

Re: A challenge to non-SRians

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-08/2044.html>

From: Androcles (*androcles_at_nospamblueyonder.co.uk*)

Date: 08/09/04

Date: Mon, 09 Aug 2004 18:23:07 GMT

"sal" <pragmatist@nospam.org> wrote in message
news:pan.2004.08.09.16.45.00.29993@nospam.org...
| On Mon, 09 Aug 2004 16:13:32 +0000, Androcles wrote:
|
|>
|> "sal" <pragmatist@nospam.org> wrote in message
|> news:pan.2004.08.09.14.22.17.501312@nospam.org...
|> | On Mon, 09 Aug 2004 06:40:11 -0700, Martin Miller wrote:
|> |
|> |> sal <pragmatist@nospam.org> wrote in message
|> |> news:<pan.2004.08.07.18.11.23.475165@nospam.org>...
|> |>> On Sat, 07 Aug 2004 08:32:00 -0700, Martin Miller wrote:
|> |>>
|> |>>
|> |>>> Do you or do you not agree that when the origins of two passing
|> |>>> inertial frames coincide, so do all other such corresponding
points
|> |>>> such as (Xa,0,0) and (Xb,0,0)?
|> |>>>
|> |>>> Oh, please. Have you ever heard of "Fitzgerald contraction"?
|> |> snip
|> |>> If Dirk won't answer you, try looking in a book.
|> |> snip
|> |>> Make a real effort to absorb some of the material, try to
understand
|> |>> it rather than trying to resist it, and then ask a question which
is
|> |>> more advanced than something I'd expect to hear on the first day of
a
|> |>> freshman physics class. Then, you'll be much more likely to get a
|> |>> polite hearing and a serious reply.
|> |>
|> |> I can prove that I should have gotten "a polite hearing and a
serious
|> |> reply" in the first place, but do you really believe that I will
ever
|> get

|> |> "a polite hearing and a serious reply" from any relativist?
|> |>
|> |> Anyway, here is my proof (actually two proofs):
|> |>
|> |> According to Einstein himself, whenever two passing observers
|> |> coincide,
|> |> if
|> |> one is equidistant (per his own ruler) from two events, then the
|> |> other
|> |> is
|> |> also (per his own ruler).
|> |>
|> |> Right. And if the frames are moving relative to each other, ONE of
|> |> three events may share a coordinate value between the two frames. The
|> |> other two won't. (Three events, not two, because the observers
|> |> "coinciding" is also an event, of course.)
|> |>
|> |> The "left distance", for want of a better phrase, will match the
|> |> "right
|> |> distance" in each frame. True. But the "left distance" in one frame
|> |> won't match the "left distance" in the other frame, which is what you
|> |> actually assumed was the case.
|> |>
|> |> (See Einstein's train/embankment experiment.) (As Einstein said in
|> |> that experiment, "But the events A and B ****also****
|> |> [my
|> |> emphasis] correspond to positions [or frame points] A and B on the
|> |> train.")
|> |>
|> |> Translation:
|> |> According to Albert Einstein, when the origins of two passing frames
|> |> coincide, all other matching frame points also coincide, such as the
|> |> frame
|> |> points (Xa,0,0,) and (Xb,0,0,).
|> |>
|> |> Wrong. You totally missed the point, as I explained out above -- but
|> |> then I expect you misunderstood my explanation, too, and will go on
|> |> claiming that Einstein's statements show Fitzgerald contraction can't
|> |> happen.
|> |>
|> |> Try to prove what you just said mathematically, starting with your
|> |> statement about equidistance in any coordinate system.
|> |>
|> |> You won't, though, because it doesn't follow.
|> |>
|> |> And that marks the end of my patience with you, and you're plonked.
|> |> Argue with Dirk -- he never seems to plonk anybody, as far as I can
|> |> tell.
|> |>
|> |>
|> |> --

|> | I can be contacted through <http://www.physicsinsights.org>

|>

|> Harsh... he wasn't directly insulting, sal.

|

| You're right. But oddly enough, direct insults don't bother me as much as willful ignorance, which I felt was displayed from the start of what he first posted, in which he just casually assumed that there was no contraction and then went on to show that SR (which of course assumes there is contraction) didn't agree with his assumption.

