Detection of Earth's Absolute Motion from Intensity Variation of a Laser Beam Passing through a Slit – a Proposal

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Abstract

This experiment is based on the physical meaning of Apparent Source Theory which states that light rays from an absolutely moving source will be bent in the lateral directions. To test this assertion, a plate with slit is placed between a laser source and a photo diode, all mounted on the same rod. Just by varying the orientation of the apparatus (the rod) in space, the voltage /current output of the photo diode should vary. The direction of Earth's absolute velocity is orthogonal to that plane in which rotation of the apparatus will result in a steady(non-varying) current/voltage of the photo diode. The magnitude of the absolute velocity is determined from the magnitude of photo diode voltage.

Introduction

The principle of relativity states that the laws of physics are the same in all inertial reference frames. It presumes that no experiment exists that can detect absolute motion.

The notion of absolute space/ absolute motion existed since Newton, but its real meaning remained obscure. The absolute reference frame remained incomprehensible: relative to what is absolute motion determined?

Naturally, scientists assumed that a medium of propagation for light wave, the ether, existed. So the speed of light would be equal to *c* relative to the ether. So the ether was thought as serving two purposes: as a medium of propagation for light and as an 'absolute reference frame'. The words ether and absolute space/ absolute motion were always used synonymously.

In 1887 Michelson and Morley (MM) set out to experimentally detect the absolute velocity of the Earth relative to the ether. The failure of the MM experiment to detect the expected fringe shift was perceived as a crisis in classical physics and was the beginning of a century of puzzlement to come. Actually, the fringe shift in MM experiment was not null, but a small fringe shift was observed.

The notion of absolute motion was thus abandoned in favor of relativity, both due to conceptual problems and the failed MM experiment.

The three main theories of the speed of light are: Special Relativity, emission theory and ether theory. The emission theory would be the natural explanation of Michelson-Morley experiment

(MMX). But it decisively failed on moving source experiments and the Sagnac effect. The ether theory can explain moving source experiments and Sagnac effect, but failed on the MMX. Special Relativity fails on Sagnac effect and most decisively, on the Silvertooth and Marinov experiments. SRT is counterintuitive and a source of many paradoxes such as the Twin Paradox and the Trouton-Noble paradox.
Despite the failure of the MMX, several experiments have been performed throughout the last century that detected absolute motion. Actually it is known that the MMX result itself was not null but a small fringe shift was observed. The Miller experiments are well known to have detected small, systematic fringe shifts.

The Sagnac and the Michelson-Gale experiments detected absolute motion as early as 1913 and 1925, respectively. These experiments have always been unnecessarily controversial because proponents of relativity argue that rotational motion is involved.

The Marinov (1976), Silvertooth (1986), Ronald de Witte(1992) experiments detected absolute translational velocity. Since no rotation is involved in these experiments, there can be no excuse for their rejection by the mainstream physics community.

The Silvertooth experiment (1986) was particularly mind blowing, as the direction (towards Leo) and velocity (378 Km/s) reported was subsequently confirmed by the NASA COBE satellite from CMBR frequency anisotropy measurement. The detected change in 'wavelength' was correlated with sidereal time. The Silvertooth experiment has conclusively disproved SRT.

Other experiments proving absolute motion were also performed by different physicists, such as the Ronald de Witte experiment.

But there is also the Bryan G.Wallace's Venus planet radar range experiment which supports the emission (ballistic) theory.

On the other hand, the speed of light has been measured for centuries with increasing accuracy, from astronomical observations and terrestrial experiments, with such experiments as the Albert Michelson rotating mirror experiment and modern experiments using laser beams and cavity resonators. The fact that no significant variation has been found in different experiments apparently shows that the measured speed of light does not depend on the orientation of the measuring apparatus relative to the earth's orbital or absolute velocity.

Thus the principle of relativity and the absolute notion both seem to have supporting evidences and the absolute notion has never been truly ruled out as often claimed in SRT.

Despite increasing pool of experimental and logical counter evidences, relativity theory has persisted as a mainstream theory. The main reason for the persistence of SRT is that no alternative theory exists that can explain all conventional and 'relativistic' facts. Many scientists and authors have proved the logical invalidity of SRT, but no competing, successful alternative theory has come out to this date. No theory exists so far that can satisfactorily explain *all* of the following experiments: the Michelson-Morley experiment, the Sagnac effect, moving source experiments and moving mirror experiments, the Silvertooth experiment.

Naturally, I started by searching for a theory that can reconcile the MM experiment and the Sagnac effect. No theory of the speed of light is valid if it cannot explain both these experiments with the same treatment.

After a considerable effort and puzzlement over years, I came across the seed of idea that can reconcile the MM experiment and Sagnac effect and developed it into the Apparent Source Theory (AST). AST can also explain moving source and moving mirror experiments, the Miller experiments, the Silvertooth experiment, the Marinov experiment, the Ronald de Witte experiment, the Bryan G.Wallace experiment, the Michelson rotating mirror light speed experiment, within a single theoretical framework. AST discloses the mystery behind the 'null' result of the MM experiment and why the Miller experiment detected a small fringe shift. It reveals the fallacy in modern and conventional Michelson-Morley experiments. It shows why the velocity of light is independent of source velocity and why it should depend on observer and mirror velocity. AST has been proposed in my paper [1] in detail.

Despite the fact that AST is a successful theory, editors of physics journals rejected my paper. Then I decided to do an experiment which can test it.

Next an explanation of AST is given before reporting on the experiment.

Absolutely co-moving source and observer

We discuss experiments with co-moving source and observer. The Michelson-Morley experiment is a case of co-moving source and observer.

Apparent Source Theory (AST)

The idea that reconciles the Sagnac effect and the Michelson-Morley experiment is as follows:
for co-moving light source and observer, the effect of absolute velocity is to create a change in path length, and not the speed, of light.

Another way of describing this is:
for co-moving light source and observer, the effect of absolute velocity is to create an apparent change in the position (distance and direction) of the light source relative to the observer/detector.

