

Re: What happened between Newton and Einstein?

Re: What happened between Newton and Einstein?

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2007-03/msg00076.html>

- *From:* "PD" <TheDraperFamily@xxxxxxxxxx>
 - *Date:* 1 Mar 2007 07:19:41 -0800
-

On Feb 28, 1:02 pm, "kk" <mr_kurt_kings...@xxxxxxxxxx> wrote:

On Feb 27, 2:38 pm, "PD" <TheDraperFam...@xxxxxxxxxx> wrote:

On Feb 27, 12:49 pm, "kk" <mr_kurt_kings...@xxxxxxxxxx> wrote:

List _one_ "testable implication" that has been "derived" from Einstein's second postulate (the one that claims that light's one-way speed from Point A to Point B in any and all frames is c).

Sure.

From this postulate was directly derived the Lorentz transforms.

The Lorentz transforms in turn implied that a clock traveling in a straighter spacetime path would show a greater time elapsed between two events than a clock traveling in a less straight spacetime path.

Thanks for giving a sincere, direct and simple answer.
(No sarcasm intended.)

But let's look a little closer.

You are saying that special relativity explicitly pertains to different ages for twins and triplets, and to different time readings for clocks in different frames (for the same two events).

You are also saying that these different ages and readings are given by Einstein's 2nd postulate.

Re: What happened between Newton and Einstein?

Re your first claim, I reply that special relativity (SR) cannot explicitly pertain to intrinsic twin age differences (or to intrinsic clock differences) simply because SR refuses to believe in any effect (i.e., any observable or detectable effect) of actual or absolute motion through space, and yet such motion is the only possible cause of the age differences between twins and triplets.

I'm sorry, I don't see how absolute motion is the **only** possible cause of the age differences between twins and triplets.

In the case of the twins, A and B, A and B **both agree** that A takes a straighter path through spacetime than B. However, this in no way implies anything about absolute motion.

Re your second claim, I reply that since Einstein's 2nd postulate is purely a mere definition (of clock synchronization), it cannot pertain to anything in nature.

I completely disagree. The second postulate is an explicit statement about what will be the result of a measurement of the speed of light, independent of any state of motion of the source or of the observer. There is **NOTHING** in the statement of the second postulate that says anything about clock synchronization.

Now, it is true **later** that Einstein **uses** that postulate to define a procedure for clock synchronization, as in implication of the postulate. However, the postulate is not dependent on clock synchronization in any way. In fact, using light for clock synchronization is not even a **requirement**. You can synchronize two spatially separated clocks by **any** procedure that carries a signal at the same speed in both directions — including walking. Einstein just happened to use light because he had just postulated that it satisfies this criterion as a usable signal.

Please be sure to stick with what the postulate says and try not to include **other** things as implicit postulates that aren't really that.

How, then, you may wonder, did SR come to contain actual (absolute) clock slowing and absolute rod length contractions (along with actual or absolute age differences for twins and triplets)?

Re: What happened between Newton and Einstein?

The answer is extremely simple, but not extremely well known:

Real clock slowing and real rod shrinkage entered SR not via Einstein's postulates, but via his upfront (pre-postulation-era) acceptance of the Michelson–Morley experiment null result. (Actually, Einstein simply accepted upfront full round-trip nullness, which included both the MMx and the KTx, with the former having rod contraction, and the latter having clock slowing.)

Actually, if you read the histories of this, Einstein was pretty steadfast in being unaware of the MMX result. However, he was **quite** aware of the form of Maxwell's equations, and he was **very** aware of that factor of c that appeared everywhere in them, and he was **painfully** aware that no absolute speed appears anywhere in any of the Newtonian laws of motion and that this fact ensures their invariance with choice of inertial reference frame. And so he simply tried to figure out how it is possible that c could appear in Maxwell's equations and still have those equations be invariant with choice of inertial reference frame. It was Maxwell's equations that demanded the invariance of c , not the MMX.

So twin and triplet age differences were given via experiment prior to SR (as far as Einstein was concerned), and were not given by his 2nd postulate (as you seem to think).

However, as I mentioned above, even though SR implicitly contains intrinsic clock slowing and intrinsic rod contraction, it still explicitly denies their existence by denying all meaning to that which causes them, namely, absolute motion through space.

Try again.