the apparent position and the apparent shape of the light source is determined. Note that, when we say 'source' we mean, for example, the radiating wire of an incandescent lamp, not other parts of the lamp.

Next we will determine the apparent position of a light source relative to a co-moving observer. Consider a light source and an observer absolutely co-moving, as shown below.



We want to get the relationship between θ and Δ .

$$\Delta = D\cos\theta - \sqrt{D'^2 - D^2\sin^2\theta} \quad \ldots\ldots\ldots\ldots..(1)$$

$$\frac{D'}{c} = \frac{\Delta}{V_{abs}} \quad \ldots\ldots\ldots\ldots\ldots\ldots.(2)$$

From (1) and (2)

$$D'^2\left(1 - \frac{V_{abs}{}^2}{c^2}\right) + \frac{2DV_{abs}}{c}\cos\theta\ D' - D^2 = 0$$

which is a quadratic equation of D' .

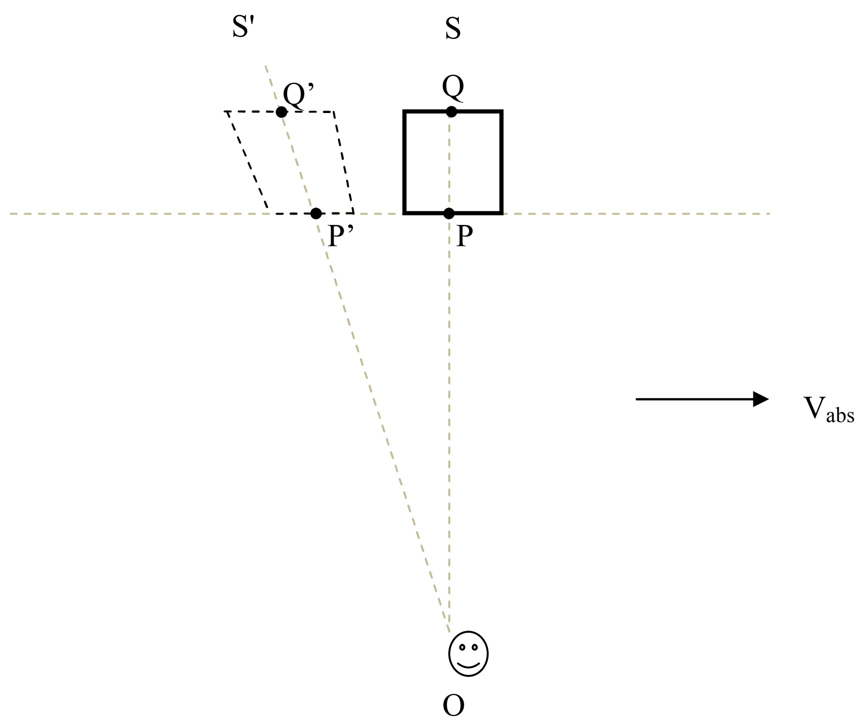
$$D' = \frac{\frac{-2D\,V_{abs}\cos\theta}{c} + \sqrt{\left(\frac{2D\,V_{abs}\cos\theta}{c}\right)^2 + 4\left(1 - \frac{V_{abs}{}^2}{c^2}\right)D^2}}{2\left(1 - \frac{V_{abs}{}^2}{c^2}\right)}$$

$$\Rightarrow\ D' \approx D - \frac{DV_{abs}}{c}\cos\theta = D\left(1 - \frac{V_{abs}}{c}\cos\theta\right),\ \text{for}\ \frac{V_{abs}{}^2}{c^2} \approx 0$$

From (2) ,

$$\Delta = \frac{V_{abs}}{c}D' \quad \Rightarrow \quad \Delta = D\frac{V_{abs}}{c}\left(1 - \frac{V_{abs}}{c}\cos\theta\right) \ldots\ldots\ldots\ldots.(3)$$

Just for illustration purpose, assume that the radiating element is a rectangular block S, i.e. every atom of the rectangular block emits light. The apparent position and shape of S is constructed by applying AST to every infinitesimal element of S. For example, the apparent position of an infinitesimal element P will be P'. In the following diagram the apparent positions of two points P and Q have been shown. Note that the diagram is only for illustration purpose and is not accurate.



Conclusion

Apparent Source Theory is a highly successful theory. However, it is accompanied with paradoxes. In light of all the successes of AST, these paradoxes should be only apparent and not real. In this paper we have seen the paradoxes and provided satisfactory solutions.

Thanks to God and the Mother of God, Our Lady Saint Virgin Mary

References

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

2. Absolute Motion, the Speed of Light, Electromagnetism, Inertia and Universal Speed Limit *c* – Apparent Change of Source Position Relative to Co-moving Observer, Vixra, by HenokTadesse