This can be seen as a fusion of ether (or classical absolute space) theory and emission theory. It is helpful to see it as modified emission theory.

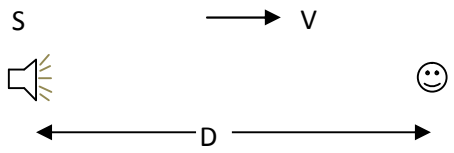
The key idea is that there is no ether. With the ether hypothesis, light was assumed to be *only* a local phenomenon. This is the blunder that led to a confusion of more than a century. Michelson and Morley conceived their experiment based on this mistake. They treated light as ordinary, material waves, such as the sound wave. The Michelson-Morley experiment was designed to detect something that never existed: the ether.

The null result of MM experiment should never have been a big surprise because the ether hypothesis itself was never anything more than a hypothesis. It never developed into the status of a theory. It could be invalidated conceptually, without any experiment. Any speculation should be subjected to a thorough conceptual test even before doing a physical experiment.

Light is not only a local phenomenon. It is a dual phenomenon, both local and a non-local (action at a distance), simultaneously.

The ether and absolute motion were always (wrongly) perceived to be the same. This paper shows that the ether does not exist but absolute motion does. This is possible with a new interpretation of absolute motion.

Let us first consider a sound source and a receiver, co-moving with velocity V relative to the air.



If the source and receiver are both at rest relative to air, i.e. V = 0, a sound pulse emitted by S will be received after a time delay of

$$t_d = D / c_s$$

If the source and the receiver are co-moving relative to the air, we can analyze the experiment by assuming the source and the receiver to be at rest, with the air flowing to the left. Since the speed of sound relative to the air is c_s, the speed of sound relative to the receiver will be:

$$c_s - V$$

Now a sound pulse emitted by the source will be received by the receiver after a time delay of:

$$t_d = D / (c_s - V)$$

In this case, it takes longer for sound waves to catch up with the receiver. By noticing a change in t_d , the observer can know that he/she is moving relative to the air and can calculate his velocity relative to air from knowledge of D and t_d.

Now we consider light. Since the ether hypothesis was disproved by the null result of Michelson-Morley (MM) experiment, there is no medium for light transmission. Yet the existence of absolute motion has been confirmed by several other experiments, such as Sagnac, Silvertooth, Marinov, Ronald de Witte experiments. Even the historical MM experiment result was not null and a small, and systematic fringe shifts were detected in the Miller experiments. But modern MM experiments are even more flawed than the conventional MM experiments and,

fundamentally, they cannot detect any absolute motion. They compare frequencies and search for beat frequencies and not for changes in phase differences. Frequencies cannot change for co-moving source and observer. All ether drift experiments disproved the ether but not absolute motion.

So the ether does not exist, but absolute motion does. How can we perceive absolute motion if no medium exists? We can understand absolute motion as follows.

Let us formulate a postulate:

For absolutely co-moving source and observer, it takes light emitted from the source a time delay t_d different from D/c to reach the observer. This means that the observer knows that he is in absolute motion by noticing a change (increase or decrease) in time delay t_d. If absolute motion is valid, which has been proved experimentally, then light emitted by source will take more or less time than D/c to reach the observer, for absolutely co-moving source and observer.

For sound wave, the speed of sound relative to the receiver will be different from c_s, for source and receiver co-moving relative to air, where c_s is the speed of sound relative to air. Consider the problem in the reference frame of the sound source and the receiver, with the air flowing past them. So the time delay is known to be due to a change in the speed of sound relative to the receiver. Since there is no medium for light, there is no medium flowing past the observer and the light source, so the speed of light relative to the observer cannot be different from c , for absolutely co-moving source and observer. To assume that the speed of light will vary relative to the observer, for absolutely co-moving source and observer, would be inconsistent with the fact that there is no medium for light transmission. Therefore, for co-moving source and observer, the speed of light is always equal to c relative to the observer. (Note, however, that the speed of light will *apparently* differ from c for co-moving source and observer, as will be seen later on. This apparent change in velocity of light occurs when we assume that light started from the source, which is wrong. Physically the light always starts from its source and not from empty space, but light behaves as if it started from an apparent position of the source and this is the correct model that successfully explains many experiments)

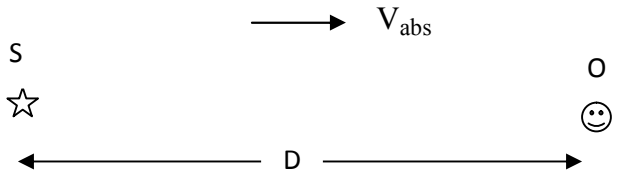
The key question is:

But how can t_d be different from D/c if the speed of light is still equal to c relative to the observer, for absolutely co-moving source and observer ?

The solution to this puzzle is that, for time delay t_d to be different from D/c , the distance between the light source and the observer should *apparently* change from D.

Thus the effect of absolute motion for co-moving source and observer is to create an apparent change in <u>position</u> (distance and direction) of the light source relative to the observer.

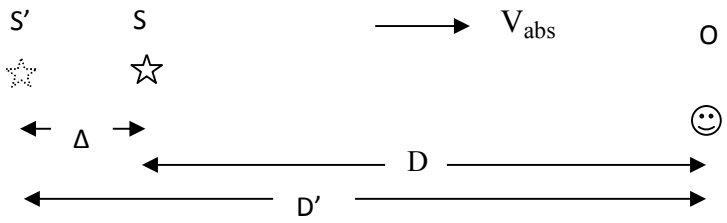
Imagine a light source S and an observer O, both at (absolute) rest, i.e. $V_{abs} = 0$.



A light pulse emitted by S will be detected after a time delay of

$$t_d = D/c$$

Now suppose that the light source and the observer are absolutely co-moving to the right.



