

Re: relativity of simultaneity – real or perceived?

Source: <http://sci.tech–archive.net/Archive/sci.physics.relativity/2005–05/msg01071.html>

- *From:* "Martin Hogbin" <goatREMOVETHIS123@xxxxxxxxxx>
 - *Date:* Sun, 15 May 2005 17:05:38 +0000 (UTC)
-

"Curious" <anthonyroseuk–curious@xxxxxxxxxx> wrote in message
news:1116115307.336850.233500@xx

- > I need to know whether the equations are telling us where the particles
- > would be *perceived* to be to an observer at $x' = 0$ and $t' = 0$, or
- > whether they are telling us where the particle actually is wrt to frame

The equations of special relativity (SR) tell us
where the particle actually is not where it is
seen to be.

- > 2. If for example we were on a spaceship travelling at $0.5c$ some time
- > before this event, and had to be able to calculate exactly where the
- > two particles would be at time $t' = 0$ given that we know where they
- > will be wrt frame 1 at time $t = 0$, would we expect particle B to be at
- > $x' = 0.87$ and the right end of the box at $x' = 1.3$?
- > Is this saying that for frame of reference 2, the two particles do NOT
- > pass each end of the box simultaneously – in other words, is this
- > saying that two contradictory scenarios both occur?

Events which are simultaneous in one frame of
reference may ('really') not be so in another. This is
one of the most important points to understand
in SR.

- > Would you agree with Paul that they are EITHER simultaneous events OR
- > not?

This is wrong. Paul is one of the regular 'aether
theorists' on this group.

- > Or do you go for the 'there is no absolute reality, we can only
- > know what we measure' view shared by Dave A. Smith, and believe that
- > they are both simultaneous AND non–simultaneous?

That is not put very well. Events themselves are the
absolute reality in SR. Whether they are simultaneous
or not depends on your frame of reference.

Re: relativity of simultaneity – real or perceived?

- > Or do you say that this is where the evidence leads, despite that fact
- > that it is beyond us to understand the multiple 'realities'?

Multiple realities are not part of SR; measurements (allowing for the transit time of light) made in different frames of reference are.

- > If the box was a bomb that blew up instantly when two photons hit it
- > simultaneously at both ends, would an observer in frame 1 see it
- > explode but an observer in frame 2 see it remain unexploded?

No, this never happens. The final result is always the same in both frames.

The problem with discussing questions like this on a public newsgroup is that any crackpot can post a reply (and they frequently do). If you want to know the answers to questions like the one you ask above, I strongly suggest that you read a good text book on the subject. The one that most physicists on this newsgroup recommend is:

Spacetime Physics : Introduction to Special Relativity
by Edwin F. Taylor, John Archibald Wheeler, Archibald Wheeler (Contributor)
Paperback – 312 pages 2nd edition (December 1992)
W H Freeman & Co.; ISBN: 0716723271

The train experiment is covered in the book.
If you have any questions on it you can post them here but you will be better able to tell who the crackpots are.

Martin Hogbin

• *Follow-Ups:*

◆ *Re: relativity of simultaneity – real or perceived?*

◇ *From: Curious*

• *References:*

◆ *relativity of simultaneity – real or perceived?*

◇ *From: Curious*

◆ *Re: relativity of simultaneity – real or perceived?*

Re: relativity of simultaneity – real or perceived?

◇ *From:* Paul Stowe

◆ ***Re: relativity of simultaneity – real or perceived?***

◇ *From:* Curious

◆ ***Re: relativity of simultaneity – real or perceived?***

◇ *From:* Jon Bell

◆ ***Re: relativity of simultaneity – real or perceived?***

◇ *From:* Jon Bell

◆ ***Re: relativity of simultaneity – real or perceived?***

◇ *From:* Curious

- Prev by Date: ***Re: What are relativists?***
- Next by Date: ***Re: Relativistic angular kinetic energy***
- Previous by thread: ***Re: relativity of simultaneity – real or perceived?***
- Next by thread: ***Re: relativity of simultaneity – real or perceived?***
- Index(es):
 - ◆ ***Date***
 - ◆ ***Thread***