Relativity Is Self-Defeated (3 of 3)

—Lorentz Factor, Aberration, and Ether

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Abstract Detailed analysis on the true nature of the aberration about a light source ends up giving us confidence on the existence of ether, which is the physical source of the Lorentz factor. Unless there is certain medium existing for the propagation of light, no stellar aberration is possible. Unfortunately, the conventional explanation on the observation of stellar aberration is misled even long before the debut of relativity, but relativity just galvanizes the misleading.

The conventional explanation about stellar aberration relies heavily on one equation, which is $\tan\beta = {}^{v}/_{c}$, where v is the orbital speed of the earth and c is the speed of light. Simple trigonometry mandates that this equation requires the existence of a right triangle that has a hypotenuse of value of $\sqrt{v^2+c^2} > c$. During the observation of stellar aberration, on the inertial frame attached to the corresponding telescopes, it is exactly along such a hypotenuse that the light path leading to the discovery of the apparent position of the star is found. As such, an observer directly facing the oncoming light inside the telescope cylinder must determine whether the light hitting his eye is traveling at speed c or speed $\sqrt{v^2+c^2}$. No known reason can support him if he chooses to claim that the light he sees is traveling at speed $\sqrt{v^2+c^2}$.

The observation on stellar aberration and the Ives-Stilwell experiment are traditionally thought to be solid evidence supporting relativity. A more thorough study on them actually found that they are physical evidence rejecting the validity of relativity. They, as solid physical evidence, also show that **time as one physical element is absolute**; time advancement has nothing to do with any clock movement. Unbelievably, relativity also has its own equations to "prove" that the temporal dimension in the universe is absolute.

With the invalidity of relativity displayed in the articles ***Relativity Is Self-Defeated*** *(1 of 3)* and *(2 of 3*) by this author, all the upcoming consideration in this article does not have any need to make special argument to exclude the interference from relativity.

Key Words frequency shift, ether, stellar aberration, lightbulb aberration, Lorentz factor, mirage, Ives-Stilwell experiment, Michelson-Morley experiment

1. Stellar Aberration

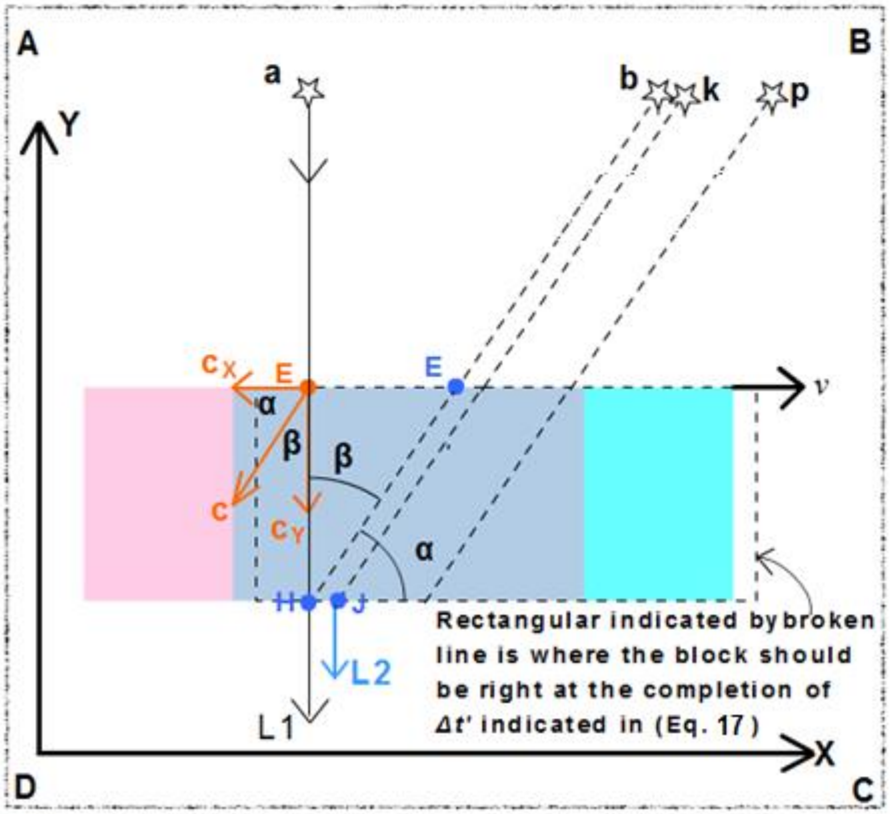


Fig. 1

In Fig. 1, space ABCD is assumed to be fully filled with some medium that enables light propagation and this medium is called ether as traditionally so. A coordinate system called X-Y and a motionless star are embedded with ABCD. A colored rectangular block is also fully filled with ether but is moving at speed *v* with respect to X-Y. With the nature of both areas so described, light must transmit through both areas with the same transparency. At any time before time t_1, the motionless block is shown in pink. At a later time t_2, the block in motion is at a new location and shown in blue. The grey portion shown in the picture is where the two blocks overlapping.

A light beam from the star at position ***a*** shines down along L1 and hits the block at point E (in ***red***) at time t_1. L1 is perpendicular to the ceiling of the block. If the block is not moving, or $v=0$, nothing will alter the progress of L1. Its loci "printed" on ABCD or on the pink block are identical. However, if the block is moving, upon the entrance of the beam at E, the block must detect a component c_X of the beam's movement in parallel to the X axis, and a component c_Y in parallel to the Y axis.

Conventionally, in studying stellar aberration, an angle β is recognized as being formed by the axis of a telescope cylinder and a line perpendicular to the earth's orbital plane. When the image of the star appears at the eye piece of the telescope, the value of angle β is considered to be determined by $\tan\beta = {}^{v}/_{c}$, where c is the speed of light and v is the orbital speed of the earth. Simple trigonometry mandates that a right triangle that warrants $\tan\beta = {}^{v}/_{c}$ would have to have a hypotenuse of a value of $\sqrt{c^2+v^2}$. In the observation of stellar observation, we must allow an inertial frame attached to the telescope, and this frame can be equivalently represented by the colored block in Fig. 1. Now, how ready are we going to accept that the light has a speed of $\sqrt{c^2+v^2}$ on the path prescribed by the light in the telescope frame, doubtlessly a slanted line pointing to the star's apparent position?

