Absolute motion/ space is intrinsic, analogous to consciousness; absolute motion doesn't require absolute space

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Abstract

According to the paradigm that existed for centuries since the time of Newton, absolute motion was always viewed as relative to an objective universal absolute space (or the ether). In this paper a new paradigm will be presented: that absolute motion is intrinsic. This view is extremely subtle. An observer can observe the effect of absolute motion only if he/she shares a common velocity with the light source. An observer needs an instrument to measure his own absolute velocity. That instrument is a light source and a detector that share the same motion as the observer. Without such instrument he/she cannot measure his absolute velocity, because space is empty: i. e no objective , universal absolute exists relative to which one can measure their absolute velocity. The light source must move with the detector (or the observer) to detect absolute motion. This is fundamental ! Absolute motion doesn't require an objectively existing absolute space. A Sagnac device can detect absolute motion (rotation) only if it exists as a single unit: as a Sagnac device. A Michelson –Morley apparatus can detect only if it exists as a single unit : the MM apparatus. It is as if these devices have 'consciousness' towards absolute motion. The explanation has been presented in this paper.

In this paper, a review of the relation between the different theories already proposed by the author will also be presented.

Introduction

In the previous theories proposed by the author , the effects of relative and absolute motion have been discussed. In this paper, these theories will be reviewed and the relationships between them will be clarified.

We start by reviewing the theory of ´Relativity of EM Fields/ Waves´ . Then we will review the already proposed ´Dual and dynamic nature of space/motion´ (or Dynamic nature of absolute motion). The presence of Doppler effect without any motion of the observer relative to the source has been predicted. At last the new subtle paradigm about absolute motion/ absolute space will be presented and explained in detail.

Discussion

1. Motion of an observer directly towards or away from a light source will result in an apparent contraction of the EM field/wave towards the source or its expansion away from the source, respectively, resulting in Doppler frequency/wavelength shift. The speed of light remains unaffected by the speed of the observer. This has already been explained in detail

   (http://vixra.org/pdf/1302.0065v4.pdf)

2. Motion of an observer in the lateral direction (relative to a light source) will result in

   2.1 Transverse Doppler shift

   2.2 Apparent shift of the light source as observed by the observer

   Therefore, Relativity of EM fields/waves (constancy of light speed) is the cause of both effects!!! :

   - the phenomena of aberration of light
   - and the experimentally observed transverse Doppler effect (that was predicted by Special Relativity)

Relativity of EM Fields / Waves is a theory previously proposed by this author to explain the light postulate (constancy of the speed of light), one of the premises of special relativity theory. The constancy of the speed of light for all inertial observers is adopted but the hypothesis of length contraction and time dilation is rejected and this alternative theory (Relativity of EM Waves) was proposed .

(http://vixra.org/pdf/1302.0065v4.pdf)

