Re: Spaceship Question

Source: http://sci.tech−archive.net/Archive/sci.physics.relativity/2006−01/msg02124.html

- *From*: "PD" <TheDraperFamily@xxxxxxxxx>
- *Date*: 27 Jan 2006 15:16:10 −0800

Henri Wilson wrote:
> On 26 Jan 2006 16:36:52 −0800, "PD" <TheDraperFamily@xxxxxxxxx> wrote:
>
> >
> >Henri Wilson wrote:
> >> On 25 Jan 2006 03:16:55 −0800, "PD" <TheDraperFamily@xxxxxxxxx> wrote:
> >>
>
> >> >> Of course it is. I would say the opposite.
> >> >
> >> >You would be wrong. Experiment, by the way, indicates otherwise.
> >>
> >> Come on! You know that there is absolutely NO evidence that length contractions
> >> occur.
> >
> >That's simply not true. Suggest you google "rapidity segmentation".
> >It's demonstrated in particle detectors repeatedly.
>
> Load of irrelevant nonsense.

Gee, I don't think so. Your refusal to look at it is your
responsibility.

>
> >
> >>
> >> >> No physical attribute of any object is observer dependent. How could it be?
> >> >
> >> >I agree. Except that length is not a physical attribute of the object.
> >>
> >> 'Length' is the absolute amount of linear space occupied (in terms of a defined
> >> standard).
> >
> >Except that this value is not a constant.
>
> Its measured value might not be....because of the visual illusion.

Except that there is physics that is affected by "the illusion" even

though it cannot see. Would you like some examples of that? (Hint: I
gave one above that has nothing to do with any visual illusion.)

>
> >
> >> Measured length can be actual or illusory, depending on how it is measured.
> >> Measured length in any one frame is real.
> >
> >And what if the measured length (done identically) in two frames
> >produces two distinct values? Who's right, and why?
> >
> >(Hint: experiment shows this does happen. SR explains why and tells you
> >the relationship between those two values.)
>
> The measurement in the same frame is almost certainly the correct one. The
> other is almost certainly an illusion.

"Almost certainly". Sounds like you hope it must be true. What is the
illusion?

>
> SR explains how impressionable fools can be brainwashed.....

But the measurements, which don't involve "seeing" and therefore don't
involve any visual illusion, do not lie. Measurements cannot be
brainwashed.

>
>
> >> >> Why are you people so obsessed with observers?
> >> >
> >> >Because length is the result of a procedure that is inherently
> >> >observer−dependent.
> >>
> >> No, you are confusing 'length' with 'measured length'.
> >
> >Please define length, distinct from measured length, and please
> >indicate
> >a) how you know such a quantity, inherent to the object and independent
> >of the state of motion of the observer, exists
> >b) what value it has, if it is not measurable
>
> You believe space exists only if it is being measured.

Again you confuse the existence of space with the quantity of space.
Momentum certainly "exists". However, it's value as a property of a
system is *certainly* observer−dependent. This observer−dependency does
not denigrate its existence at all.

> I can assure you, space was around long before humans evolved.
>

> >> The same applies to TIME, which exists as a fundamental 'dimension' whether or
> >> not we try to measure it with clocks.
> >
> >Time as a dimension certainly exists, as does space. How *much* time
> >something takes, and how *much* space something consumes, however, is a
> >matter of the state of the observer.
>
> It is a matter of comparing a measured value against a defined standard.
>
> It can only be done confidently in ONE frame.

Why? The laws of physics are identical in all inertial frames. Why
should only one frame be selected if the physics is the same in all the
others?

>
>
> >> >
> >> >No, but then again, the change in length does not amount to a physical
> >> >change in the rods.
> >> >
> >> >> Do you think that if two of them are reunited in remote space, their lengths
> >> >> will be different?
> >> >
> >> >No, but if two of them pass a single observer at different speeds, they
> >> >will be have different lengths.
> >>
> >> I think you just contradicted yourself... :)
> >
> >No, I don't think so. Where is the contradiction?
>
> What you said was hilarious... you're bending spoons again.....

No, I asked you a question. Where is the contradiction?

>
>
> >> >>
> >> >> We have already established that physical properties do not change with
> >> >> velocity. (they cannot both increase and decrease simultaneously)
> >> >
> >> >But length is not a physical property.
> >>
> >> you are confusing 'length' with 'measured length'.
> >
> >See above.
>
> nothing above makes any difference.
>
>
> >> >Crappy definition. The problem is that two copies of the same standard,

> >> >traveling at different speeds and observed by the same fella, will have
> >> >different lengths.
> >>
> >> Measurements made in different frames can be and usually ARE illusions.
> >
> >Why? Explain how to make the measurement of this quantity in such a way
> >to be free of the illusion. If you can explain that, then we'll be free
> >of all this.
>
> It is possible to measure the length of a moving rod quite accurately by using
> photo detectors to sense when the ends pass close by two known points.