As the result of the movement of the telescope, loci caused by the light's propagation and printed on the block is displayed by line E(in blue)H in Fig. 1, where H is the exit point of the light leaving the block. Star aberration tells us that along line E(blue)H only the apparent position of the star is found, not the star. If we happen to be an ant living inside this telescope, E(blue)H, but nothing else, is the only light path enabling us to discover the existence of this star. So it is only reasonable for us to accept that light is moving at speed c on E(blue)H, the only light path in our observation. Subsequently, as shown in Fig. 1, we have $c_Y = c\cdot\cos\beta$, but **not** $c_Y = c$ as what is conventionally believed. Following this we have

$$c_X = c\cdot\sin\beta = -v \qquad (Eq.\quad 1)$$

and

$$c_Y = c\cdot\cos\beta = c\sqrt{1-sin^2\beta} = c\sqrt{1-\left(\frac{v}{c}\right)^2} \qquad (Eq.\quad 2)$$

Let h be the height of the block. With $v=0$, the time that the light beam needs to penetrate h is $\Delta t = {}^{h}/_{c}$. If $v \neq 0$, the time $\Delta t'$ that the light needs to penetrate h is

$$\Delta t' = \frac{h}{c_Y} = \frac{\Delta t}{\sqrt{1-\left(\frac{v}{c}\right)^2}} \qquad (Eq.\quad 3)$$

(*Point* to *Watch: Missing this time relationship begins relativity's improper confidence on length contraction and time dilation, but we are not going to dwell in this discussion here*)

(Eq. 3) tells us that, when the star light completes the penetration, it actually cannot exit at H as L1 but, due to the movement of the block, exits at some other point as L2 with a time delay. Let's call this exit point J. Upon the light's exiting, the block would have moved a distance of

$$d = v\Delta t' = \frac{v\Delta t}{\sqrt{1 - \left(\frac{v}{c}\right)^2}} \qquad (Eq. \quad 4)$$

Therefore the distance ΔL between H and J should be

$$\Delta L = \frac{v\Delta t}{\sqrt{1 - \left(\frac{v}{c}\right)^2}} - \; v\Delta t \qquad (Eq. \quad 5)$$

(Eq. 5) would thus tell the observer that the star's apparent position is at location **k** other than **b** in Fig. 1.

Upon entering the ether that is at rest with ABCD, c_X is canceled out by v, and c_Y takes the full magnitude of c. This results in a new path L2, which would continue at the direction parallel to L1 with speed c that is characterized by ether. However, L2 so resulted must suffer a time delay behind L1, which is a path that has experienced no movement of the colored block.

If $h=0$, meaning the floor and the ceiling of the block being the same, then $\Delta t = 0$, and then L2 exits at H, suffering no time delay and becomes identical to L1. However, this result also leads us to accept that aberration exists regardless of the thickness of the block. This equivalently tells us that for any observer moving in a direction that forms a nonzero angle with the light propagation, aberration is an inevitable phenomenon, regardless of his observation facility, either a piece of sophisticated equipment or directly his naked eyes. As such, for analysis genuine to the true nature, **the component c_X and c_Y have to be resolved at a point that is part of the moving detector.** This may even mean that this point could have been found at the cornea of the observer's naked eye.

The above paragraph presents to us the following picture: A light beam is on a direction perpendicular to the direction of the movement of a light detector. As soon as the light strikes at the detector, either the objective lens of a telescope or the cornea of a naked eye, **the light must change the direction** of its path to continue its propagation, and only on this new path does it keep its constant speed c (for simplicity, let's ignore any consideration brought up by refractive index of the material on the new path for now). As to how much change the new direction would end up depends on the detector's speed and the tilting angle of the intercepting surface of the detector. It is on the opposite extension of this light's new course that the apparent position of the light source is found. However, the image of the light source at the apparent position is merely a mirage. The physically real light does not exist on the section of the course between the apparent position and the point where the detector actually intercepts the light. To distinguish, for example, no photochemical reaction can be made happen within this section, but photochemical reaction can be made happen on the new course of the light propagation. We will call the section unable to cause photochemical reaction the mirage section for the rest of this article, while the section where true light exists the genuine section.

As a matter of fact, aberration can happen in any angle besides a perpendicular angle as illustrated in the stellar aberration. Because of aberration, the image in the apparent position would lose certain fidelity of the true appearance of the light source.