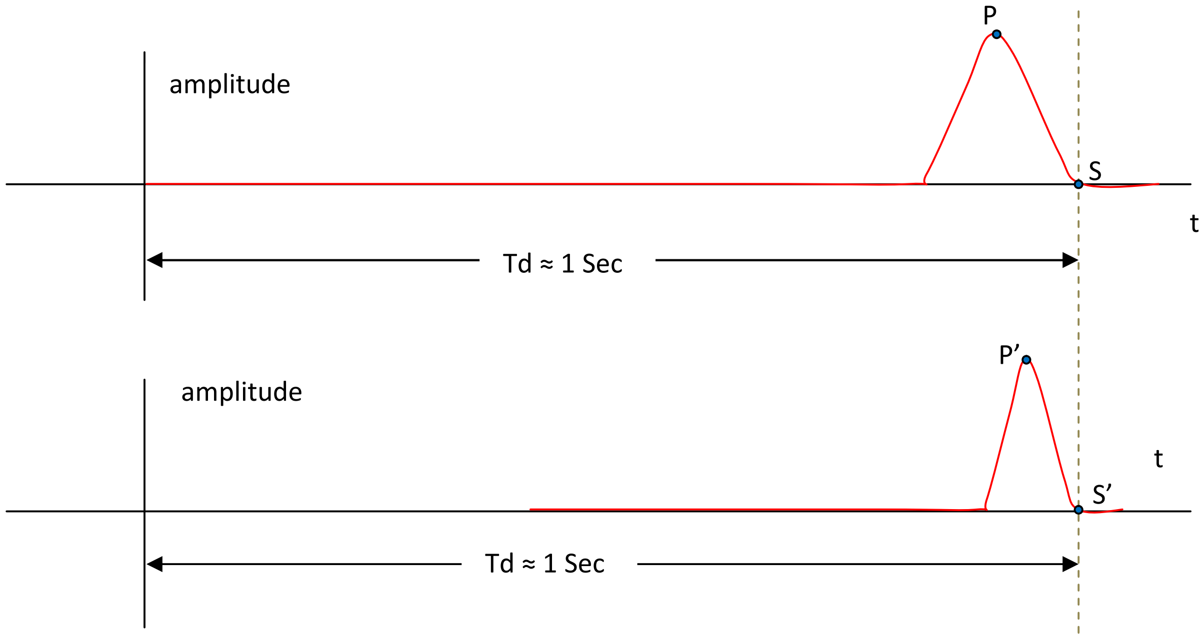
3. ***Proposed experiment to test the 'Relativity of EM Fields/Waves' theory.***

The theory of Relativity of EM Fields/ Waves can be explained as follows:
Imagine a stationary observer A at some distance from a light source S. Imagine another observer B moving with velocity V towards the source S. Assume that at t = 0 the light source emits a light

pulse. And at this same instant of time (t = 0) observer B is at the same point as observer A, but moving with velocity V towards the source.
The postulate in this theory is that both observers will detect the light pulse after the same time delay! Observer B doesn't detect the light pulse earlier than observer A (as one would normally expect because B is moving towards the source). This is due to an apparent spacial compression (contraction) or expansion of EM fields/ waves (if the observer is moving away from the light source), due to the motion of the observer relative to the source. If the envelope of the light pulse (a video pulse detected by a light detector) was saved and displayed on oscilloscope screens, the signal received at observer B would be a temporally compressed (Doppler shifted) form of the pulse received at stationary observer A. But both observers would observe the peak of the pulse envelope after the same delay, but the pulse width of the signal received at observer B would be narrower than the pulse received at observer A.