The new interpretation is that the position of the source S changes apparently to S'. Once we make this interpretation, we can follow the classical (ether) way *just to make the calculations*, to determine the amount (Δ) by which the source position apparently changes. For example, when we say ' during the time that the source moves from S' to S, light moves from S' to O ' , we are not saying this in the conventional sense.

During the time (t_d) that the source moves from point S' to point S, the light pulse moves from point S' to point O, i.e. the time taken for the source to move from point S' to point S is equal to the time taken for the light pulse to move from point S' to point O.

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

But

$$D + \Delta = D'$$

From the above two equations:

$$D' = D * (c / (c - V_{abs}))$$

and

$$\Delta = D* (V_{abs} / (c - V_{abs}))$$

The effect of absolute motion is thus to create an apparent change of position of source relative to the observer, in this case, by an amount:

$$\Delta = D^* (V_{abs} / (c - V_{abs}))$$

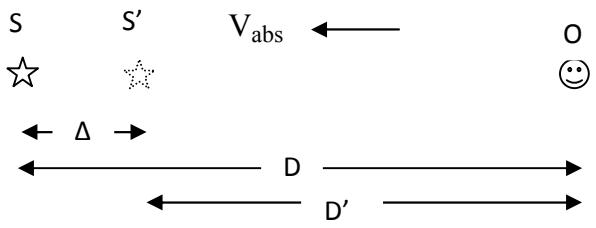
A light pulse emitted by the source is detected at the observer after a time delay of:

$$t_d = D'/c = D / (c - V_{abs})$$

To the observer, the source S appears farther away than it physically is.

For the observer, the center of the wave fronts is always at S' and moves with it. We can see this as a modified emission theory, as a fusion of emission theory and ether (absolute) theory.

In the same way for absolute velocity directed to the left:



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

But

$$D - \Delta = D'$$

From which

$$D' = D * (c / (c + V_{abs}))$$

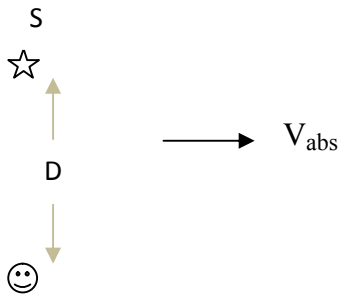
and

$$\Delta = D^* (V_{abs} / (c + V_{abs}))$$

$$t_d = D'/c = D / (c + V_{abs})$$

In this case, it appears to the observer that the source is nearer than it actually is.

Now imagine a light source S and an observer O as shown below, with the relative position of S and O orthogonal to the direction of their common absolute velocity.

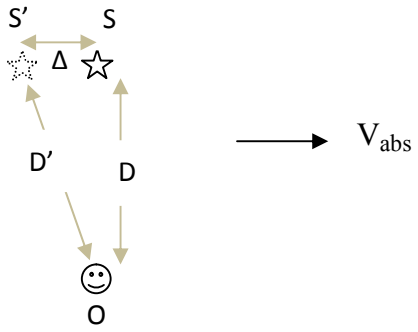


S and O are moving to the right with absolute velocity Vabs.

If Vabs is zero, a light pulse emitted from S will be received by O after a time delay t_d

$$t_d = D/c$$

If Vabs is not zero, then the light source appears to have shifted to the left as seen by observer O.



In this case also, the effect of absolute velocity is to create an apparent change in the *position* of the source relative to the observer.

In the same way as explained previously,

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

i.e. during the time interval that the light pulse goes from S' to O, the source goes from S' to S. But,

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

From the above two equations

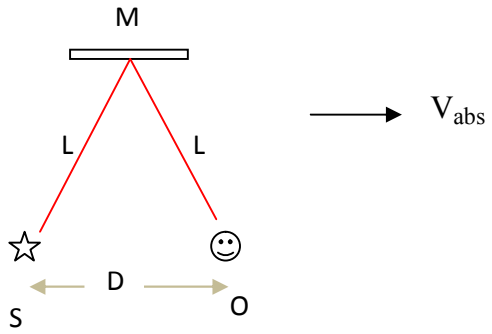
$$D' = D * (c / (c^2 - V_{abs}^2)^{1/2})$$

Therefore, the time delay t_d between emission and reception of the light pulse in this case will be

$$t_d = D'/c = (D / (c^2 - V_{abs}^2)^{1/2})$$

So far we considered only the simplest ideal systems in which only a light source and an observer existed. However, real experiments involve mirrors, causing confusion, so we will analyze a system additionally consisting of mirrors in the next section.

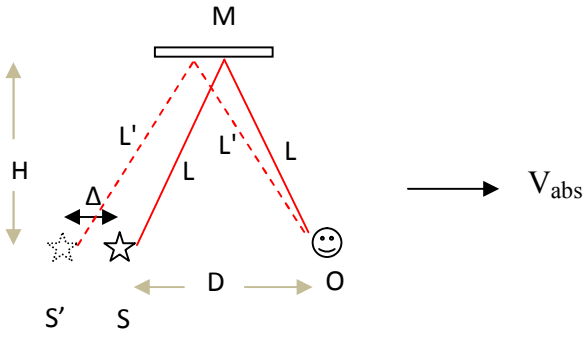
Consider a light source S, an observer O and a mirror M , co-moving to the right with absolute velocity V_{abs}.



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

$$t_d = 2L / c$$

If V_{abs} is not zero, then, as discussed previously, the source S appears to have shifted away from the observer O. The effect will be the same as physically shifting the source in a Galilean space and use emission theory.



$$\Delta = D * (V_{abs} / (c - V_{abs}))$$

Hence the length of the light path from S' to O will be:

$$2L' = 2 * (((D+\Delta)/2)^2 + H^2)^{1/2})$$

Therefore, the time delay will be:

$$t_d = (1/c) * 2 * (((D+\Delta)/2)^2 + H^2)^{1/2})$$

where D is the *direct* distance from observer to source. Note that, throughout this paper, we always take source observer *direct* distance to determine apparent position of the source.