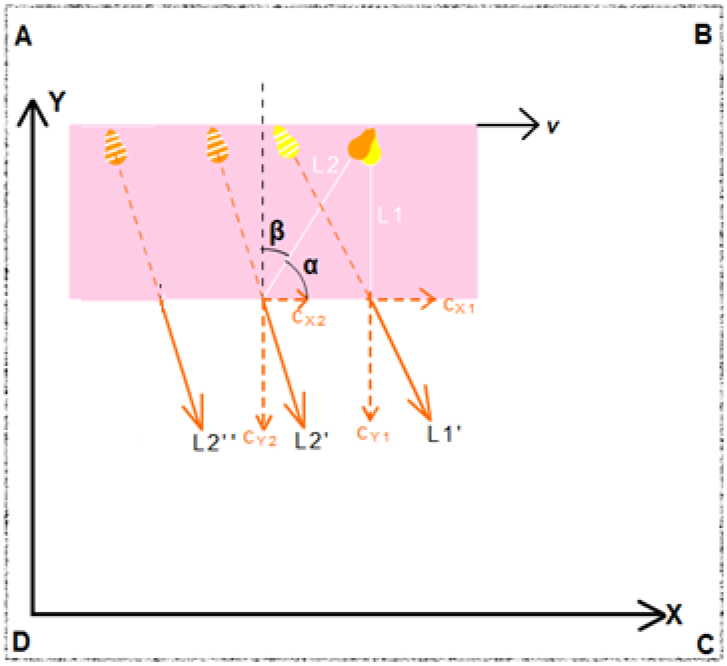


Fig. 2

Now, let's study a situation that can be considered to be reciprocal to stellar aberration. In Fig. 2, both the orange and yellow lightbulbs are moving together with the block at speed *v* with respect to space ABCD. L1 shining down from the yellow bulb is perpendicular to the floor of the block. Upon L1 exiting the block and entering ABCD, an observer stationary to ABCD, led by similar reasoning shown above for star aberration, will see a light path that can be regarded as being composed of two components, c_{X1} and c_{Y1}. Since $c_{X1} \neq 0$, this light path, named as L1', will not form a right angle with the floor of the block. However, it is on this L1' that speed of the light possesses the value of *c*. L1' will make the observer stationary to ABCD see the yellow bulb on the opposite extension of L1'. Of course, the bulb so appearing in his observation is only a mirage. We can call this phenomenon the lightbulb aberration. A reader can imagine himself seeing the lightbulb as a star hanging extremely high over in the "sky" of the block, and, because movement is relative, he can now further imagines himself moving to the left of the picture with respect to the sky that is part of the block. Then, we can all accept that stellar aberration in the previous explanation and the lightbulb aberration are identical in nature.

Similar analysis regarding the yellow bulb will make the observer of ABCD also see the orange lightbulb at a location on the opposite extension of L2'. However, L2' forms an angle that is different from what L1' forms with the floor. Upon entering ABCD, the horizontal component c_{X2} of the light path is determined by

$$c_{X\,2} = v - c\cos\alpha \qquad (Eq. \quad 6)$$

L2' will be perpendicular to the floor only if $c_{X\,2} = v - c\cos\alpha = 0$. Regardless of what angle L2' forms with the floor, only on this path L2' does light progress with the exact speed of c after it leaves the block. If the block has a nonzero thickness, according to (Eq. 5), L2' would not have been what the observer sees but L2". If the thickness is zero, then L2' and L2" are identical.

In all this analysis, the image appearing as a mirage must disappear once the light path delivering this phenomenon moves out of the vision of the observer. If the light source and the observer are moving on two different straight lines with respect to each other, the observer must constantly adjust the angle of the telescope to arrest the mirage. The reason that we on earth can continuously see aberration of the same star is because of the earth's movement on a close orbit, which is centered about the sun.

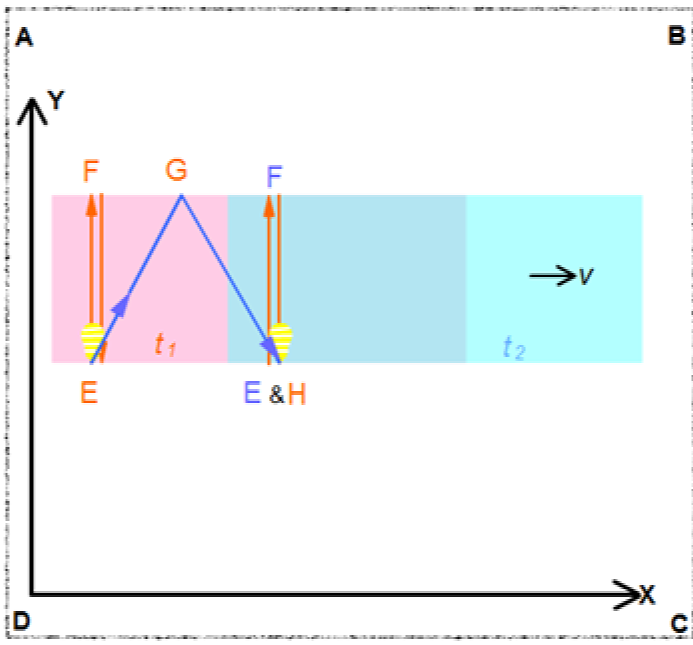
What we are doing in the stellar aberration study is like this: a telescope is lying on the surface of a huge cone and pointing straight up toward the apex (well, nearly) of the cone. This apex is where the star is, and is also the center of the bottom of a small cone, which is pointing upside down in relation to the telescope's huge cone of movement. The bottom of the small cone is a circle traced out by the apparent position of the star. If the star happens to be on the earth's orbital plane, the huge cone is flattened out. Then, the telescope would always have to point at the center of the circle that is formed by the earth's orbit. If the circle is big enough, certain angle of constant value between the telescope axis and the radius of the circle must be formed for the star to have a chance to appear forever at the lenses of the telescope. Then the apparent position of the star would trace out a small circle surrounding the star on the plane. If the earth's orbit is an open orbit, this angle will not be a constant one but must be adjusted constantly. Otherwise this star must sooner or later disappear from the sight of the observer.

Now, after all this discussion on aberration, let's review one critically important scenario with which, due to a fallacious assumption, relativity supporters promote the legitimacy of the idea of time dilation. After the true nature of this scenario hid by aberration is unveiled, we will find no difficulty to return the absoluteness back to the physical element that is called time.

2. Time Is Absolute to Both the Observers on the Train And on the Ground

Let's recall this relativity's popular scenario of "thought experiment": A flashlight bulb in a moving train sends a light pulse at instant t'_1 straight up toward the ceiling, and after reflection, this pulse comes back at t'_2 to the point where it was emitted. Both instants t'_1 and t'_2 are registered by a clock moving with the train. The path of the pulse so seen by the train observer is represented in red lines in Fig. 3. Seeing the propagation of the same pulse, an observer on the ground, according to relativity's conjecture, would describe that the pulse starts its journey at instant t_1 from point E(in red) toward G, the point of reflection, then reaches and ends at H at instant t_2 . Both instant t_1 and t_2 are registered by a clock on the ground. Then, for the ground observer, relativity leads itself to a conclusion shown as

$$\frac{t'_2 - t'_1}{t_2 - t_1} = \sqrt{1 - \left(\frac{v}{c}\right)^2} \qquad (Eq. \quad 7)$$



The same block is shown in pink at time t_1 and blue at t_2. The grey area is where the two blocks overlapped.