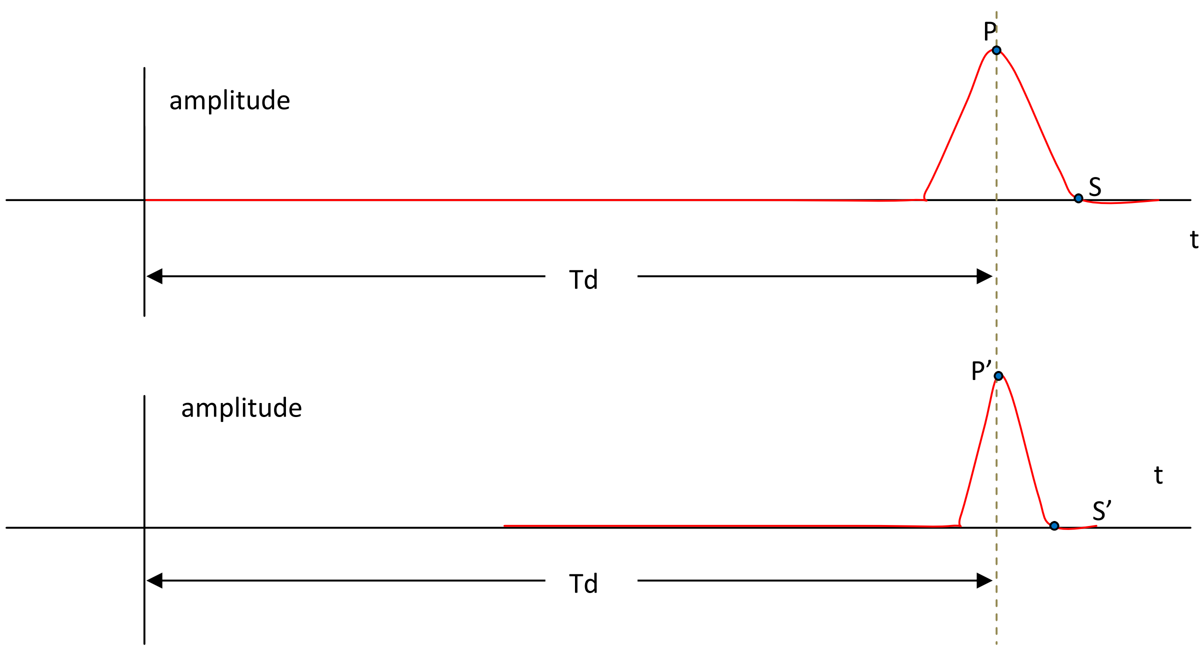
Thus an experiment can be performed to prove (or disprove) this theory. If both observers A and B detect the peak of the light pulse after equal delay, Td, (Fig.1) then this theory proves to be correct. However, the source should be far enough away from the observers, to get a conclusive result.
If the light pulse is emitted from a source (laser light) located on the moon, the delay will be about one second. Within one second an aircraft with a velocity of 500 m/s would travel 500 meters. It takes light about 1.6 micro seconds to travel 500 meters.
Thus, the observer (detector) on an aircraft moving directly towards the moon is normally expected to receive the light pulse (point ‘S’ on the waveform) 1.6 microseconds earlier than the stationary observer (detector) on the ground. According to the Relativity of EM Fields/ Waves theory, however, the detector on the aircraft would receive the light pulse exactly at the same instant that the pulse is received by the stationary detector on the ground.
The upper diagram represents the waveform of the light pulse envelope recorded at
the stationary observer A and the lower figure as recorded at (by) the moving observer B. (Fig.1)

Note that if the source was emitting point ‘S’ of the waveform at the moment (t=0) observer B was at the same position as observer A, then both observers would receive point S on the waveform simultaneously. (Fig. 1a)
If the source was emitting the peak point ‘P’ of the waveform at the moment (t=0) observer B was at the same position as observer A, then both would receive point ‘P’ simultaneously. (Fig. 1b)



P
amplitude
S
t
Td ≈ 1 Sec
P’
amplitude
t
S’
Td ≈ 1 Sec

Fig.1a



P
amplitude
S
t
Td
P’
amplitude
t
S’
Td

Fig.1b

4. Absolute (translational) velocity is dynamic .

Consider an MM device that has been in uniform rectilinear 'motion' for a long enough time. No fringe shift will be observed in this case. Imagine that the MM device is accelerated with some constant acceleration, a. Then absolute velocity, Vabs, will build up gradually (approximately) as a time integral of acceleration and a fringe shift will be observed and this increases as absolute velocity increases. Suppose that the MM device has been in acceleration, a, for a long enough time. Thus, the absolute velocity no longer keeps on increasing and it will be stabilized in some final value, Vabsf. Thus, for each value of acceleration ('a') there will be a final absolute velocity, V_{absf}, proportional to 'a'.

$$V_{abs} = V_{absf}\,(1 - e^{-t/\tau})$$

where $V_{absf} = K \,.\, a$,

where 'a' is acceleration, Vabsf is the final (steady-state) value of absolute velocity.

5. ***Doppler shift will be observed even with the source and observer at rest relative to each other. This will happen while absolute velocity is changing.***

5.1 For a constant acceleration, absolute velocity will change until it stabilizes in a final value. Thus Doppler shift will be observed before absolute velocity stabilizes, even with the source and observer at rest relative to each other. This is because, in absolute space, with a continuously changing absolute velocity, each light pulse has to travel longer or shorter distance before observed by the observer, as compared with the previous pulses. Note that 'absolute space' here doesn't mean a universal, static absolute space (such as in the ether theory), which doesn't exist (according to the 'Dual and Dynamic nature of space'). It means an imaginary absolute space (absolute reference frame) associated with every physical object/system. Each physical object/system has an associated absolute reference frame (space). Just as acceleration doesn't require absolute space (or the ether), so does absolute velocity not: absolute velocity doesn't require absolute space.

