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Example of Evident Failure of Special Relativity Transformations by Using at a Simple Physical Situation

Arthur Boltcho

Laborecka 6, 040 11 Kosice, Slovakia

Abstract

This paper demonstrates an example of evident failure of special relativity transformations by using at a simple physical situation.

Key words: special relativity transformations, simple physical situation, evident failure

Introduction

In the paper there is demonstrated the same situation as in [1] consequently followed by an example of a simple physical situation proving evident failure of special relativity transformations by using at this simple physical situation.

Situation

Inertial frame S´ moves right in inertial frame S along its horizontal axis. There are signs along horizontal axes of both frames in the same mutual rest distances, to the right from the origins. To be the situation simply imaginable, let the constant mutual velocity of frames is so high under that of light that mutual distances of signs of horizontal axis of S´ in relative motion for any rest observer of S, respectively mutual distances of signs of horizontal axis of S in relative motion for any rest observer of S´, are according to special relativity theory due to relative motion contracted to one half of the rest distance.

Now let us have an observer O rest in S located one half of the distance between sign 2 and sign 3 of horizontal axis of S. Let in S this observer O is started to be accelerated just closely after vertical coincidence of origins (figure 1). This observer O in S later becomes the rest observer of S´ located at sign 2 of horizontal axis of S´

closely before vertical coincidence of this sign with sign 4 of horizontal axis of S (figure 2).

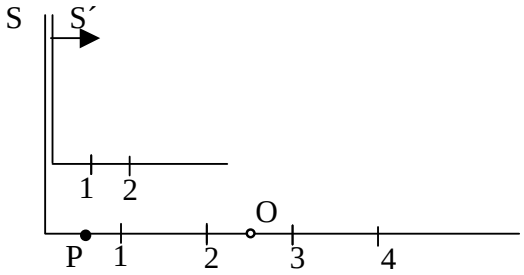

Figure 1: in inertial frame S after vertical coincidence of the origins.

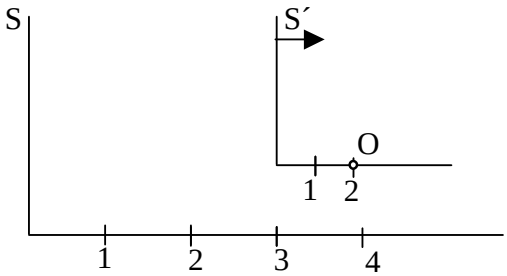

Figure 2: in inertial frame S before vertical coincidence of sign 2 of S´ with sign 4 of S.

Analysis

The observer O has to be already at rest in S´ located at sign 2 of horizontal axis of S´ before vertical coincidence of this sign with sign 4 of horizontal axis of S in S´ as well. Certainly special relativity theory is not valid for the observer O until he is accelerated, but this theory has to be valid for him when he is already the rest observer of S´. It means that in S´ – for the observer O if sign 2 of horizontal axis of S´ is before vertical coincidence with sign 4 of horizontal axis of S, so origins are before vertical coincidence (figure 3) because of relative length contraction of the theory.

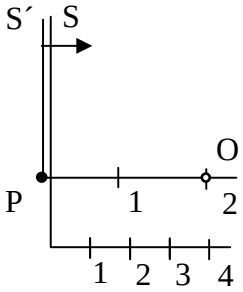

Figure 3: in inertial frame S´ - for the observer O before vertical coincidence of sign 2 of S´ with sign 4 of S.

Consideration

(1) Let us imagine that in the situation by figure 1 there is also some rest point coinciding with the observer O. If this point has for the observer O the identical running of the acceleration process as this observer, so for the observer O it is accelerating together with him so that is all his own time at rest with regards to this observer and therefore his own distance between them remains constant –

zero. It is clear that for the observer O – in inertial frame S´ as well as in inertial frame S would after finishing of acceleration this point be located at sign 2 of horizontal axis of S´ closely before vertical coincidence of this sign with sign 4 of horizontal axis of S. This simple physical situation in the given configuration clearly means no problem in inertial frame S´ as well as in inertial frame S.

(2) Now imagine that in the situation by figure 1 there is also some rest point located one half of the distance between sign 3 and sign 4 of horizontal axis of S. If this point has for the observer O the identical running of the acceleration process as this observer, so for the observer O it is accelerating together with him so that is all his own time at rest with regards to this observer and therefore his own distance between them remains constant – originally given. It is clear that for the observer O – in inertial frame S´ as well as in inertial frame S would after finishing of acceleration this point be located at sign 3 of horizontal axis of S´ closely before vertical coincidence of this sign with sign 6 of horizontal axis of S (not drawn but clearly imaginable). This simple physical situation in the given configuration clearly means no problem in inertial frame S´ as well as in inertial frame S.

(3) Finally in the situation by figure 1 let us have also a rest point P located one half of the distance between the origin of S and sign 1 of horizontal axis of S. If this point has for the observer O the identical running of the acceleration process as this observer, so for the observer O it is accelerating together with him so that is all his own time at rest with regards to this observer and therefore his own distance between them remains constant – originally given. It consequently clearly means that in the situation by figure 3 the point P has to be in inertial frame S´ – for the observer O already located at rest at the origin of S´. So the point P clearly has to be located at rest at the origin of S´ already at vertical coincidence of origins also in inertial frame S. But in inertial frame S at vertical coincidence of origins the point P cannot be already located at rest at the origin of S´ because it is according to above given situation of figure 1 also after vertical coincidence of origins still located one half of the distance between the origin of S and sign 1 of horizontal axis of S. This simple physical situation in the given configuration clearly demonstrates the evident failure of special relativity transformations using.

Conclusion

The failure of special relativity transformations by using at the simple physical situation is evident.

References

[1] Arthur Boltcho, *Process Started after and Finished before an Identical Event for an Identical Observer as a Consequence of Special Relativity*, Physics Essays, March 2006 Issue (Vol. 19, No. 1)