Paradox of Relativity

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Abstract: Relativity's Special and General Theory are not valid theories as constant one-way speed of light postulate is contradictory. This paper gives one page explanation that even a high school student can understand.

1. Introduction

Relativity's Special and General Theory are based on following constant one-way speed of light postulate:

The speed of light in a vacuum is the same for all observers, regardless of their relative motion or of the motion of the source of the light.

This paper studies the above postulate and finds that it makes the heart of Relativity theories' Lorentz Transformation paradoxical.

2. Two Observers and Two Light Sources

The follow is a simplified case for constant one-way speed of light postulate:

There are two persons. One is A on the train station, another is B on a train. There are two light sources, one is L beside the track, another is L' at the head of train. The train is moving toward the station at speed of v. The distance of AL (x) and BL' (x') is the same according to measurement readings. When L and L' meets, both lights flash. Both A and B see lights from L and L' at the same time according to their clocks.
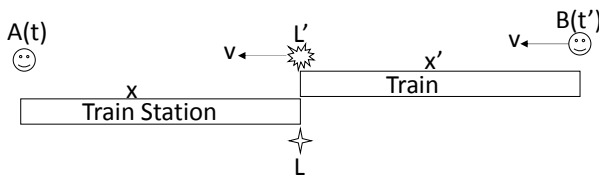
2. Lorentz Transformation Paradox

There are two cases (e.g. [1]):
1. Both A and B see light from L at the same time;
2. Both A and B see light from L' at the same time.

Simplified Lorentz transformation (e.g. [2], [3]-[5]) for case 1:

$$t' = d(t - xv/c^2) \qquad (1)$$

$$x' = d(x - vt) \qquad (2)$$

For case 2:

$$t = d(t' - x'v/c^2) \qquad (3)$$

$$x = d(x' - vt') \qquad (4)$$

Or:

$$t = d(d(t - xv/c^2) - d(x - vt)v/c^2)$$

$$x = d(d(x - vt) - vd(t - xv/c^2))$$

The above equations indicated that two inertial systems are unrelated. The solution is,

x = ct
d = 1
v=0 or v=2c

It contradicts the assumption that the train is moving.

3. Conclusions

Both Relativity's Special and General Theory use Lorentz transformation to study the relationships between two inertial systems. If constant one-way speed of light postulate is invalid, then, Relativity theories are falsified (e.g. [1], [6]-[7]). The Unified Field Theory (e.g. [8], [9]) is a good alternative.

References

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