

# Re: ABSOLUTE TRUTH ABOUT ABSOLUTE SPACETIME

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**From:** J.J. (nospam\_at\_nospam.com)

**Date:** 06/24/04

Date: Thu, 24 Jun 2004 17:40:23 GMT

"Perfectly Innocent" <perfectlyInnocent@as-if.com> wrote in message news:c45b45b3.0406232153.2e353f45@posting.google.com...

> Dear J.J.,

>

> I appreciated reading your sincere opinion. Your honesty is very  
> refreshing. The usual impression that I get from an opposing opinion  
> on this newsgroup is that I'm being unmercifully attacked by an  
> ignorant, bigoted fanatic who is highly offended by my irreverent  
> daring to advocate axioms sets not sanctioned by the high priests of  
> physics.

>

> "J.J." <nospam@nospam.com> wrote in message  
news:<JPiCc.99743\$0y.20635@attbi\_s03> in response to  
news:c45b45b3.0406201719.3bbe1cb1@posting.google.com...

>>

>> I think introducing students to SR via the SxR spacetime is bound to  
cause

>> unnecessary confusion. Basic to SR is the principle that the laws of  
>> nature have the same form in all inertial frames. Locally in SxR  
>> spacetime, this would still be true as long as clocks are synchronized  
>> (locally) using Einstein's prescription (i.e., 'E-synched').

Overlapping

>> local inertial frames would use the standard Lorentz transformation  
>> equations to relate the coordinates of events.

>

> I'm not opposed to the principle of relativity. I simply know that  
> there are important insights to be gained when the principle of  
> relativity is derived from the topology of  $S^3$  and a few other totally  
> innocuous postulates. Your declaration that the PofR is tied to a  
> particular clock synchronization (coordinate system) is precisely the  
> kind of misconception that I'm trying to correct.

>

The way we choose to synchronize clocks has no effect on physical phenomena.  
It does, however, affect the form of the equations that we use to describe

phenomena. As I see it, your synchronization scheme would lead to frame-dependent, complicated equations for expressing the laws of physics. Take the one-dimensional wave equation

$$(D_{tt} - D_{xx}) u(x,t) = 0.$$

Let's assume that this expresses the propagation of a longitudinal pulse on a slinky in the preferred frame of the SxR spacetime. Now consider a slinky in another inertial frame. What would the wave equation look like in this frame if one adopted your synchronization scheme?

>> *Globally in SxR, one inertial frame is 'special'. Guys and gals in this frame can shout out*  
>>  
>> *"Hey everybody, in our frame, light takes the same time to encircle the universe in both directions. Since this is not true for any other frame, we're special. So, we demand that all other frames honor us by setting their clocks so that any two events that are simultaneous for us will also be simultaneous for every one else. What a wonderful world it will be! We will have established an absolute time and things will be much simpler to comprehend in our universe because we all know that the notion of absolute time agrees with our intuition."*  
>  
> *I interpret your paragraph here as kindhearted propaganda, possibly humorous but it's definitely not satire. I believe it's clear that you've completely misstated and misunderstood my derivation. There's no arbitrariness in my derivation at all. Please try to understand the fundamental basis of my thesis: There is only one physically distinguished, globally applicable definition of simultaneity for SxR. And it's not Einstein's method.*  
>

But, I don't see much use for this definition of simultaneity. What advantages does it have over (locally) E-synched clocks and how does it help the newbie understand SR?

>> *Of course, occupants of the other frames will reply,*  
>>  
>> *"Baloney! If we set our clocks according to your prescription, then the laws of nature expressed in terms of this 'absolute time' will no longer have the same mathematical form in all local inertial frames. For example, the wave equation for the propagation of sound will now become unduly complicated and frame dependent. Yuck! We will continue to set our*

- > > *clocks (locally) so that they are E-synched. We*
- > > *find no use for your prescription for setting our clocks."*
- >
- > *Ah, but the problem is that the occupants of any other frame can't*
- > *E-synchronize all their clocks so that all the clocks of that frame*
- > *are synchronized. They must resort to S-synchronization to achieve*
- > *total global synchronization.*
- >

That's true. But why should so much importance be given to global synchronization? What is the physical significance of whether or not two events are simultaneous according to global synchronization. Why would any inertial frame choose global synchronization if it leads to unduly complicated mathematical equations for simple phenomena? Personally, I would much prefer locally E-synched clocks.

- > *Also, you still misunderstand the PofR.*
- >

Please elaborate.

- > > *The poor student trying to learn SR is likely to find the SxR spacetime*
- more*
- > > *confusing than enlightening. If introducing an absolute time in the SxR*
- > > *spacetime were really useful, then why don't people introduce an*
- absolute*
- > > *time in the usually assumed topology  $R^3 \times R$ ?*
- >
- > *People do. They've done it.*
- >

That's interesting. Can you give me a specific reference? Is this done in any introductory text as a pedagogical aid to understanding SR?

- > > *After all, we could*
- > > *arbitrarily select one inertial frame as 'special' and demand that all*
- other*
- > > *frames set their clocks according to the  $t' = t/\gamma$  prescription.*
- Then*
- > > *all frames would 'agree' on the simultaneity of two events and we could*
- > > *claim that there is an absolute past and an absolute future.*
- >
- > *But that construct is a logically admissible variant of SR. The unique*
- > *frame could be defined by superluminal signaling theories.*
- >

Do you think that having beginning students worry about superluminal signaling theories is going to make learning SR easier?

- > > *The answer, of*
- > > *course, is that it makes things complicated – the laws of physics would*

be

> > *frame dependent if expressed in terms of an absolute time defined this way.*

>

> *I believe it brings clarity. The way to think of it is that the PofR*

> *would apply locally to one class of physical law but other laws could*

> *be allowed that operate differently but consistently.*

>

I guess we will just have to disagree as to what brings clarity. I can't see the clarity that arises from splitting the physical laws into classes this way. Could you elaborate on what you mean by laws that operate differently but consistently? A specific example would be helpful.

> *BTW: All the hoopla about equivalent frames of reference doesn't even exist in GR.*

>

> > *The effects of different global topologies are interesting. But confronting*

> > *the beginner with these subtleties is not, in my opinion, going to be*

> > *helpful.*

> >

> > *J.J.*

>

> *At what academic level should students of special relativity learn*

> *these things?*

>

Some students might enjoy thinking about these things quite early on. But, my feelings are that the average beginning student is not going to profit from it and is likely to find it confusing. It would be interesting to see an outline of a set of lectures that incorporates SxR that you would present to students who are learning SR for the first time.

J.J.