The Misunderstood Bradley Effect

John-Erik Persson, Fastlagsvägen 2, 12648 Hägersten, SWEDEN

mailto: mail0110261847@yahoo.com

A new interpretation of starlight aberration is described, and aberration is thereby united with entrained ether, as well as with absolute ether. It is also explained how stability in planetary orbits can be united with a reasonable speed of gravity.

Background

Aberration of starlight was discovered by Bradley in 1728, united with entrained ether by Stokes in 1845, and demonstrated to be in conflict with entrained ether by Challis in 1880. See [1]. Since then scientists have tried in vain to unite entrainment and aberration. The conflict between a reasonable speed of gravity and stability in planetary orbits is of more recent date.

Bradley Effect

The aberration of starlight is easily explained for the absolute ether by the so called raindrop effect, which is a compensation for the telescope's motion during the time it takes for light to pass through the telescope. Aberration is arctg(u/c), where u is telescope's velocity transverse to light's direction. See Fig 1. This relation is valid for wave model as well as particle model of light. But it has been considered that entrained ether could not be united with this aberration due to a compensating effect. This effect is said to arise when light moves into a region around our planet where the ether also experiences a transverse change u of velocity. If vector addition of **c** and **u** is assumed, we get a bending of light just as much as is needed to compensate aberration. See Fig 2.

However, there is a serious error in this reasoning, explained in [2] and [3]. The reasoning is probably true for transport of energy (the direction of a focused beam). But the reasoning is certainly *not* true for observation of light direction in a telescope where the normal to the wave-front is detected. Light velocity is defined to the value c in every point in space and
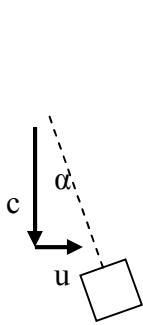
Fig 1 In telescope's frame:
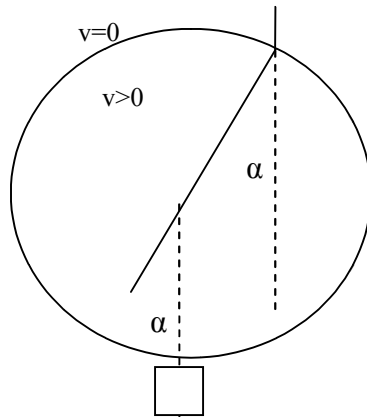$\alpha = \text{arctg}(u/c)$
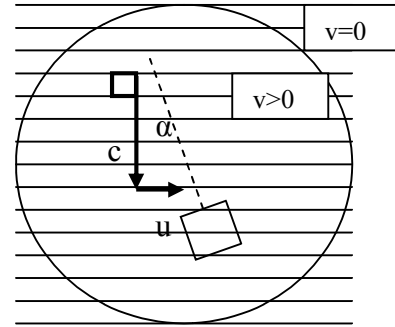
Fig 2 Wrong interpretation of entrained ether

Fig 3 Conserved normal:
$\alpha = \text{arctg}(u/c)$

the orientation of the wave-front plane, and its normal, are therefore *conserved independent of transverse ether-wind.* The wave motion is independent of the transverse ether-wind. See Fig 3. The irrelevance of transverse ether-wind means that *no compensation of aberration occurs* for entrained ether. This irrelevance explains also why sharp images of remote stars can propagate over enormous distances, and is also a support for the wave model of light. Since transverse ether-wind causes no wave-front bending, we can conclude that the entrained ether is also united with an aberration angle equal to arctg(u/c). (This was stated by this author in NPA 2005, -6 and -7). Direction of a focused beam (energy flow) is described by **c+v,** and wave motion by $\mathbf{c}(1+v_L/c)$, only longitudinal ether-wind is relevant for the wave motion detected in a telescope. The distinction between wave motion and direction of energy flow was missed.

A change in transverse ether-wind should possibly be compensated by a coordinate transformation to a frame where ether-wind is zero. This should not disturb the wave vector, **c,** and provide a logical argument for irrelevance of transverse ether-wind. Since wave propagation depends on longitudinal component of ether-wind only, the only type of wave-front bending we can expect is a very, very small *second order* effect from differences in longitudinal ether-wind or in wave velocity.

The Speed of Gravity

Gravity is defined by the distribution of matter and is therefore a *stationary* condition represented by a static field, and the speed of gravity per se is therefore zero. This does not exclude the possibility that *changes* of gravity can propagate with a finite velocity, for instance c. However, to find out about that means that we have to change the distribution of

matter in the Universe, which seems too difficult. Instead information about the ether must be gained from moving phenomena, for instance light, because gravity is stationary.

Conclusions

A velocity relation between observer and observed light creates aberration independent of transverse ether-wind. Therefore, starlight aberration does *not* rule out the entrained ether, as scientists have thought since 1880.

Gravity is free from the aberration seen in starlight, due to *immobility* and not due to an absurd mobility.

References

[1]   K F Schaffner, **Nineteenth-Century Aether Theories,** p 141, (Pergamon Press, Oxford, 1972)

[2]   J E Persson, 'Light and Gravity Aberration', Ether-Wind Detection, *Galilean Electrodynamics* **16,** 102&120 (2005)

[3]   J E Persson, "The Special Theory of Relativity and the Sagnac Effect", **14:th** *Annual Conference of the Natural Philosophy Alliance* (May 2007), In Absentia Also available at www.geocities.com/mail0110261847 Also published in *Infinite Energy,* **Nr 77**, Vol 13, 2008.