THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Theory of Constant Light Speed

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Abstract:
In this paper I have experimentally proved the second postulate of Einstein's theory of special Relativity that the velocity of light in free space is the same for all observers, and is independent of the relative velocity of the source of light and the observer. In the last section of this paper I have also found the actual speed of light.

1. Introduction

In the theory of special Relativity Einstein has taken the fact that the velocity of light in free space is the same for all observers, and is independent of the relative velocity of the source of light and the observer as a postulate but has not proved it that why this is so.

Every motion is relative with respect to some frame of reference and velocity of every moving object is dependent on the relative velocity of the observer and the body in observation. Only light does not follows this property and its speed remains constant in every frame of reference is the problem.

Light consists of particles called photons and instantly at the moment they are created they acquire very high speed, namely $3*10^8$ m/s which nothing else in the universe can acquire irrespective of however low energy the source possesses. From where does this energy come to give them such an enormous speed?

2. Method

2.1. Case I

Let us take two observers in space, observer A and observer B. A sheet of paper is taken and its surface is assumed to be so smooth that every point of every hypothetical line lying on it touches its surface. Hence it is treated as an ideal two dimensional plane. Now it is oriented horizontally with respect to A and B in space. Now the observer A is taken on the plane from space and every visible point from the space is omitted which the observer A could have further treated as a point of reference to have a sense of three dimensional Space again. This means that the entire range of observations which the observer A can make is confined to the plane only. Now observer B in space fires a bullet perpendicular to the plane of observer A, then for the observer A, only that fired bullet acts as an external point that moment ally touches the plane and escapes but remains visible throughout its course, seeing the bullet fired, A starts to move tracing various curves on the plane. The plane of A is taken to be so flexible that it can be folded in any form.

2.2. Case II

A similar experiment is replicated for observers C and D lying on the plane of A in which in initial both observers C and D are lies on the plane and a line is traced horizontally with respect to them. Now C is taken on that one dimensional line and D fires a bullet which is perpendicular to the line of A and visible throughout its course. Watching the bullet, observer C starts moving on the line that is left to right and right to left which are the only possible motion in a uni-dimensional world.

2.3. Case III

In a similar arrangement as in case I, a hypothetical line is taken as an axis and multiple similar planes are stacked on it one after another parallel to each other. Coincident holes are made on every stacked plane and the bullet kept floating stationary in the hole of bottom plane mounted stationary with respect to the hypothetical line axis and now the planes are made to slide down at the speed of initial bullet as in case I with respect to observer B. And for an instant, the plane which occupies the bottom position is always kept in consideration.

3. Results

In case I, the direction of velocity of bullet is perpendicular to the plane which means its horizontal components along the plane are zero.

That is, when $\theta = \frac{\pi}{2}, then$ it's horizontal component $\cos\frac{\pi}{2} = 0$. Because of this, the observer A will observe the velocity of bullet fired perpendicular to his plane constant throughout its course. And the observed velocity of bullet will always be independent of the relative velocity of the bullet and the observer. No matter which curve the observer traces on the plane.

Similarly, in case II. The observer lying on the line will always observe the velocity of bullet fired perpendicular to his line constant throughout its course because the component of velocity of bullet along the line of observer is zero. It implies that the observed velocity of the bullet will always be independent of the relative velocity of the bullet and the observer. No matter which direction the observer goes along the line.

In case III, since only the bottom plane is kept in consideration, so even in the absence of gun to fire the bullet, only because of the property of bullet that it can pass through the pre made perforations made on successive planes or to create its own perforations to pass through the flexible plane, because of its shape it acquires that velocity with respect to the changing bottom plane only because the planes are sliding down with initial bullet's velocity of case I. And any other particle on that plane cannot acquire that velocity with which the successive planes are sliding down because they can't either possess that much energy or they can't make perforation through the descending planes which the bullet can. And if they somehow acquire that speed then due to the planes sliding down with that speed, it would leave its particular plane and the coordinates on the plane won't be able to define it. On contrary of bullet, it would not even be possible using coordinates of bottom plane to describe its state as it won't be able to make pace with moving planes as the bullet does by remaining stationary with the axis. The particle hence gets lost somewhere in the region of higher dimension which the theories made with respect to the plane cannot define. The particle once lost can never come back to its original plane because once it loses its original plane, at bottom position at that instant. Because of flow of time that plane would have replaced by another as planes kept sliding down.

4. Discussion

In the above cases (case I and II) it is found that if the observer lies in n[th] dimensional region and some event, observable from n[th] dimensional region, occurs in (n+1)[th] dimensional region and has no component along n[th] dimensional region then there is no relative observable effect/change on the event occurring in (n+1)[th] dimensional region.

Since light speed shows no relative observable change in any frame of reference and that the velocity of light in free space is the same for all observers, and is independent of the relative velocity of the source of light and the observer implies that the light must exist in some higher order dimension which we cannot visualize other than 4 Dimensional space-time and have none of its components along any of the axes of 4D space-time.

Photons must have that property to use that extra dimension for propagation with such an enormous observable speed which nothing else in the existing universe can acquire as the denominator of the equation $\Delta m = m/\sqrt{(1 - v^2/c^2)}$ becomes 0 or the equation is not defined for that speed and hence the resultant mass also gets not defined. In a frame of reference any event becomes not defined only in the case that the existing number of coordinates in that frame of reference are not sufficient to describe that event in that frame occurring apart it. Means the particles at that velocity could enter some higher order dimensions leaving space-time for which the coordinates of space-time proves to be insufficient to describe that event.

The fact that from where does the light gets that amount of energy to acquire that speed even right after its formation even from a flash light, the obvious answer can be found from case III that photons only have property to enter the extra dimension as bullets and with respect to that it remains stationary neither in space nor in time as absolute rest in space-time is not possible. Instead, the entire universe is moving along with our coordinate system of space-time with respect to some higher order dimension with certain rate equivalent to 3*10^8 m/s in our space time which we cannot state as its velocity as it's an event of higher dimension for which we lack sufficient number of coordinates. Although the motion of the entire universe is not defined in space-time yet we can deduce that it's moving through the property of light exhibiting such enormous constant speed with any minimal value of its energy level.

The fact that light can be targeted between any two points in space implies from the above discussion that there is a network of this higher order dimension which we cannot imagine as our brain has designed itself to be confined in 3 dimensions and our every imagination is limited to these.

6. References

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