# Re: Twin paradox revisited ll

***Source:*** http://sci.tech−archive.net/Archive/sci.physics.relativity/2007−07/msg02503.html

- *From*: bill <cosmosco@xxxxxxxxxxxxxxx>
- *Date*: Sun, 22 Jul 2007 17:24:37 −0700

On Jul 21, 11:53 am, "N:dlzc D:aol T:com \(dlzc\)" <d...@xxxxxxx>
wrote:

> Dear bill:
>
> "bill" <cosmo...@xxxxxxxxxxxxxxx> wrote in message
>
> news:1184981064.527191.20310@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>
> > On Jul 20, 7:11 pm, "Martin Hogbin"
> > <goatREMOVETHIS...@xxxxxxxxxx>
> > wrote:
>
> ...
>
> > > 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.
> > > I 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.
>
> It is not about "believe" but about "measure".

On the basis that 'observation creates reality' − that what one
'measures' (or 'observes' or 'determines') *is* reality why would a

person − who *believes* that observation creates reality − having determined something then insist that he does not believe what he is seeing?

> You can go
> outbound fast enough that you could see the Earth take millions of years to orbit the Sun once. But it will move like a bat out of h*ll on your return journey.

And aren't those observations (determinations) nothing more than visual illusions generated by the red shift and blue shift of the light from the planet?

The original posting was that because the astronaut sees the light from earth as being intensely blue shifted he then believes (determines) that his twin is physically aging at a faster rate than he is.

My question is − on the basis that the astronaut sees 'the earth take millions of years to orbit the sun once' does he truly believe that whilst he is moving away from us that the earth's orbital velocity *physically* reduces to a mere 1K−s and, as he returns and sees it moving 'like a bat out of h*ll' does he really believe (determine) that the earth's rate of travel has increased to an impossible near light speed?

> 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.
>
> One expects that the Earth really could care less how fast the traveller is moving.

My point exactly.

> But relativity is about what you measure, and what you can correctly infer about what another frame might measure (based on your own measurements).

So if you measure that the earth is orbiting the sun at 1K−s are you of the opinion that it is *physically* orbiting at that velocity?

If it was, it would be pulled into the sun.

> > It has nothing whatsoever to do with what *we*, as
> > stay at home observers observers, think but what
> > is claimed the *traveler* determines is reality.
>
> Yes, for the traveller.
>
> > So he *really* believs that the earth is *physically* orbiting the sun at 1m−s?
>
> If that is what he measures *in his own frame*. If he forgets to use relativity to calculate how fast the Earthlings would calculate it was moving.

So he sees (determines, measures) the planet moving at *physically impossible* orbital velocities but then applies relativity and concludes that the earth is *not* moving at those velocities *in its own reference frame* ergo he must realise that what he *sees* is nothing more than a visual illusion created by his relative rate of travel.

The original posting was to the effect that from the traveler's point of view, the earth *is physically* moving at those impossible velocities. My argument was that the traveler would *presumably* have some sort of education *in* physics including relativity thus that he should, as Confucius suggested, *apply* (not forget) that knowledge.

Some of the postings in this discussion imply that the traveler is *incapable* of applying knowledge and makes his decisions on the basis of a purely solipsist, philosophical attitude.

The Galilean 'Principle of Relativity insists that the traveller

cannot know if his ship is moving with uniform velocity or is at rest *without reference to an external point* i.e. he cannot *see* the universe 'rushing past him' at near light speed.

The original posting insisted that the faster aging rate of the earth twin *only* takes place during acceleration following turn around and that it does *not* apply when the ship stops accelerating. In other words, at the very instant that the traveler takes his foot of the gas the earth's rate of travel around the sun reverts from near light speed to 30K−s *intantaneously*.

The traveler must *know* that this cannot possibly occur in reality thus must conclude that what he *saw* (or measured or determined) was *not* reality either in his reference frame or the earth's reference frame.

> 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.

> > It physically *has* taken place. And the traveller had squat to do with the stay−at−home aging, only to do with his own "lack" of aging... with his "gas pedal".

Are you suggesting that the traveler returns, given the respective factors, that he actually finds that all life on the planet *has* been obliterated?

If the traveler is of the opinion that he has not aged at the slower rate but that his twin ages at the faster rate he is denying

Einstein's 1981 insistence that it is the clock (the twin) who experiences the force of acceleration which is the one that *physically* ticks over (ages more slowly).

> 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.

Except that the traveller is younger thant eh stay−at−home.

Irrelevant to the specific topic , merely a reiteration.

> 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.

Yes, exactly that has been experimentally determined. Slow

> particles with short lifespans age more rapidly than faster ones.
> And it has nothing to do with "accleration" or "accelerators" or
> "magnetic fields" or "new and unexplained physics".

Those experiments have shown that accelerated particles age more slowly than slower moving particles but they do *not* prove that the latter, and the universe, ages more rapidly.

The concept that the stationary particle ages at a faster rate than the accelerated particle should be sufficient for physicists to stop all of those experiments which cause them to age at a faster rate than would otherwise occur.

> The length of a journey between any two points depends on the
> path you take. This applies equally well if the "points" are
> elapsed time on a clock, and relative motion provides the
> different path between start and end of journey.
>
> David A. Smith

That has nothing to do with the original posting which insisted that the stay at home twin physically ages at the faster rate and *only* during the traveler's period of acceleration following turn around.

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