So the effect of absolute motion is just to create an apparent shift in the position of the light source relative to the observer. This avoids all the confusions that arise in systems consisting of mirrors. We would not say, for example, that the mirror will move to a different position while the light beam is in transit, etc., as in standard, classical theories, as in ether theory and SRT. Only the position of the light *source* is thought to shift apparently relative to the observer. As

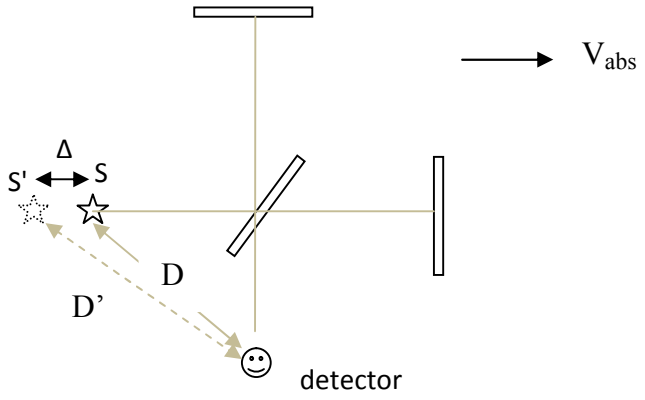
already said, we can think of this as actually/ physically shifting the source from position S to S' in Galilean space, with the same effect, *for that observer*. In other words, we replace the real source with the apparent source to account for the absolute velocity. Once we have done this, we assume Galilean space and simply use modified emission theory.

The procedure of analysis is:

1. Replace the real source with the apparent source (i.e. a source at the apparent position)
2. Apply (modified) emission theory (group velocity constant relative to source, constant phase velocity).

Modified emission theory is one in which the group velocity is constant relative to the source, as in the conventional emission theory, whereas the phase velocity is constant *c* independent of source or observer velocity, assuming Galilean space[1].

With the interpretation (theory) presented so far, the Michelson- Morley and the Kennedy-Thorndike experiments can be explained. The secret behind the null results of these experiments is that only a single light source was used, with a single light beam split into two.

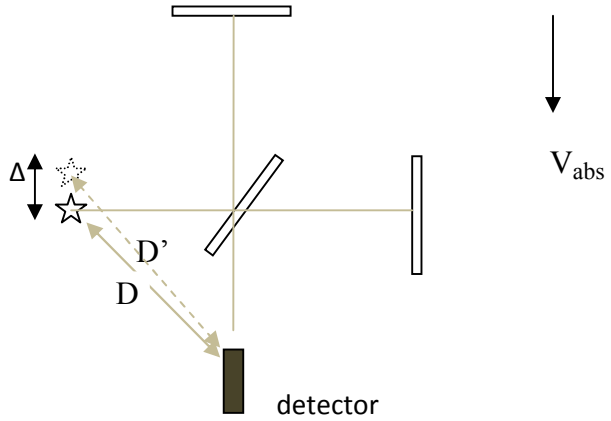


From the above diagram, we see that the effect of absolute velocity is just to create an apparent shift of the position of the light source relative to the detector, for absolute velocity V_{abs} directed to the right.

The best way to understand the effect of this apparent change of source position is to ask:
what is the effect of actually, physically shifting the source from position S to position S' , assuming Galilean space and emission theory ?

If we assume Galilean space and emission theory and shift the source from S to S' obviously there will be no fringe shift because both the longitudinal and lateral beams will be affected in the same way.
Therefore, in the present case, the apparent shift of the source is common both to the forward and lateral beams and hence the path lengths of both beams are affected in the same way and hence no fringe shift will occur. The effect is the same as physically changing the source position (assuming Galilean space and emission theory), which will not create any fringe shift obviously.

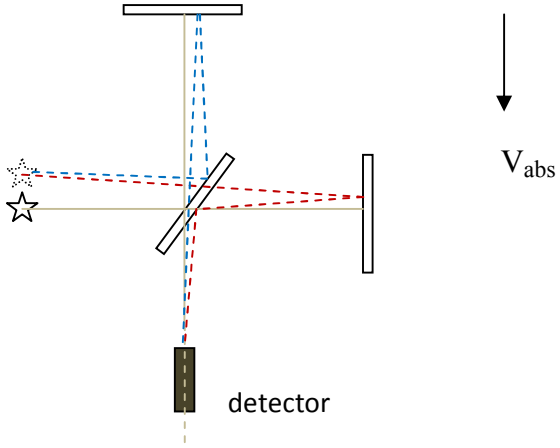
Now let us consider the case of absolute velocity directed as shown below. For an absolute velocity V_{abs} directed downwards, the apparent position of the light source will be as shown.



What is the effect of absolute velocity in this case? In the same way as above, we ask: what is the effect of actually, physically shifting the source from S to S' , assuming Galilean space and/or emission theory ? In this case there will be a small fringe shift because the two beams will be misaligned and will have different path lengths.

Note that there is no beam with slant path as in the conventional MMX analysis of SRT or ether theory. This is the distinction of the new theory.

Now we can see why there were NON-NULL results in many conventional MM experiments, such as the Miller experiments. There will be the same small fringe shift as if the light source was actually (physically) shifted to the apparent position. If the light source is physically shifted to the position shown, the path lengths of the two beams arriving at the observer (detector) should change slightly differently. The two beams will also be misaligned.

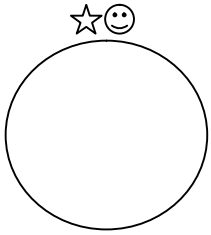


The blue and red dotted lines show the two beams. The drawing is not drawn to be accurate but only to illustrate the idea.

The Sagnac effect

In this section we apply Apparent Source Theory to Sagnac effect. The analysis of (absolute) rotational motion is somewhat different from that of translational motion. In this case we will not take the direct source-observer distance to determine the apparent position of the light source, as in the analysis of absolute translational motion.

