Reply to Mohammad Shafiq Khan's paper "On the electrodynamics of moving bodies by Albert Einstein is based on Trickeries (Open letter to Professors, Teachers, Researchers and Students of Physics)" – *Elixir Short Comm. 43 (2012) 6694-6695*

Lann N. Ramez

(10-July-2018)

Abstract

This reply to Khan's referenced paper (Khan 2012) shows that Khan performed invalid operations on a wrongly assumed equation to obtain Einstein's basic partial differential equation that Einstein derived in in his paper (Einstein 1905) to develop the Special Relativity equations. Khan concluded that the latter Einstein's equation must be an "equation of trickery", without realizing that performing invalid operations on a wrong equation to force it to lead to a desired equation doesn't necessarily falsify the forced equation.

The wrong equation Khan based his argument upon

It is unclear how Mr. Khan concluded his Eq. (2) in the referenced paper:

$$\frac{1}{2}\left[t+t+\frac{x'}{c-v}+\frac{x'}{c+v}\right]=t+\frac{x'}{c-v} \underline{\hspace{4cm}} (2)$$

Equation (2) is simply wrong, and reflects some misconception of some basic concepts. The light signal round trip is not symmetrical relative to the "stationary" observer. The one way trip duration is not equal to half the round trip duration, since, to the "stationary" observer, the forward distance traveled by the light pulse is longer than the backward distance, as the source and mirror are moving together away from the "stationary" observer. Equation (2) wrongly assumes that $\tau(x,y,z,t)=t$ (where τ is the time in the moving system):

In fact, the "moving" system valid equation

$$\frac{1}{2}(\tau_0+\tau_2)=\tau_1;$$

$$\frac{1}{2}\left[\tau(0,0,0,t)+\tau\left(0,0,0,t+\frac{x'}{c-v}+\frac{x'}{c+v}\right)\right]=\tau\left(x',0,0,t+\frac{x'}{c-v}\right),$$

leads to Eq. (2), only if the wrong assumption

$$\tau(x,y,z,t)=t$$

was made!

It should be evidently clear that, for instance, the equation $\tau_0+\tau_2=2\tau_1$ in the moving system does not imply the equation $t_0+t_2=2t_1$ in the stationary system, where t_0, t_1, and t_2 correspond to τ_0, τ_1, and τ_2, respectively – as Khan wrongly concluded.

In fact, further simplification of Eq. (2) results in $v=0$, proving that this equation is wrong.

Khan falsely speculated that Einstein fudged Khan's [wrong] Eq. (3) – resulting from Eq. (2) – by adding the term ∂t on the right hand side of the equation. Khan's speculation has no basis whatsoever.

Equation (2) is physically impossible, because relative to the stationary observer, the light pulse round trip is not symmetrical. The light pulse travels the distance of $x'+v\Delta t_1$, in Δt_1 time duration, on the way forward; and $x'-v\Delta t_2$, in Δt_2 time duration, on the way backward. If the light pulse was emitted at time t, Eq. (2) implies

$$\frac{1}{2}\left[t+(t+\Delta t_1+\Delta t_2)\right]=t+\Delta t_1; \underline{\hspace{4cm}}(2)$$

or

$$\Delta t_1=\Delta t_2,$$

which is wrong, since the traveled forward and back distances would be the same if Δt_1 was equal to Δt_2, as light is traveling at the constant speed c both ways, which leads us to

$$x'+v\Delta t_1=x'-v\Delta t_2.$$

Replacing Δt_1 and Δt_2, by Δt, since they are equal under Eq. (2), the latter equation becomes

$$2v\Delta t=0;$$

$$v=0,$$

falsifying Eq. (2).

Khan's false approach

As revealed above, eq. (2) is erroneous to start with. Plugging the term ∂t in this equation as done by Khan, speculating this step was performed by Einstein, is another meaningless error. Dividing both sides of the resulting equation by the partial differential operator $\partial x'$ as done by Khan, is another erroneous, invalid operation. The resulting equation from such erroneous, invalid manipulations could be simply anything, even a right equation! Khan's conclusion, from his false equation and invalid operations performed on it, that Einstein's basic partial differential equation is a trickery, is definitely nonsensical.

Conclusion

It follows that Khan has based his argument on the speculation that Einstein fudged Khan's Eq. (2) by adding the term ∂t on its right hand side, which has no basis, with Eq. (2) being shown invalid. Khan's wrong manipulations performed on a wrong equation doesn't allow him to conclude the resulting equation from his invalid performed manipulations is necessarily wrong, or of trickery as he puts it. In fact, a right result may be obtained from a series of erroneous operations; this neither validates the performed errors, nor falsifies the obtained result. Forcing an equation by false, invalid operations doesn't necessarily make the forced equation false.

Consequently, Khan's "open challenge" has been debunked and simply closed.

1. Albert Einstein, On the Electrodynamics of Moving Bodies. Annalen der Physik. 17: 891, 1905.
2. On the electrodynamics of moving bodies by Albert Einstein is based on Trickeries (Open letter to Professors, Teachers, Researchers and Students of Physics). Elixir Short Comm. 43 (2012) 6694-6695.
   Posted on viXra with the link: http://vixra.org/abs/1202.0004

   Posted on GSJ with the link: http://gsjournal.net/Science-Journals/Journal%20Reprints-Relativity%20Theory/Download/3966