I understand. But of course it is willful ignorance that many display when they casually assume SR must be correct, and then try to persuade by saying "starting with the Lorentz Transforms" as if I was prepared to accept what they accept, and when I refuse and request a derivation I get abuse as well. I certainly gave Gisse every opportunity, but his ignorance (willful or genuine), only left him with a long list of so-called 'evidence' to hide behind. Once he started repeating that, and having answered it once, the plonk was inevitable.

|

|

|> And there IS a problem with the contraction, too.

|

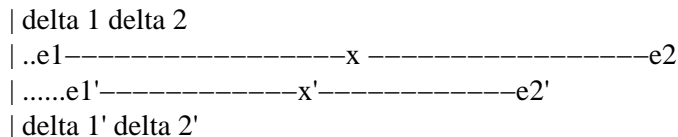
| Not with what MM was talking about, tho. He quoted Einstein as saying that (in essence) contraction is linear, and from that he concluded that contraction doesn't exist.

Well, it doesn't, but we can assume for the sake of debate it does.

|

| I hope this diagram comes through OK... unit width font, please:

|



| MM claimed that, because delta1 = delta2, and delta1' = delta2', we must also have delta1 = delta1'. Of course, no such conclusion follows.

Correct.

|

| I'm not sure he even realized that that's what he was saying, by the way, but unless I thought I had a snowball's chance of his actually trying to understand what I was saying (rather than just trying to repudiate it, with the assumption that it must be wrong) I would not be willing to spend the time to try to convince him.

Yes, I agree some cases are futile.

```

|
|
|
|> -----0'-----x'----- k frame tau = 0
|> -----0-----x----- K frame t = 0
|>
|> -0'-----x'----- k frame tau = 0
|> -----0-----x----- K frame t = 0
|>
|> xi = (x-vt)/sqrt(1-v^2/c^2) given,
|> but x = (x' + u.tau)/sqrt(1-u^2/c^2), u != v. (unless you can show
|> dxi/dtau = dx/dt, that is). Androcles.

```

| This wasn't MM's argument, of course.

| If I understand you, you've pointed out that, viewed from the prime coordinates, origin 0 crossed distance D' in the "same time" that point x' crossed a smaller distance, D-eps, in the base frame. Since each sees the other moving at the same velocity, this can't be.

| Do I follow you correctly so far?

No... I have no objection to each seeing a different velocity of the other.

That's why I called one velocity u and the other velocity v.

I'm not assuming anything here. $u = d(xi)/dtau$, $v = dx/dt$.

| If I did, then here's the problem: Relativity of simultaneity. The above diagram shows the prime frame contracted, which is what is observed by the base frame. But from the PoV of the prime frame, the locations of 0' and x' as seen by the base frame were actually evaluated at two different times. When we instead use the clock of the prime frame to set the starting points, then we see something like this:

```

|> -----0'-----x'----- k frame tau = 0
|> -----0-----x----- K frame t = 0

```

| and from the prime point of view, it's the base frame which appears contracted. In consequence, each sees the other moving the same distance in the same time -- but each also sees the other as timing the motion using clocks that are "improperly" synchronized.

Actually, the lengths are evaluated when $v = 0$, and later the experiment is conducted using the same apparatus and a preacceleration applied at an offset position. We don't know to which frame it is applied, though.

And of course any contraction assumed would be a circular argument anyway, it has to be deduced.

All we have to rely upon is the ray reaching x' from 0' the same instant x' reaches x-vt.

We can't say the frame is contracted, therefore the frame is contracted. At least, not sensibly. That would leave it open to MM saying the frame is not contracted, therefore the frame is not contracted, and certainly he can measure the frames at $v = 0$ and prove there is no contraction.

|
| MM didn't get anywhere near this far in his argument, however --- he was
| asserting that all points on the axis must line up "when" (no
| definition given for "when") the origins line up, so no contraction at all
| is allowed, symmetric or otherwise.

Yes, well, they do in the special case, $v = 0 \cdot t$. What sensible reason would he have to not conclude this to be the case when $x' = x - v \cdot t$? And although you make the point concerning simultaneity, it is this very simultaneity that is to be measured by the ray reaching x' and returning thence to the origin of coordinates, which is $0'$ and not 0 .

I suppose I should do an Einstein and say "it is clear" or an Andersen "it is blatantly obvious" that $0' = 0 - vt$ to make the point, or even an Uncle Al or Eric Gisse and call people stupid for not understanding

$$\frac{1}{2}[\tau(-vt, 0, 0, t) + \tau(-vt, 0, 0, t + x'/(c-v) + x'/(c+v))] = \tau(x', 0, 0, t + x'/(c-v))$$

doesn't have the derivative

$$\frac{1}{2}[1/(c-v) + 1/(c+v)]d\tau/dt = d\tau/dx' + 1/(c-v) d\tau/dt$$

Androcles