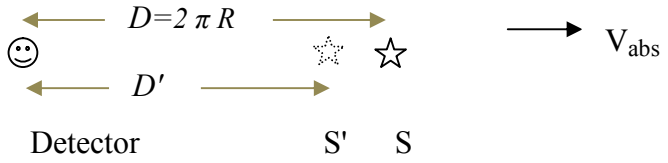
Consider a Sagnac device at absolute rest, i.e. not in absolute translation and rotation.



In this case the time delay for the forward and backward beams will be equal.

$$t_d = 2\pi R / c$$

Assume now that the device is rotating clockwise with angular velocity ω. We will apply the previous analysis for absolute translational motion. First consider the detector as 'looking' in the forward direction. This will be considered equivalent to a translational motion with co-moving source and detector, with the detector behind the source.



In this case, the source appears to have shifted by an amount Δ towards the detector. From previous discussion,

$$D' = D\,(c / (c+V_{abs}))$$
$$\Delta = D\,(V_{abs} / (c+V_{abs}))$$

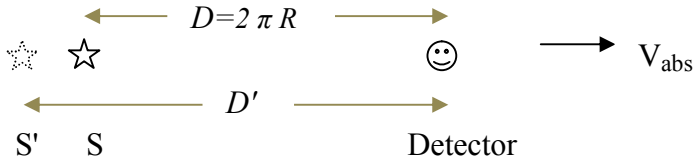
But $D = 2\pi R$, $V_{abs} = \omega R$

$$\Delta_{FW} = 2\pi R\,(\omega R) / (c+\omega R)$$
$$= 2\omega A / (c + \omega R) \quad ,$$

where A is area of the circle

Next consider the detector as 'looking' in the backward direction.

This will be considered equivalent to a translational motion with co-moving source and detector, with the detector in front of the source.



In this case, the source appears to have shifted by an amount Δ away from the detector. From previous discussions,

$$D' = D\,(c/(c-V_{abs}))$$
$$\Delta = D\,(V_{abs} / (c-V_{abs}))$$

but $D = 2\pi R$, $V_{abs} = \omega R$

$$\Delta_{BW} = 2\pi R\,(\omega R) / (c-\omega R)$$
$$= 2\omega A / (c - \omega R)$$

The total path difference will be the sum of Δ_{FW} and Δ_{BW}.

$$\Delta = \Delta_{FW} + \Delta_{BW}$$
$$= 2\omega A / (c + \omega R) + 2\omega A / (c - \omega R)$$
$$= 4\omega Ac / (c^2 - (\omega R)^2)$$

This can be written as:

$$\Delta = (4\omega A / c) / (1 - (\omega R / c)^2)$$

The well known standard equation for the path differences is: $4\omega A / c$

Physical meaning

Apparent Source Theory (AST) [1] successfully explains the Michelson-Morley experiment and Sagnac effect. However, understanding its physical meanings posed a great challenge to me.

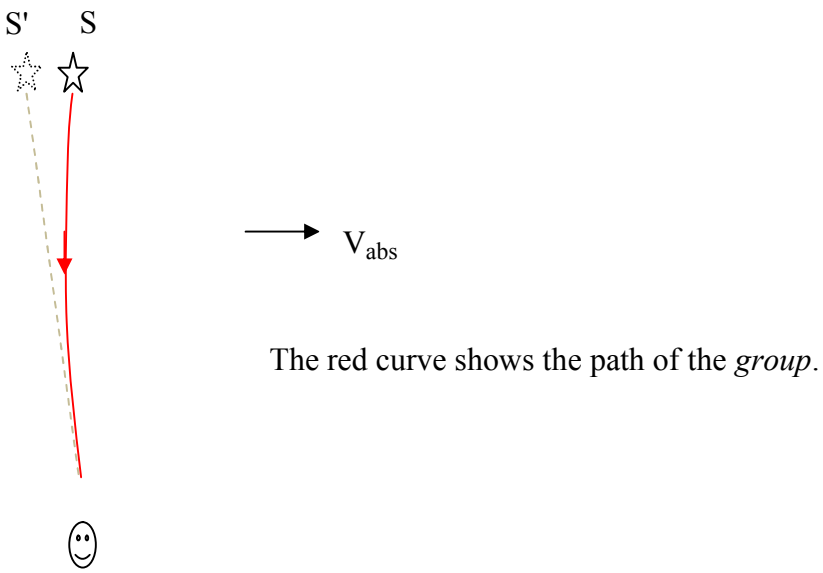
To solve problems involving absolutely co-moving source and observer, we just apply AST as described so far, by applying the procedure:

1. Replace the real source with the apparent source
2. Solve the problem by assuming (modified) emission theory and/or Galilean space.

The puzzles is:

What is the physical meaning of replacing the real source with an apparent source ?

Imagine a light source and an observer absolutely co-moving, with the source observer line orthogonal to the absolute velocity. The apparent change of position of the light source relative to the observer is explained by curved light rays, as shown below. The dashed line is tangent to the curved line at the point of observation.