5.2 Absolute velocity will change also (obviously) if acceleration is changing. In this case also Doppler effect will be observed even with the source and observer at rest relative to each other.

6. ***Absolute motion is intrinsic (analogous to consciousness).***

Imagine an observer and a light source, both inside a space craft moving in space.

At first, suppose that the space craft has been in uniform rectilinear motion for a long enough time. Hence, as discussed above, the absolute velocity of the space craft would be zero. Suppose then that the space craft starts accelerating. Hence, as discussed previously, absolute velocity starts to build up. Now the observer and the source (as a system) have absolute velocity, Vabs. You can imagine them to be moving in some absolute space with velocity Vabs. Hence, the observer will measure the speed of light to be C+Vabs. If the source was placed behind the observer as seen in the direction of acceleration (absolute velocity) of the space craft, he/she would measure C - Vabs.

Now let us discuss intrinsic nature of absolute motion (velocity).
The observer O measures C + Vabs (or C - Vabs) because the source and observer share the *same* absolute motion (velocity). Note that I didn't even say 'equal' , I said 'same'. They share the same absolute velocity with the *same cause* : the absolute velocity of the space craft. Both share the same absolute velocity: the absolute velocity of the space craft.
Now let us further see the distinction in this theory.

Imagine that the source and observer are at rest relative to each other as in the above example, but they are not inside the same space craft this time; both are moving in space separately, independently. You can imagine each to be in two different, independent space crafts. But suppose that the two space crafts (and hence the source and the observer) *just happened* to be at rest relative to each other and both have *equal* accelerations and *equal* absolute velocities at all times, both equal to the acceleration and absolute velocity of the previous space craft. Here we see that there is no *connection* between the motion of the observer and the motion of the source. Their motions have separate causes. The two space crafts just happened to be at rest relative to each other, to have equal (*not same*) accelerations, equal (not same) absolute velocities. Imagine that even the distance between the source and the observer is equal to the distance between them while they were in the same space craft.

Therefore, the only fundamental difference here is that the motions of the source and the observer have different causes.

Now, what velocity of light will the observer measure ?!

The observer will *always* measure the velocity of light (from S) to be equal to C, irrespective of any motion (absolute or relative) of the two space crafts ! ! !

This is nothing new by itself because it is one of the premises of Special Relativity, but the exclamation marks are meant to show the contrast between the above two results.

Thus an observer can observe the effect of absolute velocity ($C \pm Vabs$) only if he/she shares the *same* motion (absolute velocity) with the light source. The source and the observer share the same motion when, say, both are inside the same space craft. They share the same motion also if they are in different space crafts which share a common motion. This can be done, for instance, by making the second space craft always follow the first space craft, by using a control system and a radio link between the two.

6. The series of reasonings was as follows.

- Einstein's (and Galileo's) notion of motion is correct, with some modification. All objects that have been in a uniform rectilinear motion <u>for a long enough time</u> *are* at absolute rest. Thus in steady state inertial conditions, all objects *are* at absolute rest. The difference of this view from Einstein's is that here we say the inertial objects *are* at absolute rest at steady state, while in Einstein's view 'every inertial observer/object *can consider themselves to be* at rest'.

In this theory the concept of *steady state* (dynamics) also is one of the key differences.

- Absolute motion is a *change* in state of motion of an object and has no connection with the motion of that object relative to other objects.

- If all inertial observers agree on the motion of an object then that motion is an absolute motion.

Thus all inertial observers agree on rotational motion of an object. All agree on the same angular velocity of that object. Thus rotational motion is always absolute.

- Translational motion is different. Not all inertial observers always agree on the same translational velocity of an object. However, all inertial observers will agree on the same translational acceleration of an object.

- Now we have to make a jump. If an object that has been in uniform rectilinear 'motion' for a long enough time *is* at absolute rest, then the acceleration of that object must result in absolute velocity (as a time integral of acceleration). All inertial observers will also agree on this velocity, at least for some time.