Fig. 3

Right away, with all the preparation we have had about aberration, we can confidently claim that the ground observer is never able to see how the pulse propagates except at some restricted locations: To see the light pulse, he must locate himself directly on the course of the light's propagation so that he can intercept either the true image of the bulb like the observer on the train or the mirage of the lightbulb like the observer viewing the stellar aberration. All this is based on some very simple facts like the following: An observer can see light coming from star A or star B, but he can never see any light traveling between star A and B. To see the light traveling between star A and B, he must have his light detecting facilities placed between A and B, either his naked eyes or some kind of instrument. Likewise, for two light beams from the same star but forming a nonzero angle between them, he can only see either one of them at a time, but unable to see both of them at the same time. These basic facts must bring out skepticism about the legitimacy of (Eq. 7), which is based on a fallacious assumption that an observer can see the light beam without placing himself on the course of the light's propagation. Genuinely, the ABCD observer in Fig 3, or equivalently the ground observer, cannot stay anywhere in ABCD and still be able to detect the light. For simplicity, let's begin with only the examination of the light path E(red)G in Fig. 3 , which is repeated in Fig. 4.

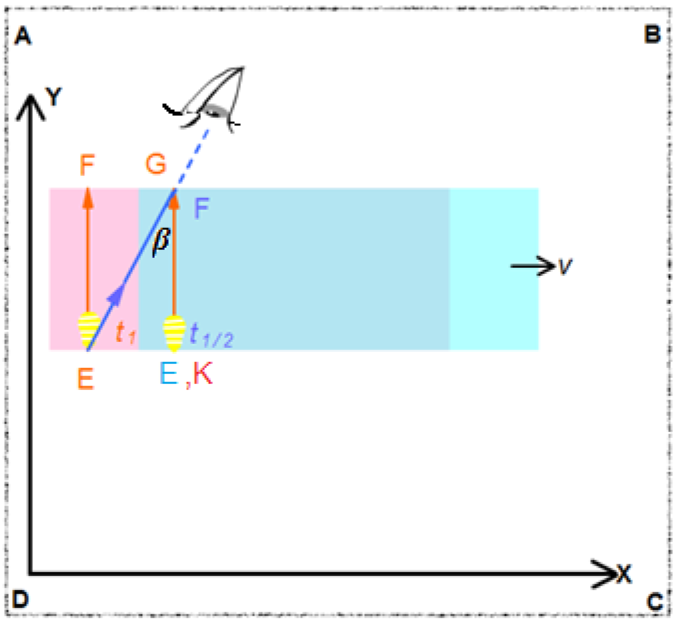


Fig. 4

(Before we go any further, though, we must clarify one thing. On earth, we do always see some light beams without directly locating ourselves facing the light beams on coming, just like we can see a light beam from certain spotlight in the night sky but standing at a distance on earth from the spotlight. That this is possible is only because of the light scattering action of many tiny particles such as dusts. In such situation, all tiny particles on the path of the light beam just reflect the light beam at all possible angles, and some of the reflected light at certain angle is able to invade our vision. Now, the light coming to our vision is from innumerable sources other than just one, i.e., the spotlight.)

In Fig. 4, point G belongs to ABCD and F(in blue) belongs to the blue block but they share each other at the instant the light pulse hits F, the point of reflection. Comparing the light path so presented with the analysis given to L1 and L1' in Fig. 2, we would easily conclude that the actual light path, by which the naked eye stationary to ABCD discovers the existence of the bulb in Fig. 4, is along the broken line (or equivalently the solid L1' in Fig. 2). The eye of the ground observer would not see the light at anywhere else other than that. At the instant the observer conceives seeing the bulb at E(red), what he sees is only the apparent position of the bulb, a mirage. At the same instant, the bulb's actual location should have been E(blue) or K(red).

To the observer at rest with the bulb, or the train, the bulb's position is never a mirage but forever real to him. So, with a time duration $t'_2 - t'_1$ properly registered by his clock, he can instantaneously and simultaneously see the creation of two graphics: (1) line E(red)F(red) "printed" on his train frame and (2) line E(red)G, a real graphic printed on ABCD where the ground observer stays. While the length of line E(red)F(red) can be found as $|\text{E(red)F(red)}| = c(t'_2 - t'_1)$, line E(red)G can be found as $|\text{E(red)G}| = v_{EG}(t'_2 - t'_1)$, where v_{EG}, referring to Fig 4, is so determined:

$$v_{EG} = \frac{\sqrt{|EF|^2 + |E(red)K|^2}}{t'_2 - t'_1} = \frac{\sqrt{[c(t'_2 - t'_1)]^2 + [v(t'_2 - t'_1)]^2}}{t'_2 - t'_1} = \sqrt{c^2 + v^2} \quad (Eq. \quad 7)$$

(Eq. 7) shows that v_{EG} is determined by only two elements, c and v, which are commonly shared by both frames. Therefore, v_{EG} is good to the observer of both frames.

