

## Re: SR cannot determine Contraction

---

*Source:* <http://sci.tech-archive.net/Archive/sci.physics.relativity/2008-02/msg02148.html>

---

- *From:* Dono <sa\_ge@xxxxxxxxxxx>
  - *Date:* Sun, 24 Feb 2008 21:13:56 -0800 (PST)
- 

On Feb 24, 8:45 pm, PD <TheDraperFam...@xxxxxxxxxx> wrote:

On Feb 24, 10:31 pm, Dono <sa...@xxxxxxxxxxx> wrote:

On Feb 24, 8:25 pm, PD <TheDraperFam...@xxxxxxxxxx> wrote:

On Feb 24, 10:09 pm, Dono <sa...@xxxxxxxxxxx> wrote:

On Feb 24, 7:36 pm, "Artful"  
<art...@xxxxxxxxxxx> wrote:

Nicely put. Now we've just  
got to convince dono that an  
object *\*does\**  
'physically' have a shorter  
spatial length (ie take up  
less physical space;

I had a hunch that you will not get this. This  
is what happens when  
you are more interested in being always right  
instead of getting it  
right <shrug>

Let's put it this way. Length is a result obtained through a  
prescription, one that typically involves recording two spatial

## Re: SR cannot determine Contraction

locations simultaneously. Length is a physical property. However, because simultaneity is frame-dependent, the physical property length is also frame-dependent. There is, however, no physical process or interaction occurring to or in the rod to change its length.

PD

Correct.

–This is why one can't close the doors simultaneously in the barn frame without hitting the pole.

In the frame in which the barn is at rest, you can.

No, you can't. This would be equivalent with a physical contraction of the rod and this is not what is going on.

–This is why the pole in the barn, being a thought experiment, is a very poor illustration for length contraction.

I don't follow this.

There is a large class of thought experiments (the pole in the barn being one of them) that rely on the misguided idea that length contraction allows larger objects (like the pole) to fit inside smaller enclosures (like the barn) as a byproduct of rapid relative motion. This is not the case.

–This is why, to date, we have no experimental test for length contraction ([http://www.edu-observatory.org/physics-faq/Relativity/SR/experiments.html#Length\\_Contraction](http://www.edu-observatory.org/physics-faq/Relativity/SR/experiments.html#Length_Contraction))

I don't follow that, either. What does the frame-dependence of length do to prohibit measuring that effect, when the frame-dependence of just about any other frame-dependent quantity has certainly been

## Re: SR cannot determine Contraction

measured? (E.g. muon lifetime in  $g=2$ , angular distributions of secondary particles in hadron-hadron collisions, etc.)

Length contraction is a measurement artifact that comes about when we attempt to measure lengths of moving objects. It is easy to prove that the effects are of the second order in  $v/c$ , something well outside the current precision of measuring devices.

If, by contrast, length contraction were a physical effect, compressing objects such that, at relativistic speeds they would fit into much smaller enclosures (like in the case of the paradox in discussion) we would have been able to measure it through tension/stress effects. This is not the case, so we don't have any tests of length contraction to date, and probably none for the foreseeable future:

[http://math.ucr.edu/home/baez/physics/Relativity/SR/experiments.html#Length\\_Contraction](http://math.ucr.edu/home/baez/physics/Relativity/SR/experiments.html#Length_Contraction)

.