- But that absolute velocity which resulted from acceleration (as a time integral of acceleration) should not be permanent and static because, if every acceleration resulted in a permanent/static absolute velocity, we would observe absolute velocity in the Michelson-Morley experiment (didn't). Thus, it follows that absolute velocity must be dynamic (changing). Hence we arrive at the new theory: Dynamic Absolute Motion / Space. Absolute velocity builds up during acceleration and, if the acceleration lasts long enough, (absolute velocity) settles in a final steady-state value and (absolute velocity) will be discharged/decays gradually towards zero (with some time constant) if the acceleration ceases.

Note that after acceleration has ceased, the object will have an absolute velocity until it discharges/decays completely (with some time constant), even when the object is in an unaccelerated state of motion.

- Let us see a paradox that requires further development of the theory.

The Sagnac effect has always been the most difficult phenomena to be reconciled with any theory of relativity (and MM experiment).

We can easily account for the fringe shift in Sagnac effect by assuming an associated absolute space. The forwards and backward beams start from the same point in that absolute space and as the detector is in (absolute) motion towards the backward beam and away from the forward beam, the two beams will travel different distances before being detected at the detector and this can account for the observed phase (fringe) shift. This is the most straight forward explanation of Sagnac effect.

Imagine that a miniature MM device is mounted on and rotating with Sagnac device; the detector on the Sagnac device and the miniature MM device are mounted on the same mounting so that they share the same motion. We may even imagine that the same detector is part of both devices: the Sagnac device and the miniature MM device.

If the reader finds the above setup not clear, we may imagine another case. Imagine a gigantic

Sagnac device encompassing the orbit of the earth around the sun, with the detector part (and the mirror next to the detector) on the earth and the other three mirrors at appropriate points in space in the orbit of the earth (here we assume that the earth is not rotating on its own axis, for simplicity), with all parts of the device rigidly connected to each other, just as a real Sagnac device . Thus, the gigantic Sagnac device would be rotating with the angular velocity of the revolution of the earth around the sun.

Now two beams are transmitted, one in the forward direction and one in the backwards direction. At the detector we would observe a fringe shift that is proportional to the angular velocity. We can easily account for the fringe shift by assuming absolute space/motion. The earth (the detector) is in absolute motion towards the backward beam and away from the forward beam: hence a difference in path length resulting in a difference in phase and hence fringe shift.

Now let us also have a Michelson-Morley device on the earth ! Even at the same location where the detector of the gigantic Sagnac device is ! We wouldn't detect a fringe shift ! Both the detector of the Sagnac device and the MM apparatus always have the same motion because both are fixed to the earth. Then how can we account for this contrasting discrepancy?

This was a daunting paradox that resulted in , after exhaustive search , in a new paradigm that can replace the paradigm about absolute motion / absolute space that existed for centuries, since the time of Newton.

Intrinsic nature of absolute motion ! ! !

The way out of the above paradox is proposed as follows:

Absolute motion is ***intrinsic ,*** like consciousness . Absolute motion doesn't require an external, objective absolute space. If absolute motion is intrinsic, it follows that it is intrinsic to the device that is in absolute motion. The device must exist as a single unit.

All observers agree on the (absolute) rotation of a Sagnac device. Thus, all agree that a fringe shift should be detected. The fringe shift is a result of absolute rotation *of the device* , as a single unit; it is not due to rotation of the device relative to an objectively existing absolute space. We can imagine of an imaginary absolute space associated with the Sagnac device. The detector in the Sagnac effect is to be imagined as if it is moving in the absolute space associated with the device, in the analysis of Sagnac effect. If all observers agree on the absolute rotation of the whole device, then they should also agree on the (absolute) translation of the detector and the source.

We may also see the above in another way. If it was possible to used the same detector as part of a Sagnac device and an MM device, we wouldn't consider it to have the same absolute motion when we analyze the fringe shift on each device. The absolute motion of the detector as part of the Sagnac device stems from the absolute rotation of the Sagnac apparatus, where as, as part of the MM device, it stems from the absolute translational motion of the MM device (as a dynamic time integral of its (centripetal) acceleration, as discussed previously). All this is a result of the new paradigm: absolute motion is intrinsic.