Yes. Precisely. Note that it's important that the photodetectors do
this at the same time. Do you see why?

> One can also measure the rate of a moving clock similarly by comparing its
> readings with two synched clocks spaced a known distance apart.
>
> However, because light speed is so high, no practical experiment of this type
> is likely to reveal anything that might disprove SR.

Nonsense. I can *easily* measure the time of flight of something that
is traveling at highly relativistic speeds. In fact, I can tell the
difference between two particles that have the same momentum, just
because of the slight difference in their times of flight between two
points. Don't tell me that measurements at high speed can't be done
accurately. If that were so, we'd have no experimental evidence of
relativistic effects at all.

>
>
> >> Ah! I can identify part of your problem.
> >>
> >> You people all believe you are infallible.
> >> If you see something, you firmly believe it must be real!
> >
> >If there is a physical property that is unmeasurable, then it is not
> >real. If there is a physical property that can be, but hasn't been,
> >measured, then please specify how. Exactly.
>
> That isn't the issue at all.
> The issue is , "can a physical property be measured in any frame other than
> that of the object being measured?".
> I say NO it cannot.
> The value obtained will always be illusory.

Really? You can't measure the speed of a fastball, because you're not
measuring it in the frame of the fastball??? (The only way to measure
the speed of anything in the same frame as the object would yield a
speed of zero, wouldn't it, HW?) Or is the speed of a fastball just an
illusion of its "true" speed, which is zero?

>
> >> >> >> Why would you think it would?
> >> >> >>
> >> >> >> A_____rod_____B
> >> >> >>
> >> >> >> −>O O1<−
> >> >> >>
> >> >> >> You seem to be under the delusion that the rod changes length because of the
> >> >> >> presence of differently moving observers. How strange...
> >> >> >
> >> >> >Yes, that's right. Note that nothing is happening to the rod per se,
> >> >> >though something is happening to its length. That's because length is
> >> >> >not a physical property of the rod.
> >> >>
> >> >> Its length has been given the value ONE by definition.
> >> >>
> >> >> Are you saying that it becomes something other than ONE just because observers
> >> >> move past?
> >> >
> >> >Yes.
> >>
> >> That's not very logical of you.
> >
> >I don't see why you'd think so.
>
> You have already agreed with the obvious fact that observing something cannot
> change it.

Change the object, yes, not it's length.

> So its length must still be ONE unit of length no matter what value a moving
> observer comes up with..

No, the length can change without changing the object. Just like two
observers can come up with two different values for the kinetic energy
of the *same* object at the *same* time, without doing anything to
change the object.

>
>
> >> >>
> >> >> Nor is anyone else with proper measuring equipment.
> >> >
> >> >Spaceman also believes that time dilation is due to clock
> >> >malfunctioning. Do you believe that too?
> >>
> >> Spaceman does NOT believe that.
> >
> >You sure?
> >

> >>
> >> Spaceman and I both know that 'time dilation' is part of the relativists'
> >> delusion.
> >>
> >> You still haven't defined 'time dilation' anyway.
> >
> >OK.
>
> Well what does TIME DILATION actually mean?
>
> ...tell us what happens to TIME when an observer moves.

Time isn't an object that you do something to. It's a coordinate. The
coordinates of events, and the differences of coordinates between two
events, will be different for different observers.

>
> >> >> >That depends on what "they" stands for. If you mean the rods and the
> >> >> >clocks, then I agree. If you mean the rod's length or the clock's rate,
> >> >> >as measured on the ship, then I agree. If you mean the rod's length or
> >> >> >the clock's rate, as measured by any other observer, then I don't
> >> >> >agree.
> >> >>
> >> >> But you have no good reason to hold such a belief.
> >> >
> >> >Sure I do. It's called experiment. It's an observed fact.
> >>
> >> It would be an observed illusion, if it did happen.
> >
> >It's only illusion if there is a way to correct it. Got a plan?
>
> Why would you want to make a correction to something that you knew hadn't
> changed?
>
>
> >> >
> >> >Not if length is not a physical property of the rod. If one defines a
> >> >standard and then finds that the standard is useless and
> >> >observer−dependent, then one calls into question the standard rather
> >> >than assuming the technique is crappy. Especially if one can accurately
> >> >*predict* how much the "standard" changes with the observer,
> >> >independent of the method used to measure it.
> >>
> >> But the standard is NOT useless. I can take a standard metre rod anywhere,
> >> anyhow in the universe and know it is exactly as it was before I left.
> >
> >Not so. A standard meter comes with instructions stamped in the side
> >that it can only be used at rest in the observer's frame.
>
> Rubbish. We have firmly established that nothing physical happens to hte rod
> after an acceleration.