To the observer staying with ABCD, E(red)G is a line of real graphic on his frame and the creation of E(red)G must have taken some time interval between certain instants t_1 and t_2 that are recorded by his clock. However, he must be aware of one critically important fact: By the time he sees the mirage of the lightbulb, the creation of E(red)G would have completed. Depending on the distance between the block and his light detecting facility, he may find E(red)G right at the instant of t_2 or later, but can never find it before t_2. While the observer in the train can instantaneously watch the entire process of the creation of E(red)G, the observer of ABCD cannot. He can only find how E(red)G has expanded in his frame **in history**! Assigning $t_1 = t'_1$, when the expansion reaches G, examining the history, this observer of ABCD can have

$$|E(red)G| = v_{EG}(t_2 - t_1) \qquad (Eq. \quad 8)$$

As mentioned above, v_{EG} is a speed true to both observers, because it contains only the elements but nothing else that are commonly shared by them. Since line E(red)G and v_{EG} are two quantities the observers in both frame agree and share , they must commonly have:

$$v_{EG}(t'_2 - t'_1) = |\text{E(red)G}| = v_{EG}(t_2 - t_1) \qquad (Eq. 9)$$

The left end of (Eq. 9) is a conclusion made by the observer on the train, and that on the right side is made by the ground observer. So, (Eq. 9) must lead them both to:

$$(t_2 - t_1) = (t'_2 - t'_1) \qquad (Eq. 10)$$

(Eq. 10) simply tells us that time advancement has nothing to do with the movement of any clock. With $t_1 = t'_1$, the consequence of $t_2 = t'_2$ is natural and inevitable — **Time as a physical element is therefore absolute**!

After the light pulse being reflected by the ceiling, the ABCD observer must lose the sight of the light. To see the same pulse again, he needs to go to the other side of the block, or beneath the floor of the moving train, to meet the course of the reflected pulse (Fig. 5). There, the spot of the reflection, point G, would be a mirage to him when he conceives seeing it. At this instant, the actual location of the reflection spot marked on the block but printed as a history record on ABCD should have been at F(blue). Following the reasoning done for the path of E(red)G, he will come to another exact relationship shown in (Eq. 10) concerning time advancement and the absoluteness of time as a physical element.

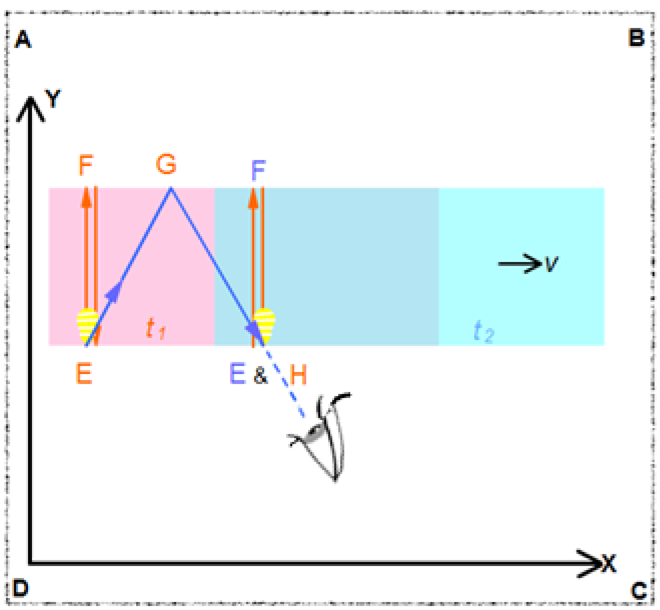


Fig. 5

With (Eq. 10), that time is absolute is affirmed. Immediately following this affirmation is that length as a physical element must also be absolute. This is simply because length is one of the only two physical elements in the speed expression. If time is absolute and speed is unique, length cannot escape from being absolute. Please the scientists be merciful to our common sense.

3. The True Nature of Frequency-Shift Shown in the Ives-Stilwell Experiment

In Fig. 1, on the path Hb leading to the discovery of the apparent position of the light source, there is only one section, the HE section, on which light is physically propagating, while the other section, Eb, is a mirage section, on which, as mentioned before, no photochemical reaction can be made happen. If the height of the block *h* shrinks to zero toward point H, the entire line Hb would become a mirage section, and the light as a physical entity will propagate at speed *c* only after it leave point H. With *h=0*, and if the distance of the vertical line aH=s, the length of Hb is then

$$|Hb| = \frac{s}{\cos\beta} = \frac{sc}{\sqrt{c^2 - v^2}} \qquad (Eq. \quad 11)$$

(Eq. 11) simply tells us that, because of aberration, a light detector would always conceive an *instantaneous image* of the moving light source existing at a distance **larger** than the actual distance. As we have always emphasized, this image is a mirage.

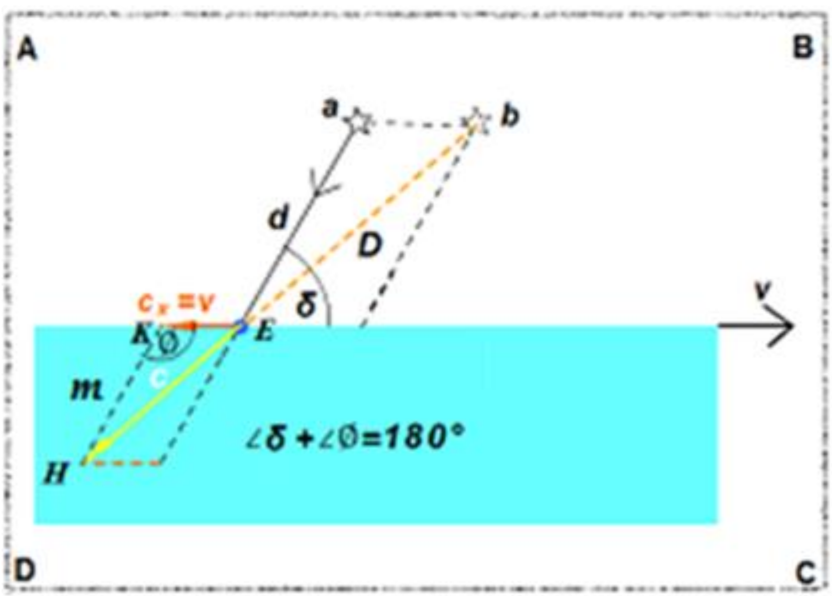


Fig. 6

Now, let's consider a case that is more general. In Fig. 6, the star light beam enters the moving block at an angle of δ, and results in a new course represented by the yellow line on the blue block. It is on this yellow line that a true light travels at speed *c*. From ΔEKH , we have

