Re: Why SR? (was: Source Independency of Light Speed Without an Aether???????)

Source: http://sci.tech−archive.net/Archive/sci.physics.relativity/2009−07/msg00184.html

- *From*: "Whoever" <noone@xxxxxxxxxxx>
- *Date*: Fri, 3 Jul 2009 01:23:08 +1000

"Bruce Richmond" <bsr3997@xxxxxxxxxxx> wrote in message
news:b1ea902d−b768−405a−97f0−af03e164047a@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

> On Jul 2, 3:02 am, "Whoever" <no...@xxxxxxxxxxx> wrote:
>
> > "Bruce Richmond" <bsr3...@xxxxxxxxxxx> wrote in message
> >
> > news:9d2fd128−0fe3−43db−8f8e−634275ca04f9@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
> >
> > > On Jul 1, 11:49 pm, "Whoever" <no...@xxxxxxxxxxx> wrote:
> > >> "Bruce Richmond" <bsr3...@xxxxxxxxxxx> wrote in message
> > >>
> > >>news:3b21d130−b93e−4e7e−8486−9fe5c6ae61bd@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
> > >>
> > >> > > If the coordinate system is constructed using light
> > >> > > signals that by definition travel at isotropic c then there is no > > > way
> > >> > > you can measure the speed of light to be anything but c. Call it
> > >> > > circular if you like but it is true. And that is a property of the
> > >> > > coordinate system. You could have made it differently if you wanted
> > >> > > to.
> > >>
> > >> > You could .. but there is not really anything else that makes sense.
> > >>
> > > Well you could defer to the sync of another frame.
> > >
> > > And what does that mean? One still needs to know what sync means for a
> > > given frame in order to sync clocks with some other frame
> >
> > It means just what it says. If you are on the train you could adjust
> > the tick rate of your watch so that it stays in agreement with the
> > clocks on the embankment.
>
> I'm not talking tick rate (tho that is another issue), but sync.

> It would make sense if the purpose of your
> trip was to report on activities observed along the embankment. But
> it would leave you with a coordinate system in which light did not
> travel at isotropic c.

And if you DID adjsut the tick rate (which is not really what is covered by clock sync) .. how would you synchronise with a remote clock (eg on the embankment)

> > > Does the space
> > > station have its own time or do they use a particular time zone on
> > > earth?
> >
> > You're bypassing the question .. one still then has to ask how does one
> > synchronise with a clock on earth. What does it mean for the clock on the
> > space station and that on earth to be in sync? (not that they could anyway,
> > as they tick at different rates, so they would immediately go out of sync)
>
> Most clocks have an adjustment for their tick rate. I think my train
> example answered your question.

It avoided the question of how do you sync with the clock on the embankment, and what does it mean for them to be in sync

> > > That would make more sense than adjusting their clock each
> > > time they pass into another time zone, or worse yet continuously
> > > adjusting to match the solar time of the point they are passing over.
> >
> > Still doesn't answer the question of what is a sensible alternative of clock
> > sync to that proposed by Einstein
>
> On the space station receive timing signals from the ground to varify
> that you have the tick rate of you clock set right.

Its not just tick rate .. its sync. How do you set the clock on the satellite to the same time as on earth?

> For any
> experiment using multiple clocks on the station use slow transport.

And how do you know that clocks moved by slow transport are in sync .. what definition of sync are you using?

>> Some people wave arms about absolute time and absolute sync .. yet >> they
>> can't define what that means, or how to achieve it (ie how to set up >> two
>> clocks in absolute sync), or how to measure it (ie how to check if two
>> clocks are in sync or not). Other than naive concepts like looking at
>> the
>> clocks from a midpoint and seeing them show the same time (and we all
>> know
>> what that assumes) :):)

> I don't think anyone here was trying to invoke an absolute time.

They have been .. not by you though

By "anybody" I meant John and myself. I know there are cranks around here.

> I
> was just pointing out that in SR the speed of light being isotropic c
> is not an assumption, it is a property arrived at by how the
> coordinate system is constructed.

Yeup .. but there is not really any sensible alternative.

Depends on your purpose. When you travel into a different time zone you adjust your watch to agree with those around you.

How .. how do you know it agrees (ie what is your definition of sync)?

There is a
definite line at which the change is supposed to be made. You may have only traveled ten miles, but if you crossed that line you better adjust your watch or you are the odd one.

> If it was an assumption it could be
> proven wrong. As it is, if the speed of light is measured to be
> anything other than c an error was made because it has to be c.

It has to be isotropic from the postulate that the speed of light is c.

The clock sync then comes from that postulate .. as any other sync would not be showing the correct speed for light (ie it would be an error).

> I'm pretty sure that's what I was saying. I only added that because
> it comes from the postulate it will agree with the postulate. It is
> obvious but some people don't see it.

Yeup

> > If it was possible to show that light speed is isotropic (perhaps comparing
> > wavelength and frequency of light going in opposite directions?) without
> > using remote clocks, then that would 'prove' the clock sync as 'correct' ??
>
> I thought in science you could prove something correct, you could only
> show what was not correct.

That's why I used "

> > The fact that I can do experiments that
> > are in agreement with LET does not prove LET correct and SR wrong ;)

The point is .. can one show isotropy without measuring the speed directly. Would comparing wavelengh of light in each direction and seeing that they are the same, show isotropy of light, without and clock being required ??

And the other point is .. what other method of sync would be useful for a light speed measurement using two clocks .. what other definitions of sync are there other than the Einstein definition of what sync'd clocks must show.

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