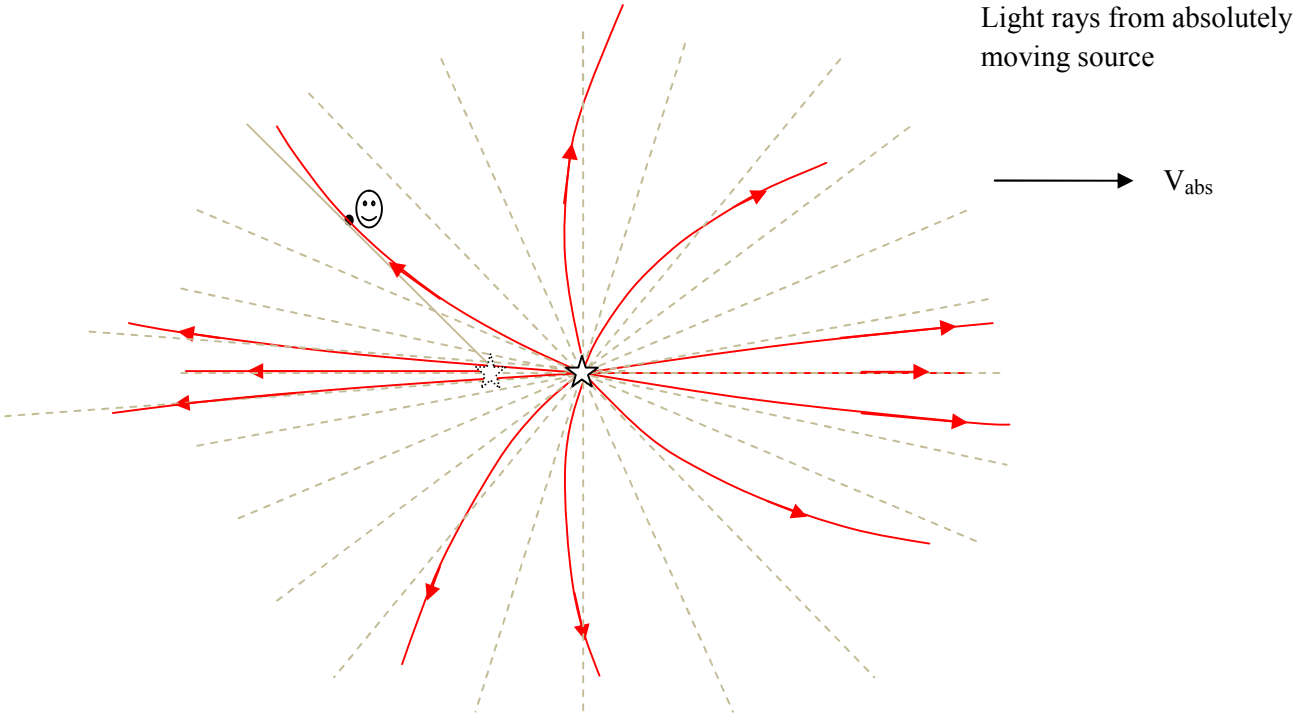


We see that the apparent change in position of the source is due to the curving of the light rays. The red curved line shows the path of the *group*. Even though the source is physically, actually at position S relative to the observer, it appears to the observer that it is at position S' and this is due to the curving of the light ray which is a result of absolute motion.

Light rays from a light source in absolute motion will be bent in the lateral directions (i.e. in directions other than forward and backward directions). In the forward and backward directions, obviously, the light rays will not be bent, but the speed of light will be c - V and c + V *relative to the source*, respectively.

The following diagram shows the group velocity for an absolutely moving source. In lateral directions the bending of light rays is large. As we approach the forward and backward directions, the bending of the light rays becomes less and less. In the forward and backward directions (with respect of direction of absolute velocity), the light rays are straight and there is no bending, but different phase and group velocities. Note that the drawing is not meant to be accurate, but only to serve as a qualitative illustration.

The group velocity is constant relative to the apparent source. Physically, this means that the effect of absolute motion of a light source is to create a change in the group velocity (magnitude and direction) of light <u>relative to the source</u> [1].



Let us consider only the forward and backward light rays from a source in absolute motion, for simplicity.

***Relative to the source,* the group velocity of light will be $c - V_{abs}$ and $c + V_{abs}$, for the forward light beam and for the backward light beam, respectively [1].**

This is just a modified emission theory because, for a given absolute velocity, the speed of light in a given direction is constant *relative to the source*. The effect of absolute motion of the source is just to create a change in the group velocity (*magnitude and direction*) of light ***relative to the source***. In the forward and backward directions, only the magnitudes vary and the direction of the light rays are radial. In all other directions, both the magnitude and direction of the group velocity of light vary with absolute velocity of the source. The direction of the light rays are not purely radial and will have transverse components in the lateral directions because the light rays are curved.

According to conventional emission theory, the speed of light is the same c relative to the source and directed radially in every direction relative to the source. In Apparent Source Theory (AST) the group velocity of light from a source that is in absolute motion is not the same in every direction relative to the source and the light rays are curved in the lateral directions (in directions different from the forward and backward directions). Just as conventional emission theory predicts a null fringe shift for the Michelson Morley experiment, so does the AST because, for a given absolute velocity, and in a given direction relative to the source, the velocity of light is 'constant' *relative to the source*. Note that by 'constant' we mean, for example, $c + V_{abs}$.

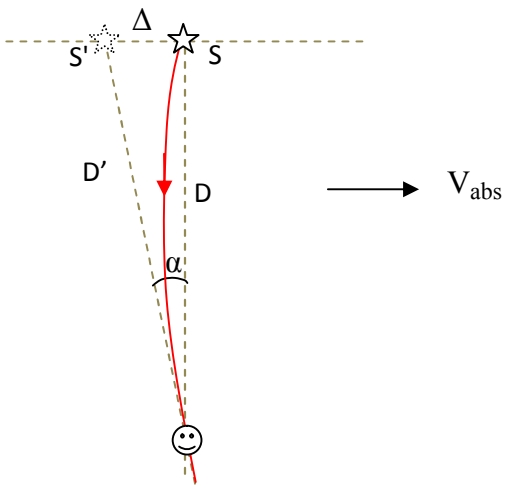
We can easily explain the Sagnac effect by the physical meaning of AST. Since the source has absolute velocity ($V_{abs} = \omega R$) , the speed of the forward beam is c - V_{abs} RELATIVE TO THE SOURCE and the speed of the backward beam is $c + V_{abs}$ RELATIVE TO THE SOURCE , hence a fringe shift.

The experiment

According to the physical meaning of Apparent Source Theory (AST), the light rays from an absolutely moving source will be bent in the lateral directions. Therefore, detection of bending light rays means detection of absolute motion and also confirmation of AST.

