

Symmetry in the Phenomenon of Stellar Aberration – Apparent Change in Past Position of Light Source in Absolute Motion

Henok Tadesse, Electrical Engineer, BSc. Ethiopia, Debrezeit, P.O Box 412

Tel: +251 910 751339 or +251 912 228639

email: entkidmt@yahoo.com or wchmar@gmail.com

21 January 2018

Abstract

The theory of Special Relativity does not truly show symmetry in the phenomenon of stellar aberration, and hence is no better than ether theory in this respect. Only emission theory conforms to such symmetry, which is a requirement of the principle of relativity. In this paper, it will be proposed that the phenomenon of stellar aberration is in fact symmetrical with respect to motion of the light source and motion of the observer. According to Apparent Source theory (AST), the phenomenon of stellar aberration occurs not only in the case of light source at rest and observer in motion, but also in the case of light source in absolute motion and observer at rest. The phenomenon of stellar aberration occurs in the latter case because of an apparent change in the *past* position of a light source in absolute motion.

Introduction

According to the principle of relativity, motion of the light source is equivalent to motion of the observer. Therefore, the phenomenon of stellar aberration occurs not only in the case of observer motion but also in the case of source motion. The Special Theory of Relativity (STR) is supposed to conform to the principle of relativity. However, it has been argued by various authors that STR explains the phenomenon of stellar aberration only in the reference frame of the light source (the star). STR does not truly show symmetry in stellar aberration with respect to observer motion and source motion. It is proposed in this paper that the phenomenon of stellar aberration occurs in both cases:

1. Star at absolute rest and observer in absolute motion and
2. Star in absolute motion and observer at absolute rest

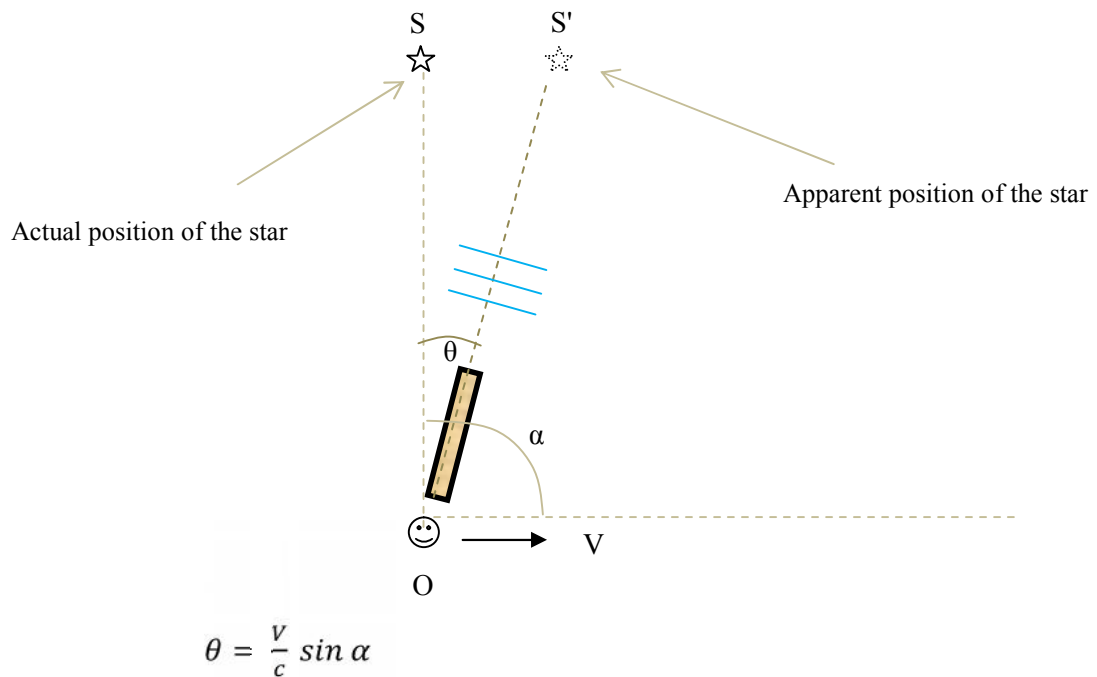
Apparent Source theory (AST) [1] shows that motion of the source (star) and motion of the observer are equivalent in the case of stellar aberration.

