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The Etherless Century

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Abstract

New interpretations are presented to the three most common important phenomena related to the abolishment of the ether concept. These interpretations support an entrained ether.

Background

The common opinion among scientists is that stellar aberration and Michelson-Morley's measurements together refute the ether concept, and that Sagnac effect is irrelevant in relation to the ether-wind due to the classification of Sagnac effect as caused by *rotation.*

Keywords

Stellar aberration, Michelson-Morley, Sagnac effect, ether.

Sagnac effect

Sagnac effect is defined as a time delay, Δt, derived by integrating a rotation over circular surface. The integration gives $\Delta t \approx 2A\Omega/c^2$, where Ω is angular velocity of an area A. This interpretation is correct in a mathematical sense, but not physically since *nothing* is rotating inside the circle. Instead we find that the *equipment* is rotating. By applying Stokes' rule and substitute an integration of rotation over an area by an integration of a velocity component along a closed line limiting the area we find instead that $\Delta t \approx vL/c^2$, where v is tangential velocity and L is the circumference of the circle. This expression produces the same value for Δt, but indicates that Sagnac effect is a *translational* effect, and also that Sagnac effect in a rotating circle is the same as the effect in a translating straight line of length L if v is the component of the ether-wind in the direction of L. An alternative derivation for a straight line is $\Delta t = L[1-1/(1+v/c)]/c \approx vL/c^2$. For a non-rotating curved line Sagnac effect is the same as the effect for a straight line with the same end points.

When Sagnac effect is identified as a *translational* effect it is easy to see that Sagnac effect in GPS (Global Positioning System) is relevant in relation to the ether-wind. *GPS has detected the ether-wind,* and demonstrated that the ether is translated, but not rotated, by our planet. This follows from the fact that Sagnac correction in GPS is related to the centre of our planet. (Communicated to NPA each year from 2005 to 2009, but not well formulated by an amateur scientist.) The distinction that Sagnac effect is caused by a translating line (instead of by a rotating surface) is important. This fact explains why we have more than ten failed efforts to explain Sagnac effect. This is also the reason why we have not seen that GPS *supports* the entrained ether, and that Sagnac effect *is* the ether-wind.

Stellar Aberration

The ether-wind is the translation of a *real* thing, namely the ether, but light is instead a *behaviour* inside the ether. This distinction means that vector addition is not self evident between these two, very different, phenomena. The translating ether-wind can add the same translation to all points in a wave-front but *not* change the orientation of

the wave-front. Therefore, *wave-fronts' orientations are conserved* in relation to changing ether-wind. The wave-fronts in stellar light are *always* perpendicular to the true direction to the fix star that is the light source, independent of changing ether-wind. This fact explains the enormous sharpness in images of fix stars. Stellar aberration contains therefore *no* information about the ether's state of motion. The wave-motion of light can therefore be described as $\mathbf{c}(1+v_L/c)$, where v_L is longitudinal component of ether-wind $\mathbf{v}(\mathbf{r})$. The ether-wind has relevance for the *speed* of light only.

Stellar aberration is instead caused by the *telescope's* motion during the time interval between focusing and detection of light. The ether's state of motion is completely irrelevant for aberration. Since we have no absolute reference we can not observe the total aberration. We can only observe the effect of *differences* in transverse telescope motion during different parts of a year. We can therefore conclude that stellar aberration *does not refute* the entrained ether.

Michelson-Morley's Experiments

An entrained and non-rotating ether provides an ether -wind of only $10^{-6}\cdot c$ and a second order effect of about 10^{-12}. This can explain Michelson's results, since he tried to detect second order effect in *two-way* propagation of light. The atoms in a crystal control their separations by producing two contra directed force fields. The ether-wind makes these fields dynamic and changes propagate with velocities $c\pm v$, so two contra directed effects are almost equal, and a second order effect is possible in the sum of two contra directed forces. This means that the second order effect in *one two-way* communication can be compensated the same effect in *two one-way* communications. Michelson's method has definitely to low resolution for the entrained ether. The method is perhaps *silent* also.

The reasoning earlier applied to light from a fix star can be applied to light generated in a cavity also. Ether-winds inside the wave-fronts plane can not change the plane's orientation. Wave-fronts are *always* parallel to the cavity and Stokes' correction to Michelson's prediction $[1/\gamma=\sqrt{(1-v^2/c^2)}]$ is without motivation.

Detecting the Ether-Wind.

The ether-wind is detected in GPS by the need to compensate for the rotation of our planet. The same effect can be detected in a lab. This will render even more convincing verdict. A method for this is described in a contribution to NPA 2009 called *The Forbidden Ether*. The method uses two lasers mounted on a rotating platform.

Conclusions

Sagnac effect is a *translational* effect supporting the entrained ether.

The property of light to *conserve direction* independent of the ether-wind means that entrained ether has the same aberration as the autonomous ether and units entrained ether with aberration.

Michelson-Morley's experiments are of less importance in relation to the entrained ether although they have been the most debated phenomena.

The 20:th century was etherless due to serious misinterpretations of important phenomena.

Reference

The Forbidden Ether and other articles to NPA 2009 are available at:
www.geocities.com/johnerikpersson
www.worldnpa.org
www.wbabin.net