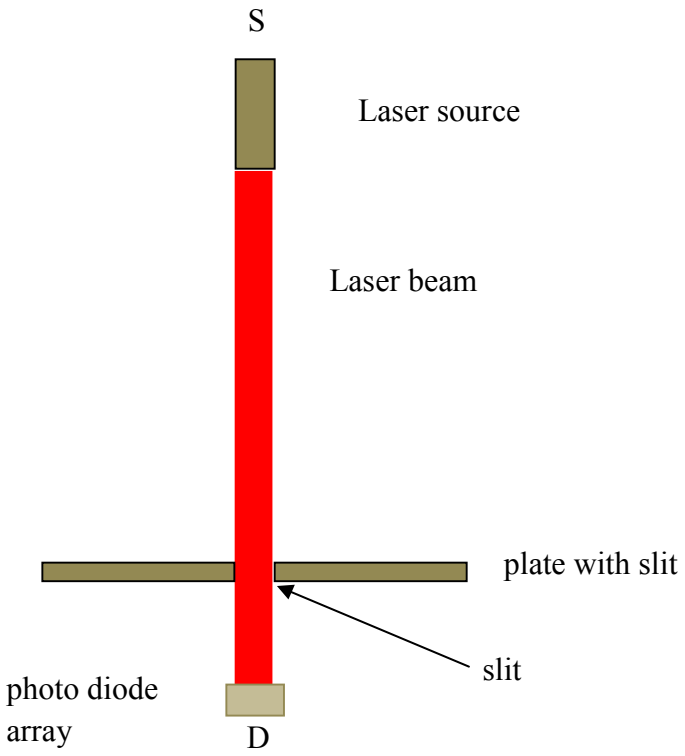
$$\sin \alpha = V_{abs} / c \quad \square \quad \alpha = \sin^{-1} (V_{abs} / c)$$

$$\Delta \approx (V_{abs} / c)\ D$$



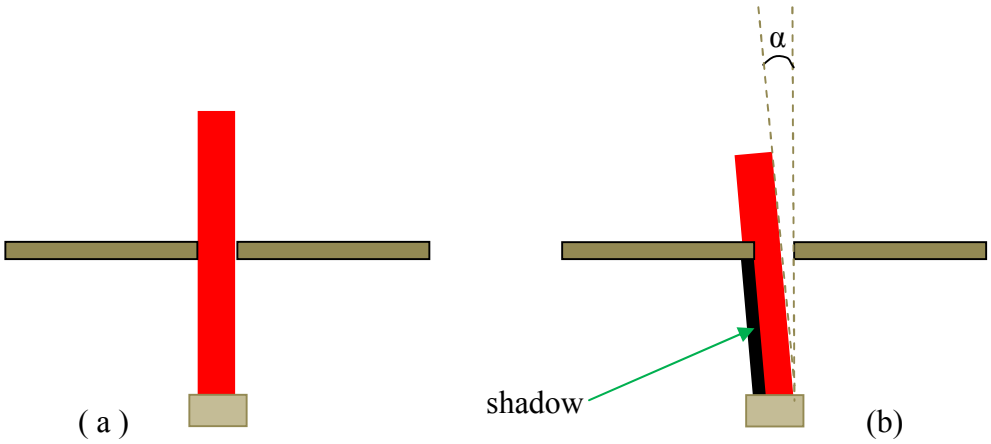
Let us see the experimental setup to detect absolute velocity with an isotropic light source.

The bending of light rays can be detected by placing a plate with a slit between a light source and an observer. A simple laser pointer can be used as the light source. The laser beam is first aligned with the slit and a photo diode behind the slit when there is no bending of the laser beam. Light rays will not bend if the light source is at absolute rest or if the source detector line is parallel to the absolute velocity. If the whole apparatus is then set into absolute motion, with source detector line orthogonal to the absolute velocity, then the laser beam will bend and part of it blocked by the plate and this can be detected as intensity variation by the photo diode..



If the whole apparatus is at absolute rest, or if the line connecting the source and the photo diode (line SD) is oriented parallel to the absolute velocity vector, there will be no bending of the light ray (the laser beam).

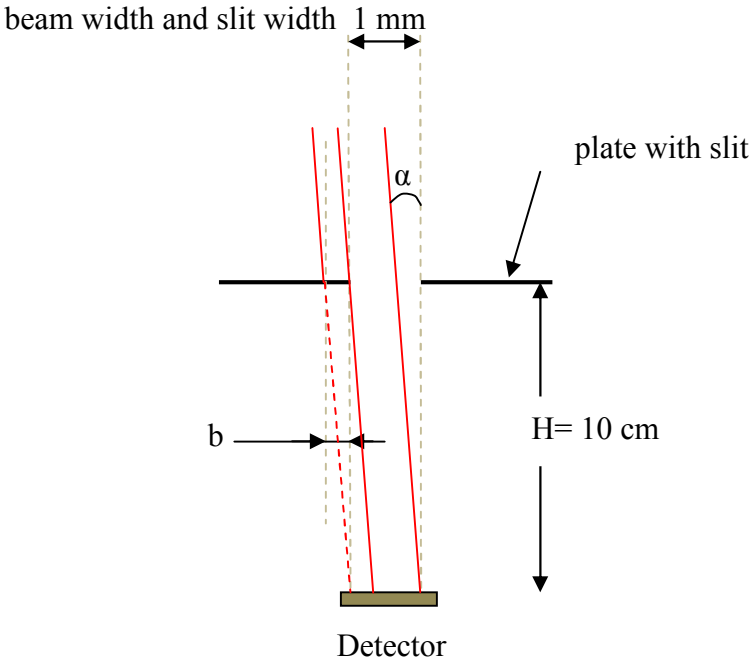
But when the line SD is orthogonal to the absolute velocity vector, the light ray will be bent and the angle of arrival α of the light ray will be different from zero as shown in the next diagram.