Yes.

> So we know it is the same length as beforehand no matter
> how or where we go..

No, because changing the length is not tantamount to changing the
object. Depending on how I go, the momentum of that same object will
change as well, even though I do *nothing* to the object and nothing
physical happens to the object.

>
> >> >If there were a problem with the technique, then the answer would vary
> >> >by varying the technique or by altering the device. Since the result of
> >> >the measurement is *predictably* dependent on the relative speed of the
> >> >observer and not on the technique, then the implication is that there
> >> >is something else going on.
> >>
> >> M\easuring anything in a frame different from the obserevr is tricky at best.
> >> It would normally lead to an illusion. Sensible people would immediately
> >> realize that.
> >
> >What illusion is that? And how do you measure the quantity free from
> >the illusion?
>
> You use its own frame for the measurement, of course.
>

And so the "true" kinetic energy of every object is zero, and the other
values are illusions?

>
> >> >Limits of accuracy are estimable, and this effect has been observed to
> >> >far exceed the limits of accuracy.
> >>
> >> Limits of the illusion are not easily estimable.
> >> One must try to create the reality behind the illusion when the illusion is the
> >> only data one has.
> >
> >??? You mean, like "Imagine the real world without the Matrix?"
>
> That is a quite a good example actually.
>
> How about, "Imagine the electrical signals in your monitor cable by looking at
> the picture on the screen".
>
> >> >> Those people who originally standardized their gear with the ship's while at
> >> >> rest with it and who subsequently do NOT measure the spaceship's length to be
> >> >> ONE unit, are obviously performing flawed experiments.
> >> >
> >> >Sorry, that's not obvious. In fact, it's pretty easily ruled out.

> >>
> >> If logic proves that the ship's length did NOT change and a particular observer
> >> DOES measure a change, then it is pretty obvious who is wrong.
> >
> >No, logic does not rule it out. You only showed that no physical
> >processes can be acting to affect the intrinsic physical properties of
> >the rod. You have not demonstrated that length is one of those
> >instrinisic physical properties. In fact, you have not demonstrated a
> >meaning or a means to measure a length in any way that observers in
> >different states of motion could agree on and get a common value.
>
> I have made it clear that only measurements made in an object's own frame can
> be taken as reliable. Measurements of the object in other frames are illusions.
>
> >This isn't something to get overly worked up about. There are lots of
> >properties that are like this. Kinetic energy or momentum, for example.
>
> They are different.
> They are obviously frame dependent because they have 'L/T' in their dimensions.

OK, now here we go. Why the *hell* should having L/T in the dimension
suddenly make them OK in every frame, whereas L and T are only
measurable in the frame in which the object is at rest?

>
> So they DO have different values in different frames.

And they are not illusory?

>
> For instance kinetic energy can be evaluated in different frames by measuring
> heat dissipated on impact.

Really? You're sure? You're sure that all of the kinetic energy will be
converted to heat? Be really sure about that claim.

>
> >> >> >Maybe you should ask yourself what "length" means.
> >> >>
> >> >> ...occupation of space between two points.
> >> >
> >> >Let's figure out exactly what that means. How do you measure the length
> >> >of a moving object?
> >>
> >> You don't have to measure it to define it.
> >
> >I beg to differ.
> >Define the momentum of any object that is independent of the motion of
> >the observer.
> >Go ahead.
>

> Don't change the subject. Momentum is frame dependent.
> We were talking about rods.

Momentum is a measurable property of a rod. Length is a measurable property of a rod. What is fundamentally different about these that one is measurable in any frame and it is not illusory in any of those frames, but the other is illusory in all frames but one?

PD

> My answer is, don't even try to measure the length of a moving rod. Chances are
> you will get a wrong answer.
>
> >
> >> You only have to measure it if you want to quantify it.
> >
> >Then we're talking about two different things. You seem now to be
> >talking about the *existence* of length, as opposed to what values it
> >has, according to different observers.
>
> That's correct. I don't give a stuff about its value. I make its value equal to
> ONE unit by definition.
>
>
> >
> >PD
>
>
> HW.
> www.users.bigpond.com/hewn/index.htm

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- ***References***:
  - ♦ ***Re: Spaceship Question***
    - ◊ *From:* Randy Poe
  - ♦ ***Re: Spaceship Question***
    - ◊ *From:* PD
  - ♦ ***Re: Spaceship Question***
    - ◊ *From:* PD
  - ♦ ***Re: Spaceship Question***
    - ◊ *From:* PD
  - ♦ ***Re: Spaceship Question***
    - ◊ *From:* PD

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