

Abolishing the Lorentz Factor

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Abstract

This article is about the ignorance of the important distinction between the real motion of light (beam), and the apparent motion of light (ray). This mistake has caused many wrong interpretations of observations, and also supported the introduction of the absurd Lorentz factor. The result of this is time dilation and twin paradox.

The behavior of light

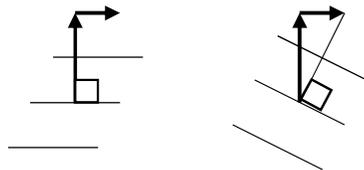
Detection of light can be done in two ways: detection by amplitude, or detection by phase. Amplitude detection is possible only in focused light, where the real motion of light can be observed as the direction of maximum amplitude. This is the beam direction defined by the vector sum, $\mathbf{c}+\mathbf{v}$. If light is not focused we can detect only based on phase. This is the apparent motion of light defined by the normal to the wave fronts as the ray direction. This direction is defined by \mathbf{c} only (independent of \mathbf{v}). We can see this by regarding that ether wind inside the wave fronts cannot change phase and not wave front orientations. The ray direction is conserved in relation to changes in transverse ether wind.

The distinction between beam ($\mathbf{c}+\mathbf{v}$) and ray (\mathbf{c} only) is important. In most optical experiments, it is the ray direction that is relevant. Therefore, transverse component in ether wind \mathbf{v} cannot cause stellar aberration, not cause a transverse effect in Michelson and Morley's tests (MMX) and not in Einstein's light clock either. In error, the beam has been used instead of the ray.

Generation of light can also be done in two ways. Generation based on phase is done in cavities and MMX interferometers, based on feedback with mirrors. This means coherent light, where the ray concept is relevant.

Stellar aberration due to observer motion

Bradley explained stellar aberration as a rain drop effect. This means a relation between the state of motion of the observer and the state of motion of the observed phenomenon. It does not matter



Transverse ether wind changes beam direction but not ray direction. This is a real change.

Transverse observer motion changes beam and ray directions. This is an apparent change only.

whether the phenomenon is a wave motion or a particle motion. If observer motion is changed a small amount u in a direction transverse to light motion (with speed c), then the observed light direction is changed an angle approximately u/c , since $u \ll c$. This means that u causes stellar aberration and we do not have to regard ether wind \mathbf{v} . This is also valid for the pulsar aberration observed in VLBI equipment. We can conclude that if the same reality is described in two different frames, then the

representation of the phenomenon must be corrected due to the difference in velocities. Einstein was wrong about this. See the diagram, that comes from an article called *Illusions and Reality in Relativity* from 2011. The idea that Bradley's explanation (for particles) is valid for waves also is supported by Hartwig Thim and David Tombe, but not by Ronald Hatch.

Stellar aberration independent of ether wind

The real motion of light, the beam direction, is observable as the direction of maximum amplitude and it is the amplitude modulation by the focusing that makes this observation possible. However, in most experiments it is the ray direction that is relevant, that is, detection is based on phase. The ray is an abstract concept, and the physical reality is in the wave front. Since ether wind inside the wave front affects all points in the wave front equally the orientation and the ray direction are conserved in relation to transverse ether wind. Since telescopes are coherent systems detecting wave front orientation we can conclude that transverse ether wind is irrelevant in relation to stellar aberration. We can also conclude that in coherent systems the relevant description of light is $c(1+v\cos A/c)$, where A is the angle between \mathbf{c} and \mathbf{v} . In coherent systems only the longitudinal component in ether wind is relevant. This light model should be used in phase sensitive, or coherent, systems (telescopes, cavities, MMX interferometers and so called light clocks). Light from fixed stars can be described as plane and coherent wave fronts. So, we can conclude that \mathbf{v} cannot cause stellar aberration. The real cause of stellar aberration is the transverse component, u in observer motion.

MMX independent of ether wind

Another consequence of this reasoning is that we must use the ray concept in MMX. The mirrors in the MMX are relevant in relation to \mathbf{c} , but not in relation to \mathbf{v} . So, light takes the fastest, not shortest, way between mirrors. This means that there is no effect of ether wind in the transvers arm in MMX, and not in Einstein's light clock, and no transverse Doppler effect either; in agreement to experiments done by Hartwig Thim. Therefore, Stokes was wrong when he introduced a decrease in Michelson's prediction due to the transverse arm. Einstein was also wrong regarding his light clock. We have seen that transverse ether wind cannot bend a wave front. However, such bending is possible, instead, due to a gradient in the longitudinal component in the ether wind.

It is reasonable to assume that these mistakes by Stokes and Einstein have been useful in advocating the absurd Lorentz factor, causing time dilation and twin paradox. To correct for this, we have to abolish the Lorentz factor for time, and instead use a squared Lorentz factor for the contraction of matter. This means that this larger length contraction is equal to the reduction of 2-way speed of light, and the expected effect is compensated. This fact seems very reasonable, since the atoms in a crystal exchange positional information by means of the ether. Therefore, MMX is a useless method in relation to ether wind detection.

Stokes was wrong

The theory of special relativity was based on stellar aberration and MMX. We have seen that both these methods are useless in relation to ether wind detection. Therefore, SRT rests on false ground. These two mistakes represent the first (and most important) errors in SRT. The Lorentz factor has been supported by Stokes' error and produced the twin paradox. However, a squared Lorentz factor can explain contraction of matter and also be united with Galilean relativity. To escape SRT we must give up the Lorentz factor as well, and not just Einstein's interpretation of it. The difficulties in explaining that Einstein was wrong are explained by the ignorance of the fact that Stokes was wrong too.

Einstein added more errors by defining time as the reading of clocks. If that was true we could stop time by just stopping a clock. He also made another mistake by not observing that Bradley's old interpretation of stellar aberration for light particles also was valid for light waves.

Conclusion and summary

We should give up the Lorentz transform completely, and not only Einstein's interpretation of the transform, and we should use Galilean relativity instead. Stokes' erratic interpretation of an effect in the transverse arm in MMX has supported the idea of a Lorentz factor on time as well as on space (or on length). Instead, we should abolish the Lorentz factor for time and use a squared Lorentz factor for length. The Lorentz transformation is based on the illogical assumption that a physical phenomenon can move with the same speed in relation to all inertial frames. My ideas are supported by Hartwig Thim in a paper to NPA in 2011, called *Three Important Inconsistencies in the Lorentz Transform*.

Links

See my CNPS blog at www.naturalphilosophy.org/site/johnerikpersson. In the post, *Wave or Particle Confusion* you can find links to my articles at www.gsjournal.net and www.naturalphilosophy.org/site. There you can find *A tragedy in Physics*, *Physics without Paradoxes* and *The Radial Ether Wind*. These articles describe, in more detail, ideas presented here.

Comment added by Hartwig Thim:

I have read the paper entitled "Abolishing the Lorentz Factor" because the Lorentz Transformations are illogical and, hence, wrong. John-Erik has written many papers, their contents are correct and I agree with all his conclusions.