The Lorentz transformation cannot be physical

Rasjid Chan Kah Chew, Singapore, chanrasjid@gmail.com

15th Jan 2015

1 Abstract

The Lorentz transformation will always remain only as an abstract mathematical transformation that cannot be successfully incorporated into any theory of physics. The reason being there is no natural principle that ensures real physical space positions and time be also mapped onto real positions and time. Under the projection, space would be contracted and time would be dilated; so the space and time co-ordinates cannot be associated with real physical quantities.

1.1 keywords :

special relativity;special relativity invalid;Lorentz transformation;time dilation; length contraction.

2 The Lorentz transformation

The Lorentz transformation cannot be the correct physical co-ordinate transformation. It will always remain only as an abstract mathematical transformation that cannot be successfully incorporated into any theory of physics. The reason being there is no natural principle that ensures real physical space positions and time be also mapped onto real positions and time. Under the projection, space would be contracted and time would be dilated; so the space and time co-ordinates cannot be associated with any real physical quantities.

The Lorentz transformation is what is called in mathematics a linear transformation and mathematics is the study of abstract systems and their constructs. Special relativity is basically the Lorentz transformation from which length contraction and time dilation for moving frames are deduced.

The event points in the domain R are mapped into the image points in another space R of the moving reference frame. The co-ordinates of E(x,y,z,t) and E'(x',y'z',t') are just basically real numbers, pure scalars by themselves; only through some acceptable manner could the scalars be associated with the standard units of quantities used in physics.

For a stationary observer frame A by itself, we could easily associate any event E(x,y,z,t)

$\in$

with real positions measurable through standard rods and standard clocks in the classical manner; it has always been done without any controversy. So any such events E may be termed real events. When the Lorentz transformation is invoked, we have :

$LT : E(x, y, z, t) -> E'(x', y', z', t'); E \in A, E' \in B$

E is a real event in A through association with real rods and clocks; but that cannot be said about E' until we could make acceptable associations; before that, the co-ordinates of E' are still pure scalars. In fact the co-ordinates of E', when it is only an event which is the image under the Lorentz transformation, are only pure scalars; they cannot be associated in any manner with the measuring rods and clocks used in A.

The inertial frame B in itself, of course, is in all manner equivalent to frame A; real space co-ordinates and real time may be measured in B. But the projections of real events in A to B may not be naturally associated with real events in B. There is no natural principle that mathematical linear transformations also carry over associations of scalars with real quantities from the domain to the image.

In special relativity, it is routinely assumed (no question was asked) that x', y', z' are also, somehow, in meter and time t' is second - but they are not! They are only pure scalars without physical unit. So whenever such scalars are used in calculations which require real quantities, the calculations would all be meaningless.

Special relativity is only a mathematical model. It is not a theory in physics; it has nothing at all to do with physics which is about the real physical world. As such, there cannot be any empirical verification of special relativity as a theory.

3 Conclusion

In view of the fact that real physical positions and time will never be transformed into real physical values, any theory that purport to be a physics theory which invoke the Lorentz transformation will be found to be invalid. This includes Einstein's special and general theory of relativity.