

Re: Twin paradox revisited II

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2007-07/msg02366.html>

- *From:* bill <cosmosco@xxxxxxxxxxxxxxxx>
 - *Date:* Fri, 20 Jul 2007 18:24:24 -0700
-

On Jul 20, 7:11 pm, "Martin Hogbin" <goatREMOVETHIS...@xxxxxxxx> wrote:

"bill" <cosmo...@xxxxxxxxxxxxxxxx> wrote in
messagenews:1184887231.899046.188560@xx

On Jul 19, 6:42 pm, "Martin Hogbin"
<goatREMOVETHIS...@xxxxxxxx>
wrote:

"bill" <cosmo...@xxxxxxxxxxxxxxxx> wrote in
messagenews:1184810766.298641.95760@xx

On Jul 18, 2:57 am,
stevendary13...@xxxxxxxx (Daryl
McCullough)
wrote:

So you apparently agree with the decade old
posting that the stay at
home twin physically ages at the faster rate
(ages the most) rather
than it is the traveler who ages at the slower
rate.

Could you explain what the difference is between those two
scenarios? How could we tell?

The difference is that according to the original posting the stay at
home physically ages at the faster rate and although as you correctly
point out there is no way that we can tell which twin physically aged
at the different rate – from the traveler's point of view the earth
could be orbiting the sun at close to the speed of light then at the

Re: Twin paradox revisited II

very instant that he takes his foot off the gas pedal that orbital velocity instantly changes from close to $300,000\text{K-s}$ to 30K-s .

In your opinion – does the traveler **really** believe that this **physically** takes place?

That is really two questions. On the basis of the best measurements he can make, and allowing for all effects that he can think of, the traveller calculates that the other twin's clock is running more slowly than his own during the cruise phase. In such circumstances I would believe that this is what is 'really' happening. Would you come to the same conclusion?

No I would not. I cannot accept that the traveler **really** believes that the earth is orbiting the sun at around 1m-s nor do I believe that this is what would 'really' be happening.

During the acceleration the situation is much more complicated but the answer is essentially the same.

As regards whether it is 'physically' happening, I cannot answer this question unless you define exactly what you mean 'physically'.

By 'physically' I mean the concept that the earth is 'really' orbiting the sun at 1m-s as distinct from 'apparently' as determined by the traveller.

It has nothing whatsoever to do with what **we**, as stay at home observers, think but what is claimed the **traveler** determines is reality.

Yes, for the traveller.

So he **really** believes that the earth is **physically** orbiting the sun at 1m-s ?

What we can tell is that, when the two twins meet up, the travelling twin has aged less than the earthbound twin.

Re: Twin paradox revisited II

One could argue that inertial clocks run as quickly as possible and that the best way of describing what has happened is to say that the non-inertial (travelling) twin's clock has been slowed down.

Other than what one 'could argue' I fully agree with those comments but I cannot agree, as expressed above, that the stay at home *physically* ages at the faster rate thus that the traveler could obliterate all life on earth by taking his foot off the gas pedal.

You need to define 'physically'.

That the traveler destroys all life on the planet. When he returns home he learns – hopefully – that this has not *physically* taken place.

The fact that the traveler finds on his return that everything is 'normal' back here – that life continues – should indicate to him that the earth had *not* been orbiting the sun at near light speed, that what he saw or determined was nothing more than a visual illusion generated by his rate of travel.

No, it indicates that the passage of time is not universal. Of course, on his return, the traveller will be aware that, from the earthbound twin's point of view, nothing unusual has happened.

Having 'believed' that all life on the planet has been obliterated it would not only be 'from the earthbound twin's point of view, nothing unusual has happened' but also from the *traveler's* point of view.

The bit you have not grasped is that the passage of time is not universal. This is very counterintuitive but it is the inescapable conclusion of experiment.

Or rather, in the *interpretations* of those experiments. As far as I am aware there has been no experiment which proved that from the traveler's point of view it is his twin that ages at the faster rate than himself.

Re: Twin paradox revisited II

Bill

.