Speed Of Light From Motion Of Light Source

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(Dated: May 11, 2019)

The relative motion between a pair of observers represents a reflection symmetry. In the rest frame of first observer, the second observer moves at a distance away. In the rest frame of the second observer, the first observer moves with the same speed at an identical distance away but in the opposite direction. The reflection symmetry shows that the elapsed time in each observer's rest frame is conserved in both rest frames. The light takes the same elapsed time to move between two observers in both rest frames. However, the distance traveled by the light is different in different rest frame. With identical elapsed time but different distance, the speed of light is proved to be different in different reference frame.

I. INTRODUCTION

The relative motion between two observers can be described precisely by the reflection symmetry. The first observer observes the second observer in a distance away. The second observer observes the first observer in the same distance away but in the opposite direction. Both observers are observed to move at the same speed but in the opposite direction.

Their symmetric movements can be formulated by their velocities. By calculating these two velocities, the time transformation between two rest frames can be determined.

With the elapsed time determined for a ligh pulse to travel from the first observer to the second observer, the speed of this light pulse can be calculated from the distance it travels in each rest frame.

II. PROOF

Consider one dimensional motion.

A. Reflection Symmetry

Let an observer P_1 be stationary at the origin in a reference frame F_1. Let another observer P_2 be at a position x in F_1.

Let the rest frame of P_2 be F_2. P_2 is stationary at the origin of F_2. From the relative reflection symmetry, P_1 is at the position of -x in F_2.

Let P_2 move at the speed of v relative to F_1. From the relative reflection symmetry, P_1 is moving at the speed of -v relative to F_2.

B. Elapsed Time

Let t_1 be the time of F_1. P_2 moves at the speed of v in F_1. This motion can be described by the following equation,

$$\frac{dx}{dt_1} = v \tag{1}$$

Let t_2 be the time of F_2. P_1 moves at the speed of -v in F_2. This motion can be described by the following equation,

$$\frac{d(-x)}{dt_2} = -v \tag{2}$$

From equations (1,2),

$$dt_1 = dt_2 \tag{3}$$

The elapsed time is conserved in both F_1 and F_2. If dt_1 is zero then dt_2 is also zero. Two simultaneous events in one reference frame are also simultaneous in another reference frame.

C. Speed Of Light

Let P_1 point a flash light toward P_2 who is at a positive position x in F_1.

In F_1, the speed of light from the flash light is C_1. The elapsed time for the light from the flash light to reach P_2 is T_1.

$$C_1 * T_1 = x + v * T_1 \tag{4}$$

$$T_1 = \frac{x}{C_1 - v} \tag{5}$$

In F_2, the elapsed time for the light from the flash light to reach P_2 is T_2.

$$C_2 * T_2 = \mid -x \mid \tag{6}$$

$$T_2 = \frac{\mid -x \mid}{C_2} \tag{7}$$

From equation (3), the elapsed time is conserved in all reference frames.

$$T_1 = T_2 \tag{8}$$

From equations (5,7,8)

$$\frac{x}{C_1 - v} = \frac{\mid -x \mid}{C_2} \tag{9}$$

$$C_2 = C_1 - v \tag{10}$$

The speed of light in F_2 depends on the velocity of the light source.

III. CONCLUSION

In one-dimensional space, the elapsed time is conserved in all reference frames. Two simultaneous events in one reference frame are always simultaneous in another reference frame.

Time dilation from Lorentz transformation[1] is impossible in physics because it violates the relative reflection symmetry.

The speed of light is related to the relative motion between the observer and the light source. The speed depends on the motion of the light source in the rest frame of the observer.

The assumption from the theory of Special Relativity[2] on the speed of light is clearly incorrect. Any theory based on incrrect assumption should be revised or rejected in physics.

[1] H. R. Brown (2001), The origin of length contraction: 1. The FitzGeraldLorentz deformation hypothesis, American Journal of Physics 69, 1044 1054. E-prints: gr-qc/0104032; PITT-PHIL-SCI00000218.

[2] Reignier, J.: The birth of special relativity - "One more essay on the subject". arXiv:physics/0008229 (2000) Relativity, the FitzGerald-Lorentz Contraction, and Quantum Theory

[3] Eric Su: List of Publications, http://vixra.org/author/eric_su