$$c^2 = c_x^2 + m^2 - 2mc_x \cos\emptyset \qquad (Eq. \quad 12)$$

Because of $\delta + \emptyset = 180^\circ$, and $c_x = v$, (Eq. 12) leads to

$$m = -v\cos\delta \pm \sqrt{c^2 - v^2\sin^2\delta} \qquad (Eq. \quad 13)$$

For obvious reason, only the " + " sign is kept, so we actually have

$$m = -v\cos\delta + \sqrt{c^2 - v^2\sin^2\delta} \qquad (Eq. \quad 14)$$

The proportional relationship between the two similar triangles ΔEKH and ΔEab leads to

$$\frac{D}{d} = \frac{c}{m} = \frac{c}{-v\cos\delta + \sqrt{c^2 - v^2\sin^2\delta}} \qquad (Eq. \quad 15)$$

where D is the length of the mirage section of the light path "seen" by an observer moving with the blue block.

If $\delta = 90^\circ$, (Eq. 15) leads to $D = d\left(c/\sqrt{c^2 - v^2}\right)$, which is an identical result shown by (Eq. 11). If $\delta = 0^\circ$, we have

$$D = d \cdot \frac{c}{c - v} > d \qquad (Eq. \quad 16)$$

At this point we must be aware of one fact that, for any value of angle of δ other than $\delta = 0^\circ$, after striking at point E in Fig. 6 and entering the block, the true light path must separate from the path that is an extension of line aE, the original light path. Indeed, it is because of this separation that enables the discovery of transverse Doppler Effect. However, the separation will not happen for $\delta = 0^\circ$. Instead, the true light path and the extension line that is equivalent to the aforementioned aE must forever merge in the same direction. While the mirage can stay in the detector's interception for only a limited time for all $\delta > 0^\circ$, the mirage can stay in the detector's interception forever for $\delta = 0^\circ$ and for as long as the light source not yet colliding with the detector.

If d represents a wave length of the genuine light path, (Eq. 16) tells us that the wave length on the corresponding mirage section is $D > d$. This is very important for us to understand the nature of the Ives-Stilwell equations.

Let's briefly review the Doppler Effect equations before we go further.

The traveling speed c of a wave train moving through a medium is a fixed value that is characterized by the property of this medium. (1) If the medium and the wave source of frequency f' are kept at rest with respect to each other, an observer moving toward the source at speed v will receive a frequency as $f = f' \cdot \frac{c+v}{c}$. If moving away, he gets $f = f' \cdot \frac{c-v}{c}$. (2) If the medium and the observer are kept at rest with respect to each other, then, a source of frequency f' moving toward an observer at speed v will make him detect a frequency as $f = f' \cdot \frac{c}{c-v}$; if moving away, the source will make him detect a frequency as $f = f' \cdot \frac{c}{c+v}$.

In Fig. 7, a light source of frequency f' at speed v is moving toward the light detector. For the light path generated by the light source, we can easily understand an observed frequency so generated should have a frequency $f_1 = f' \frac{c}{c-v}$. However, from all the previous preparation about aberration, we should also expect another frequency to have been observed because of the existence of a mirage, whose existence is inevitable. A light path leading to the appearance of a mirage always has one genuine section and mirage section. On the genuine section, and only on the genuine path, speed of light retains its characterized speed c. A speed so perfectly retained makes the distance shortening between the detector and the mirage to appear as if the shortening had been caused by the detector approaching the mirage, resulting the frequency to be observed as $f_2 = f' \frac{c+v}{c}$.

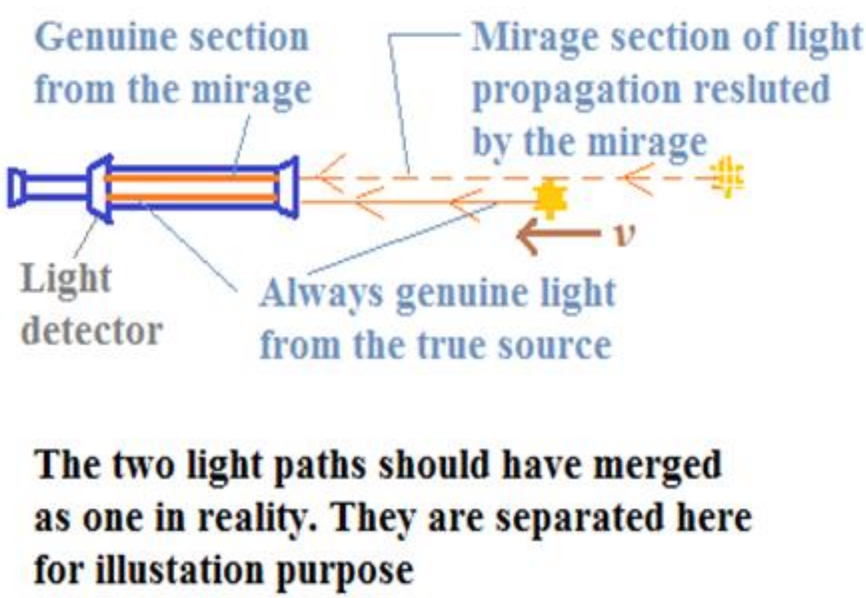


Fig. 7

Had f_1 and f_2 been from two genuine sources, they must interfere each other at where they both genuinely cast at. The interference of two wave trains can be resulted by either frequency modulation or amplitude modulation. However, since f_1 and f_2 are commanded by one genuine source, frequency modulation should have zero chance here. The zero chance of frequency modulation is indeed evidenced by a single color instead of a continuously varying color appearing in the observation.