Symmetry in the phenomenon of stellar aberration with respect to light source and observer velocity

Star at absolute rest, observer in absolute motion

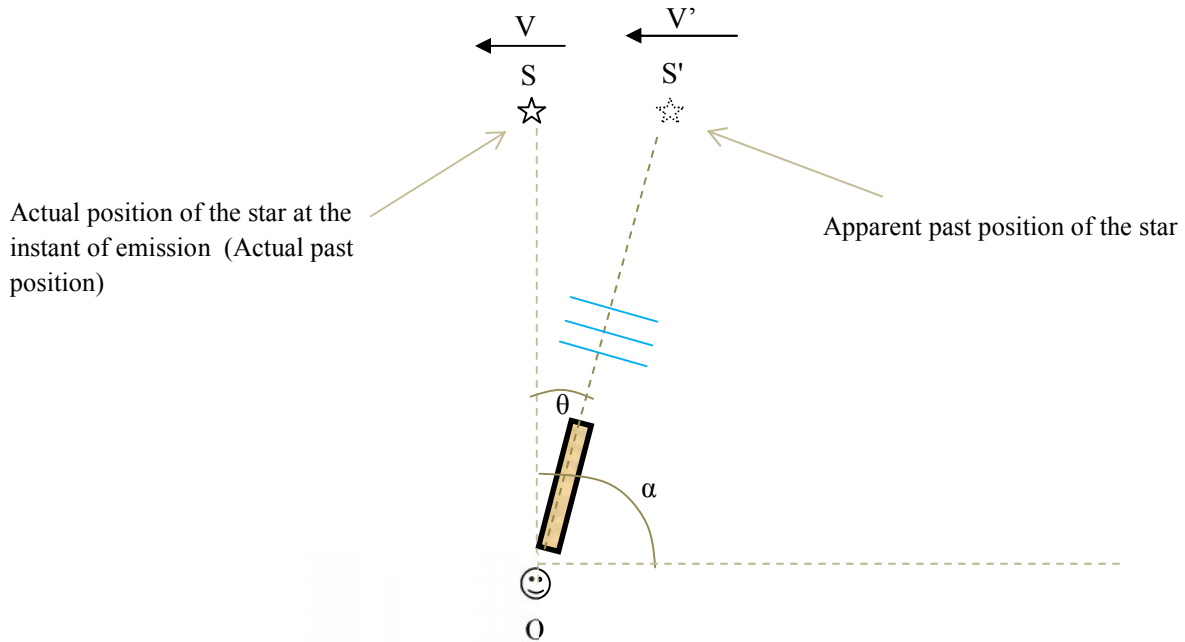
This is a familiar phenomenon known as Bradley stellar aberration. The conventional explanation draws analogy with a person running in rain, and is based on the corpuscular theory of light. Even when the rain droplets are falling vertically, it appears to the observer running in the rain as if the droplets are falling at a slant angle. Although this gives some intuitive

understanding (and is part of the whole explanation), it does not fully explain the phenomenon because light is also a wave. The theory proposed in this paper is that, unconventionally, the wave fronts of light rotate due to observer motion. This rotation of the wave fronts has no further explanation and is a consequence of non-existence of a medium (ether) for light wave. The light comes from the direction of the apparent star S', and not from the direction of the real star S. Hence, the observer needs to tilt his/her telescope forward by an angle (determined by the speed of light c and observer velocity) in order to see the star light. This is unconventional because the wave fronts of sound waves and water waves do not rotate due to observer's motion.



Star in absolute motion, observer at absolute rest

This is the case no existing theory (except emission theory) can explain. STR is no better than ether theory in this respect. STR, despite being a theory of relativity, does not truly predict the phenomenon of stellar aberration in the reference frame of the observer.



$$\theta = \frac{V}{c} \sin \alpha$$

The Apparent Source Theory (AST) explanation is as follows.

There will be an apparent change in the *past* position of the star in the reference frame of the observer also and the angle of aberration is the same as the angle of aberration when the experiment is analyzed in the reference frame of the star.

There will be an apparent change in the *past* position of the star, i.e. it appears to the observer that the star emitted light not from its actual past position S (its position when it emitted the light), but from its *apparent past position* S'.

An experiment is proposed to test this theory. Light from elementary particles moving with speed close to the speed of light or fast moving ions should be used.

Conclusion

This is yet another success of Apparent Source Theory (AST) . It has been a well known fact that the Special Theory of Relativity cannot satisfactorily show symmetry in the phenomenon of stellar aberration, which is a requirement of the principle of relativity.

Glory be to God and His Mother, Our Lady Saint Virgin Mary

References

1. Absolute/Relative Motion and the Speed of Light, Electromagnetism, Inertia and Universal Speed Limit c - an Alternative Interpretation and Theoretical Framework, Henok Tadesse, Vixra

<http://vixra.org/pdf/1508.0178vD.pdf>