Oct. 12, 2020

Dear Editors,

It is well known that Einstein argued convincingly that events which are simultaneous for one observer may not be so for another. This thesis is commonly referred to as "Remote Non-simultaneity." It was a reversal of a long-held view dating back to Newton in the 17th century that each event in the universe occurs at the same time for each observer.

Yet, over a decade ago, it was shown definitively that Einstein's position on this matter is specious. It is quite easy to see why. His non-simultaneity argument is based on the following equation from the Lorentz transformation (LT), which is the cornerstone of his relativity theory:

$$\Delta t' = (1-v^2c^{-2})^{-0.5} (\Delta t - c^{-2}v\Delta x).$$

In this equation, Δt and $\Delta t'$ are time differences obtained by two different observers for the same pair of events such as two lightning strikes on a train. The observers are moving with constant speed v relative to each other along the x-axis, one on the train and the other on the stationary platform it passes in the course of the lightning strikes; the distance between the events is denoted by Δx (c is the speed of light in free space).

A key condition is that neither observer is subject to an unbalanced external force, that is, both the train and the platform in the above example correspond to *inertial systems* in the standard nomenclature. It is clear from the above LT equation that as long as both v and Δx are different from zero, it is impossible for both time differences to have a value of zero. This is to say that if one observer finds that the two lightning strikes occurred simultaneously ($\Delta t=0$), the other must find a corresponding non-zero value ($\Delta t' \neq 0$), indicating non-simultaneous observation.

Einstein overlooks a key point about inertial clocks in coming to his conclusion, however. Since it is subject to no external unbalanced force, any such clock must have a constant rate until this condition is changed. This conclusion is consistent with Newton's First Law of Motion (Law of Inertia) which states that any inertial object will always move with constant speed and along the same direction, and thus this can be considered to be a corollary to the First Law. The salient point in the present context is that *the ratio of the rates* of any two inertial clocks must also be a constant. As a result, any measured elapsed times for the same two events obtained using the two clocks must always be in strict proportion to one another:

$$\Delta t' = (\Delta t)/Q,$$

whereby Q is the value of the fixed ratio.

It is clear that the above LT equation, even though it also deals exclusively with inertial clocks, is inconsistent with this proportionality relation. *This fact proves beyond any doubt that the LT is invalid.* With reference to the lightning-strike example, the time differences read from the two clocks on the train and platform must always occur in the same fixed ratio, independent of what events are considered. Consequently, if $\Delta t' \neq 0$, then so also must $\Delta t' \neq 0$, i.e. both clocks agree that the two lightning strikes did not occur at the same time. Conversely, however, when the strikes do occur simultaneously based on one of the clocks ($\Delta t' = 0$), it follows from the proportionality relationship that they must also have occurred simultaneously for the other ($\Delta t = 0$).

All this is crystal-clear. The question is what can be done to make the scientific establishment aware of this state of affairs? Please check the above arguments about inertial systems with people whose opinions you trust in such matters. You will find

that it is impossible for an inertial clock, by virtue of its definition, *to change its rate spontaneously*. The rest follows as the night the day, and it becomes unavoidable that the space-time theory in Einstein's landmark 1905 paper is faulty and in need of essential revision.

It should be made clear at the same time that this development in no way changes the fact that Einstein was a great scientist and icon. The point is that this very stature makes it imperative that serious errors in his work are corrected and that his version of relativity theory is amended. To show that a credible revision already exists, I have attached to this message several papers which have been published in established theoretical journals, one over a decade ago, and also a power-point presentation that was recently given to a group of scientists from 43 universities in India. I have also included an open letter on this subject which was sent to a number of physics departments in the U.S.

In summary, there is a critical need for Scientific American to use its authority to make clear to physicists that there is an urgent need for revising Einstein's theory of relativity.

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Sincerely yours,

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