A Michelson-Morley device that is accelerating will also acquire absolute velocity and hence a fringe shift . This absolute velocity is not due to any objective absolute space but results only from the time integral of acceleration, which doesn't require any objective absolute space.
We can imagine of an imaginary absolute space associated with the MM device.

An MM device will detect fringe shift if it is in absolute translational motion. And a Sagnac device will detect fringe shift if it is in (absolute) rotation.

There is no common, objective absolute space in which all experiments would be analyzed. Each physical object/ physical system has its own associated absolute space.
The Sagnac device (as a single system) has its own associated absolute space, even distinct from the absolute space associated with its parts.
The MM device, even if it is fixed to the same object (the earth) as the Sagnac device, will have its own associated imaginary absolute space as a single unit (as a single system). Thus it would be wrong to try to analyze MM experiment by assuming it to be in the same absolute space as the absolute space associated with Sagnac device.
The MM experiment (device) should be analyzed in its own associated absolute space and the Sagnac effect should be analyzed in its own associated absolute space.
With this notion, absolute motion is completely intrinsic.
We can see at the detector in Sagnac effect as being in absolute motion (in the absolute space associated with the device) only when we are analyzing Sagnac effect.

The absolute space/motion associated with physical objects/ physical systems is intrinsic to that physical object/ physical system. This is analogous to consciousness.

To make this distinction more clear, let us repeat the previous discussion.
Previously we stated that an observer can observe the effect of absolute motion (measuring C $\pm$ Vabs) only if he/she shares a common absolute velocity with the light source.

In the same way, imagine that the parts (the mirrors, the detector) of the gigantic imaginary Sagnac device we discussed earlier are not fixed rigidly to each other. Assume that all parts move in the orbit of the earth similarly as in the previous example. But their motion just happened to be as if they were connected together rigidly, by chance (or programmed). Therefore, there is no common cause for the motion of the 'parts'. What would one expect in this case? A fringe shift?
No ! This is because even if parts of a Sagnac device exist independently, the Sagnac device as a single unit doesn't exist ! Therefore no fringe shift would be detected. A fringe shift, if it exists, shows the rotation of the device. But the device doesn't exist! So fringe shift wouldn't exist also.

The Sagnac device exists only if all of its parts are made to share the same motion (rotation) caused by the same cause, i.e if their motion stems from a single cause. They will have the same cause for their motion if they are rigidly connected to each other or if the motions of all the parts are connected by control system through radio link.
Therefore, for absolute motion to be detected

1. The appropriate device (designed and constructed to measure absolute motion) must exist
2. The device must move absolutely

The same applies to MM device. An MM device can detect fringe shift only if it exists an MM device. If parts (the mirrors, the detectors) of an MM device came together in space just by chance (or programmed to be so, with no common cause for their motion), no absolute velocity would be detected even if they had equal accelerations. The parts of the MM device should be part of a single unit (an MM device) by being connected rigidly to each other, for an MM device to exist and detect a fringe shift. A fringe shift, if observed, would indicate the absolute rotation *of the MM device*.
If no MM device exists, then no fringe shift would be observed, even if the parts exist independently.
If the MM device exists, it would detect fringe shift. It will ‘perceive’ its own absolute motion.
A real MM device (not a simulated one) must exist and be accelerated to observe fringe shift.
Nature cannot be ‘fooled’.

This is analogous to consciousness. A conscious being perceives, feels only if it exists as a conscious being. For example, a dead cat cannot perceive because it no longer exists as a cat. The existence of the body parts of the cat alone doesn't result in a conscious cat.

7. Let us repeat some parts of the above discussion, to make the new paradigm even more clear. Imagine an inertial light source and an inertial observer, with independent motions. The observer will always measure the speed of light to be equal to C, irrespective of the relative motion between the source and the observer. If there is relative acceleration between the source and the observer, the observer will measure the speed of light to be different from C.

These have been discussed in two theories previously proposed by the author: 'Relativity of EM Fields/Waves' and ' General Relativity of EM Fields/Waves'.

