

Re: Is Lorentz contraction a real process

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-09/3860.html>

From: Harry (harald.vanlintel_at_epfl.ch)

Date: 09/14/04

Date: Tue, 14 Sep 2004 12:00:07 +0200

"Tom Roberts" <tjroberts@lucent.com> wrote in message
news:ci4b7v\$5pe@netnews.proxy.lucent.com...

> *Harry wrote:*

> > *Tom Roberts <tjroberts@lucent.com> wrote in message
news:<YvO0d.15397\$ZC7.4870@newssvr19.news.prodigy.com>...*

> > > *Harry wrote:*

> > > > *I still wonder how real and unreal these things are in the Einsteinian
> > > > interpretation.*

> > > *In SR, no rod "contracts" in any way due to its velocity relative to any*

> > > *inertial frame; similarly no clock "dilates" in any way due to its*

> > > *velocity relative to any inertial frame.*

> >

> > *Thanks for trying to explain this. So, according to you, in Einstein's*

> > *interpretation what is measured (time dilation) does *not* correspond*

> > *to reality?*

>

> *Good heavens, NO! How could you possibly twist what I said into that???*

> *That bears no relation to anything I have said (specifically, I*

> *completely avoided trying to label something "reality" or not).*

>

> *In SR, "time dilation" does not correspond to any "physical" change IN*

> *THE CLOCK. It corresponds to a change in perspective of how the observer*

> *OBSERVES the clock. This is "real" for most meanings of that word.*

Maybe you did not understand what I tried to say. Of course there is no denying that we really make the observation. If I have a change of perspective of how something looks like, then it involves no physical change of that something: the observed change is fake insofar as it does not correspond to an intrinsic change of that object. Thus, if I change my perspective back to how it was before, nothing should have happened to my object of observation compared to the case that my change of perspective did not occur. Such is for example the case using a magnifying glass.

> *I think that he stated quite the opposite when he first*

> > *presented his interpretation:*

> > *"Thence we conclude that a balance-clock at the equator must go more*

> > *slowly, by a very small amount, than a precisely similar clock*

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- > > *situated at one of the poles under otherwise identical conditions."*
- > > *(Well put IMO; let's not waste time on the then unknown GRT effect).*
- >
- > *The "GRT effect" is not "unknown" at all -- it is quite well known. But*
- > *let's ignore it, here.*

Exactly, that's what I wrote (maybe the word "then" is ambiguous? I only know the meaning "at that time").

- > *Note, however, that I was discussing "length contraction" and "time*
- > *dilation"; the example you quote is not really "time dilation" --*
- > *Einstein's example involves non-inertial motion in an essential way.*

In the same paragraph he illustrated that it doesn't matter for the calculation: only the speed of the clock (v) matters.

- > > > *Just think about it -- since*
- > > > *all inertial frames have equal standing, and there are an infinite*
- > > > *number of them moving with different velocities, how could a rod or*
- > > > *clock possible "change" due to any such relative velocity?*
- >
- > > *How can it *not* be so, given such examples as the above one of*
- > > *Einstein?*
- >
- > *It can quite easily "be so":*
- >
- > *Look at a building from directly in front, and it appears to*
- > *be a given width. Now move over to a corner and look at it --*
- > *it appears to have a smaller width. Did the building itself*
- > *change? Quite clearly not; what changed is your perspective*
- > *of the building. In SR, "time dilation" and "length contraction"*
- > *are directly analogous changes in perspective.*

That's what I meant. It's what caused Dingle's downfall.

- > *If you want to discuss Einstein's example, start a new thread about it.*
- > *This thread is about "length contraction" (and by analogy, "time*
- > *dilation").*
- >
- > > *Do you mean that nothing happens to it?*
- >
- > *If by "it" you mean the clock, and by "nothing happens" you mean that*
- > *relative motion of the observer does not "change" the clock, then YES.*
- > *Quite clearly this MUST be so.*
- >
- > > *Then how can nothing*
- > > *make it move more slowly, and still it does move more slowly?*
- >
- > *You meant TICK more slowly.*

Sorry yes.

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- > *And you forgot to mention who is measuring*
- > *its tick rate -- different observers will obtain different values for*
- > *its tick rate, due to their different PERSPECTIVES.*

In the particular example where Einstein expressed himself about the physical meaning, the clocks are compared and it is thought that one "goes" or "ticks" more slowly. This is true in any frame of observation, thus your objection is irrelevant.

- > *In particular, an observer collocated and comoving with the clock will*
- > *observe/measure the normal tick rate. But an observer not comoving with*
- > *the clock can measure a different tick rate.*

That can't be otherwise, a clock tick is a clock tick.

- > > *Sorry,*
- > > *I'll likely never understand what I consider to be twisted reasoning.*
- >
- > *You simply do not understand the underlying geometry. This is, at base,*
- > *as simple as the building example I gave above. There is no "twisted*
- > *reasoning" at all (except in your personal MISUNDERSTANDINGS, which are*
- > *indeed, "twisted").*

Thanks for trying anyway!

- >>*In SR what changes is the relationship between the rod or clock and the*
- >>>*various inertial frames. Measurements in each inertial frame, of course,*
- >>>*depend on that relationship, and this leads to "length contraction" and*
- >>>*"time dilation".*
- >>
- >> *That kind of reasoning was held by Dingle...*
- >
- > *No, Dingle made other, more subtle, errors.*

Sure he made errors. However, his downfall came after he realised what I try in vain to point out to you. Next he effectively rejected or misapplied the Lorentz transformations, but I don't know if that is a "subtle" error.

Harald