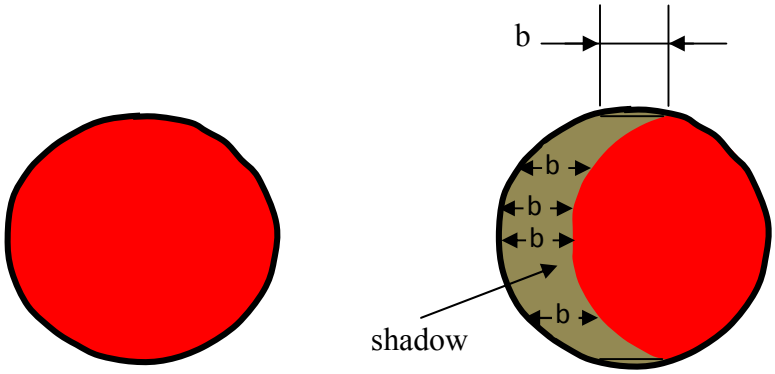
We can see that when the light is bent due to absolute motion, part of the light rays is blocked by the plate, creating a shadow and hence a decrease in intensity (quantity of light per unit area) of

light falling on the photo diode. By measuring the voltage output of the photo diode, it is possible to observe variation of light intensity with variation in absolute velocity and with variation in orientation of line SD relative to the absolute velocity.

An approximate analysis is as follows.



Suppose that the slit is circular.



The left diagram shows a bright circular spot on the photo diode which will occur when there is no bending of the light ray. The right diagram shows what the spot of the light ray on the photo diode looks like, with a shadow due to bending of the light ray. Note that the size of the shadow has been exaggerated, which is actually only about 16.56% of the total area of the circle for an absolute velocity of 390 Km/s of the Earth.

$$b / H = \sin \alpha = (V_{abs} / c)$$

$$\Rightarrow \quad b = H (V_{abs} / c)$$

If we take Earth's absolute velocity, V_{abs} = 390 Km/s , c = 300,000 Km/s

$$b = 100 * 390/300{,}000 \text{ mm} = 0.13 \text{ mm}$$

Area of the shaded (shadowed) area is:

$$dA_{sh} = b \, . \, dh \quad \Rightarrow \quad A_{sh} \approx 2 \int_0^r b \, dh = 2b . r$$

where r is the radius of the slit.

$$A_{sh} = 2 * 0.13 * 0.5 = 0.13 \text{ mm}^2$$

This is the area of the shadowed part.

The total area A of the circle is :

$$A = \pi D^2 / 4 = \pi * 1^2 / 4 = 0.785 \text{ mm}^2$$

Since we assumed an isotropic source, the intensity of the light falling is uniform, then we can calculate the percentage of change in intensity due to bending of the laser beam.

$$(A_{sh} / A) * 100\% = (0.13 / 0.785) * 100\% = 16.56 \%$$

This is a big change !

To measure absolute velocities, the instrument has to be calibrated first. It would be easier and more accurate to use this method than to try to determine analytically the change in intensity for a given absolute velocity and for a given orientation of line SD relative to the absolute velocity.

The calibration is done by recording the voltage output of the photo diode for different angles of the arriving light ray, by changing the position of the source physically relative to the slit and the photo diode, as shown in the next diagram. Then, when measuring absolute velocity, the angle α of the light ray corresponding to the voltage output of the photo diode is read from the calibration table. Once the angle α is obtained, the absolute velocity is determined from the formula:

$$\sin \alpha = (V_{abs} / c)$$

Remember that this formula applies for line SD orthogonal with the absolute velocity vector.

But there is problem with the method of calibration. For calibration, the apparatus needs to be at absolute rest so that the light rays from the source are radial and straight. Since the Earth is in absolute motion (390 Km/s), this method (calibration) is not practical.

So the only option becomes analytical method.

The procedure of measuring absolute velocity is as follows:

1. First align the source detector line (SD) to be orthogonal to the absolute velocity vector. This means that the line SD should be on a plane orthogonal to the absolute velocity vector.
How can we find this plane ? We use trial and error method. Rotation of the line SD in this plane will result in constant voltage output of the photo diode because the angle α will be constant; the bending of the light ray is constant. Rotation of the line SD in all other planes will result in variation of angle α , which will result in variation/ fluctuation of voltage of the photo sensor, as line SD is rotated in that plane.

2. Once the line SD is orthogonal to the absolute velocity vector, read the voltage output of the photo diode and try to determine the angle α analytically, from which absolute velocity is determined.
With this experiment, it is possible to determine the direction and magnitude of Earth's absolute velocity, hence confirm the validity of absolute motion.

I conceived this experiment several months ago after I fully understood the physical meaning of Apparent Source Theory (AST), which is bending of light rays and variable velocity of light relative to the source. It took me quite a long time to figure out the physical meaning of AST. I long thought about the possibility of bending of light rays as a physical meaning to the theory but was unable to understand it clearly and completely, so I was in doubt about its reality (bending of light rays). I had a hard time to figure it out clearly because the physical meaning of AST is quite hard to understand. On top of that, bending of light rays seemed to be an extraordinary claim. Even with such a vague understanding, I decided to do the above experiment. However, I was unable to acquire the components needed for the experiment in time and just continued to develop the theory.

In the mean time, I came across a paper [2] on the internet in which the author claimed to have observed bending of a laser beam due to Earth's absolute motion. This created a big motivation for me because I was then sure that bending of light rays is real. The very fact that bending of light rays is proved to be real enabled me to think more clearly to advance the theory and its physical meaning. Before long, I was able to fully understand the physical meaning.

Once I fully understood the physical meaning, I decided to do the experiment. This is a very easy, cheap yet vital experiment. However, unfortunately, again I had difficulty to get the components needed to do this experiment. It is not easy to make foreign purchases from my area. At last I decided just to publish the experiment as a proposal. At the same time I am trying to get the components and will hopefully do this experiment in the near future, with an accuracy just enough to confirm the Apparent Source Theory.

Conclusion

A simple experiment has been proposed. A positive result of this experiment confirms absolute motion and Apparent Source Theory.

Thanks to God and His Mother, 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, Henok Tadesse, Vixra
2. Ether Detection Experiment with a Laser, by Bent Kargaard, Wielsen, 2009, NPA