If an observer and a light source have independent motions, the observer will observe only the effect of relative motion (as discussed in the two theories mentioned above) and cannot observe the effect of absolute motion.

One effect of absolute motion is measuring the speed of light to be $C \pm V_{abs}$.

The other effect is that the source S will not be at the center of the wave fronts.

The other related effect is the anisotropy of the speed of light relative to the source.

Thus, an observer who has motion independent of the motion of the source will not observe these effects. He/she will always observe the source S to be at the center of the wave fronts, irrespective of any motion (absolute or relative) (or acceleration) of the observer or the source.

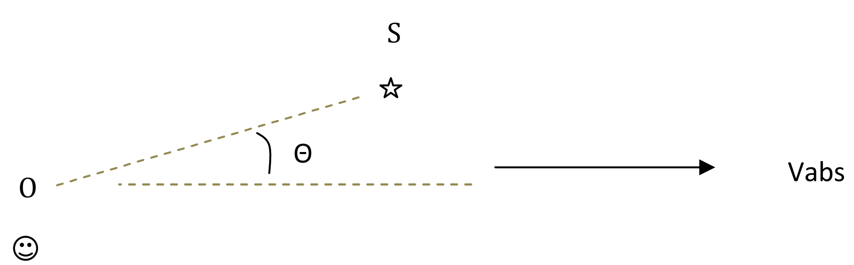
Even if an observer just happens to be at rest relative to a source that is accelerating (or a source that is in absolute motion), they cannot observe the anisotropy of the speed of light relative to the source. Thus an observer who is on an accelerating space craft can observe the anisotropy of the speed of light emitted from the space craft, but another observer whose motion is independent of the motion of the space craft but who just happened (by chance or programmed) to be at rest relative to the space craft cannot observe the anisotropy of the speed of light emitted from the accelerating space craft.

Thus it follows that the stars are always at the center of the light wave fronts. Therefore, the existing explanation for stellar aberration needs to be changed. Aberration effect can be explained by the ' Relativity of EM Fields/Waves' theory (and the constancy of the speed of light).

8. Imagine an observer O and a light source S, at rest relative to each other, both inside an accelerating space craft, with the source in front of the observer as seen in the direction of the acceleration .

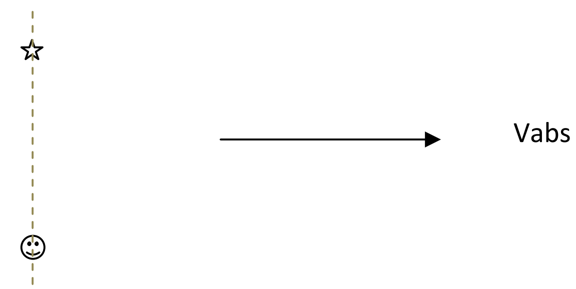
Previously we discussed that the observer would measure speed of light to be C+Vabs.
(And C-Vabs if the source was behind the observer)
Now, the question is:
What if the observer moves towards /away from the source with relative velocity, Vrel ? What velocity of light would he/she measure? He/she would measure the speed of light to be equal to C + Vabs, irrespective of the relative velocity Vrel !!! Therefore, for the positions of the source and the observer shown above, the speed of light is always a constant C + Vabs ! (if the observer was in front of the source, this would be C - Vabs).

What if the relative positions of the source and an observer is at an angle Theta relative to the acceleration (absolute velocity)?
He/she would measure : $C' = C + Vabs . \cos \Theta$



If the observer position relative to the source is lateral relative to the absolute motion (see fig. below), the observer would measure:

$$C' = (C^2 + V_{abs}^2)^{1/2}$$



Conclusion

Absolute motion has always been perceived and defined relative to an objectively existing, static, universal absolute space or medium (the ether). This paradigm existed for centuries since the time of Newton. Not only those who held the notion of absolute space were in this paradigm, but also those who rejected the notion of absolute space/motion were in the same paradigm. The new paradigm about absolute space/motion presented in this paper ('intrinsic absolute motion/ space') can replace the centuries old paradigm.

Always thanks to God and His Mother, Our Lady Saint Virgin Mary.

References

1.