Since both f_1 and f_2 are generated by one single source, no argument can support that the amplitude associated with one frequency is larger than that with the other. So, when amplitude interference occurs, the equal amplitude between them must result in 100% modulation. For f_1 modulating f_2 , we end up with

$$f_A = (1 + f_1)f_2 = f_2 + f_1 f_2 \qquad (Eq. \quad 17)$$

For f_2 modulating f_1 , we end up with

$$f_B = (1 + f_2)f_1 = f_1 + f_1 f_2 \qquad (Eq. \quad 18)$$

Since only one frequency displays as being observed in the Ives-Stilwell experiment, so only what is commonly shared by f_A and f_B ends up being shown. The term commonly shared by f_A and f_B is $f_1 f_2$ contained in (Eq. 17) and (Eq. 18). So we can have full legitimacy to use one single value f in place of f_A and f_B such that f has the mathematical equivalence representing $f_1 f_2$.

It is indisputable that both original frequency components are actually sustained by the energy that has otherwise only generated f_1 . Therefore, after some energy must be dissipated for the appearance of another frequency f_2 , f_1 must somewhat suffer and end up appearing with a lower frequency to match a new but lower energy state. This suffering is to be evidenced by the new frequency f and results in $f < f_1$. On the other hand, on the path connecting with the mirage, the wavelength on the genuine section is smaller than that on the mirage section; smaller wavelength means higher frequency. So, we then expect the new frequency f associated with the genuine section to bring out $f > f_2$. Subsequently, the common term shown in (Eq. 17), (Eq. 18), the uniqueness of f , and the relationship $f_1 > f > f_2$ then all brings in an equivalence shown as $f^2 = f_1 f_2$. Consequently and no more than natural, we have the following outcome:

$$\begin{aligned} f^2 &= f_1 f_2 \\ &= \left(f' \frac{c}{c - v}\right)\left(f' \frac{c + v}{c}\right) \\ &= f'^2 \left(\frac{c + v}{c - v}\right) \qquad (Eq. \quad 19) \end{aligned}$$

Then, inevitably,

$$f = f' \sqrt{\frac{c + v}{c - v}} \qquad (Eq. \quad 20)$$

Blue shift for the Ives-Stilwell equation is hereby confirmed with (Eq. 20). An equation for red shift can be arrived at with similar reasoning and shown as

$$f = f'\sqrt{\frac{c-v}{c+v}} \qquad (Eq. \quad 21)$$

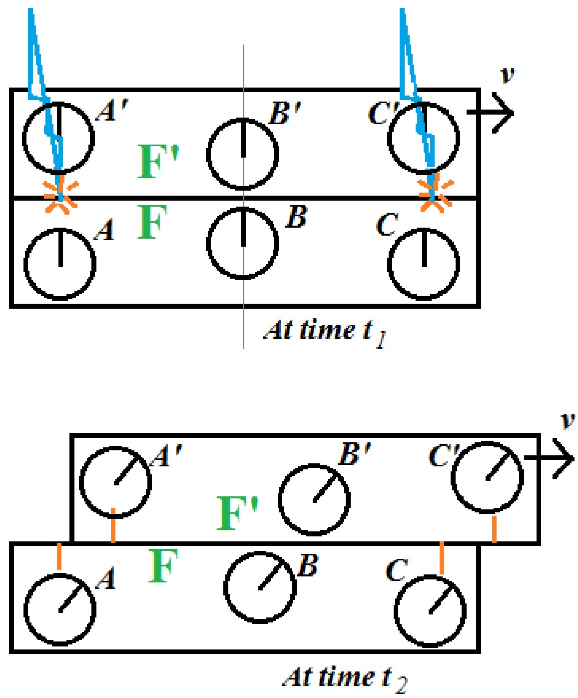
Since relativity as a theory shows being so self-defeated, it has no credit to offer valid verification on anything. Indeed, as shown by (Eq. 18) and (Eq. 20) in the article ***Relativity Is Self-Defeated*** *(2 of 3)—In Terms of Physics* by this author, relativity even ends up disastrously forcing $v=0$ in the equations summarized by the Ives-Stilwell experiment. Therefore, because of relativity's failure, data shown in the Ives-Stilwell experiment can inevitably be said to have stayed as empirical data and (Eq. 20) for blue shift and its counterpart (Eq. 21) for red shift stayed as empirical equations the entire time ever since this experiment is performed in 1938. Now, with the frequency modulation explanation, we can say that the Ives-Stilwell equations are theoretically confirmed.

As what we have shown in this article, the key for the Ives-Stilwell equations to be theoretically confirmed is the 100% reliance on the existence of a medium serving as the energy conveyor for light. Such reliance allows us to come back to common sense and use "classic treatment" in exploring the puzzles regarding light propagation. The so called common sense has been accompanying with human beings all their generations, and the classic treatment has been so laid for us ever since all those great minds such as Euclid, Archimedes, Copernicus, Galileo, Kepler, Newton, Faraday, Maxwell and many more pioneered the research in mathematics and physics. Has human beings found any reason why such classic treatment must be given up only because new discovery seems keeping a distance from the comprehension of a certain group of people?

Through all our derivation we find that the Lorentz factor is nearly omnipresent. In some cases, its appearance is because of the need of geometry in the deduction, such as in the stellar aberration analysis. In some cases, its appearance nearly has nothing to do with geometry, such as in the process of confirming the Ives-Stilwell equations. In some cases, the need for its appearance is in between, such as in the study of lightbulb aberration. Nevertheless, its appearance is so unshakable. Now, we may have seen enough how aberration necessarily and sufficiently evidences the physical existence of a medium for light conveying and how the Lorentz factor must potentially accompany with the conveyance of light. The Lorentz Factor thus in turn serves as an ironclad manifesto to galvanize in theory the existence of a medium for light propagation. Without this medium, light cannot propagate, but with this medium, the light's propagation must be invariably characterized with a constant speed and potentially presents the phenomenon of aberration for the light source in our observation.

The medium so mentioned here has been traditionally called ETHER or AETHER by scientists of many generations!

4. Simultaneity



Picture is drawn according to relativity's ideas but clock advancement is displayed according to "classic" understanding——space and time are independent from each other and absolute.

Fig. 8

Now, we would like to wade into another "thought experiment" and see how, with fallacious assumption, it helps relativity to promote its version of simultaneity. In Fig. 8, at time t_1 , two lightning bolts are seen simultaneously striking at two different locations, A and C, that have equal distance from observer B on the stationary frame F. Since frame F' is moving, according to relativity, observer B' should have seen the lightning bolts striking at F' at different instances.

Even before any quantitative consideration is given, we should already see the discrepancy of this thought "experiment". If the observer on frame F sees the same color from both lightning bolts, the observer on frame F' must see two bolts of different colors. The bolt he is approaching should appear bluer than the other, which should appear redder to him. How do both observers judge things being the same if they could not even settle between them about the colors of the bolts they see?

Suppose the observer next to clock B is at the origin of his frame with equal distance $|a|$ from each striking locations where clock A and C are respectively found. If clock B and B' face each other on the same line at instant t_1, relativity would predict that a clock called A' on frame F' can be found matching t_1 with $t_1^{A'}$, where

$$t_1^{A'} = \frac{t_1 - {}^{v(-a)}/_{c^2}}{\sqrt{1-({}^{v}/_{c})^2}} \qquad (Eq. \quad 22)$$

For another instant t_2 shown by clock B, we can have the following instant from Clock A' to match

$$t_2^{A'} = \frac{t_2 - {}^{v(-a)}/_{c^2}}{\sqrt{1-({}^{v}/_{c})^2}} \qquad (Eq. \quad 23)$$

As far as clock A' is concerned, we could have

$$t_2^{A'} - t_1^{A'} = \frac{t_2 - t_1}{\sqrt{1-({}^{v}/_{c})^2}} \qquad (Eq. \quad 24)$$

Now, simultaneity on frame F must require $t_2 - t_1 = 0$, but non-simultaneity on F' must require $t_2^{A'} - t_1^{A'} \neq 0$. Both requirements must force (Eq. 24) to appear as

$$nonzero = \frac{0}{\sqrt{1-({}^{v}/_{c})^2}} \qquad (Eq. \quad 25)$$

No mathematical principle can be found supporting the above equation that is so inevitably led to by relativity's simultaneity claim. Therefore, this claim must destroy itself.

From the point of view of the observer on frame F', corresponding to any instant $t_1^{A'}$ found from his A' clock, the instant t_1 from the clock on another frame matching $t_1^{A'}$ will be found as

$$t_1 = \frac{t_1^{A'} + {}^{v(-a)}/_{c^2}}{\sqrt{1-({}^{v}/_{c})^2}} \qquad (Eq. \quad 26)$$

.

For another instant t_2 , the observer on frame F' would find

$$t_2 = \frac{t_2^{A'} + {}^{v(-a)}/_{c^2}}{\sqrt{1-(^v/_c)^2}} \qquad (Eq. \quad 27)$$

So, (Eq. 26) and (Eq. 27) together give us

$$t_2 - t_1 = \frac{t_2^{A'} - t_1^{A'}}{\sqrt{1-(^v/_c)^2}}$$

or

$$\frac{t_2^{A'} - t_1^{A'}}{t_2 - t_1} = \sqrt{1-(^v/_c)^2} \qquad (Eq. \quad 28)$$

However, (Eq. 24) can lead us to the following:

$$\frac{t_2^{A'} - t_1^{A'}}{t_2 - t_1} = \frac{1}{\sqrt{1-(^v/_c)^2}} \qquad (Eq. \quad 29)$$

Multiplying the corresponding sides of (Eq. 28) and (Eq. 29) leads to

$$\left(\frac{t_2^{A'} - t_1^{A'}}{t_2 - t_1}\right)^2 = 1 \qquad (Eq. \quad 30)$$

Inevitably,

$$t_2^{A'} - t_1^{A'} = t_2 - t_1 \qquad (Eq. \quad 31)$$

Equation (31) hereby announces that <u>time is absolute</u>, "proven" by relativity!

5. Conclusion:

(1) That ether exists is undeniable.

(2) Aberration effect would potentially show up to an observer if the light source he observes has movement in relation to him. So the only reliable speed of light, together with the natural frequency of the same light, is obtained only if the observer, the source of light, and the medium through which light propagates are all absolutely stationary to each other.

(3) The spatial dimension and the temporal dimension in the universe are absolute, and independent to each other.

(4) Relativity is an invalid theory, and its validity falsely assumed existing is brought up historically by the misunderstanding shown in the following practices:

(a) Michelson-Morley experiment. So far, the performance of this experiment has always been done with a zero speed through a light-carrying medium, which is the atmosphere.

(b) An assumption that falsely allows an unrestricted freedom for an observer to see a light beam even though he is not on the path facing the light beam.

(c) In applying $tan\ \alpha = {}^{v}/_{c}$ in the calculation of stellar aberration, a negligence has escaped from the common attention. For more than two centuries, this negligence has allowed a falsified speed $\sqrt{c^2 + v^2}$ to be taken for granted but without awareness.

(d) An even more serious negligence that has led to $c=0$ in the derivation of the Lorentz transformation equation set has escaped the attention of the science workers for more than a century, but this negligence should have been comparatively easy to be spotted had people been less prejudiced with superstition on big names.

(e) The same prejudice is so overwhelming that it has even allowed an open principle zero≠nonzero to be broken so much as to go all the way to receive the glamorization of being respected as the sublimate of human wisdom.

Finally, in the study of physics, there is no "classic" nor "non-classic" (or a fancier term: relativistic) treatment, but only correct or incorrect treatment. Let's not deviate even lightly from the method and thinking system that all those great minds have laid for us before the debut of relativity.

References

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