

Re: GPS CLOCK PARADOX

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2008-01/msg02522.html>

- *From:* snapdragon31 <snapdragon31@xxxxxxxx>
 - *Date:* Wed, 30 Jan 2008 21:19:59 -0800 (PST)
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On Jan 30, 10:50 am, "Dirk Van de moortel" <dirkvandemoor...@ThankS-NO-SperM.hotmail.com> wrote:

"snapdragon31" <snapdrago...@xxxxxxxx> wrote in
messagenews:334d88d4-ff89-4573-bf6d-f377ec0a220d@xx

On Jan 30, 4:40 am, "Dirk Van de moortel" <dirkvandemoor...@ThankS-NO-SperM.hotmail.com> wrote:

SperM.hotmail.com> wrote:

"snapdragon31" <snapdrago...@xxxxxxxx> wrote in
messagenews:185c9dbf-f01c-4681-b266-a9bf152d5c92@xx

[snip]

Yes, there are tons of solutions to the twin paradox but none of them is a valid solution. Let me show you why it is a logical problem that has no solution. Assuming that Lorentz transformation can predict the time and distance of the other frame. Let v = velocity of the moving twin M
 x = distance measured by stationary twin S
 t = time measured by twin S
 x' = distance measured by twin M
 t' = time measured by twin M

The information we have is:
1. v – velocity of moving twin.

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$$2. x = v * t$$

This equation is valid for events satisfying $x' = 0$,
expressing the fact that the velocity of the origin of the primed system is v w.r.t. the unprimed system

$$3. x' = v * t'$$

Expressing the (erroneous) fact that the velocity of the origin of the unprimed system is *also* v w.r.t. the primed system. That is wrong. The velocity is $-v$
This is your first error.

Please note that x' is defined as a distance measured by twin M not displacement.

Both x and x' are not vectors.

A more correct equation should be

$$x' = |v| * t'$$

distance = speed * time

then the other equation should be

$$x = -|v| * t$$

so you induce a new error.

$$4. x' = x * \sqrt{1 - v^2/c^2}$$

Only valid for events satisfying

$$t' = 0$$

Exercise: Why?

$$x' = x * \sqrt{1 - v^2/c^2} \quad \text{Length contraction}$$

Only valid for measurements of two sides of an object

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when measured simultaneously in the primed frame,
expressed by

$$t' = 0$$

Check the definition of length contraction.

$$5. t' = t * \sqrt{1 - v^2/c^2}$$

Only valid for events satisfying

$$x' = 0$$

Exercise: Why?

$$t' = t * \sqrt{1 - v^2/c^2} \quad \text{Time dilation}$$

Only valid for measurements of two ticks of a clock
at rest in the primed frame, expressed by

$$x' = 0$$

Check the definition of time dilation.

So if you combine equations 4 and 5, you are talking about
events that satisfy

$$x' = 0$$

$$t' = 0$$

and therefore also

$$x = 0$$

$$t = 0$$

Exercise: Why?

Congratulations.

Congratulation, you figure out that both the Length Contraction and
Time Dilation equations can be true only when $x' = 0$, $x = 0$, $t' = 0$
and $t = 0$. If they are not valid equations then twin paradox is not a

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paradox any more.

The two are *together* valid if and only if everything is zero, so when you write

$$x' = x * \sqrt{1 - v^2/c^2} \quad \text{Length contraction}$$

$$t' = t * \sqrt{1 - v^2/c^2} \quad \text{Time dilation,}$$

you actually write

$$0 = 0$$

$$0 = 0,$$

and that is something we all know, thank you.

I hate equations.

Of course you hate equations.

You understand nothing about these equations.

Before you write an equation, you should understand what the variables mean.

Physics is not an exercise in algebra.

As I told you before, *that* is your problem.

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Physics is not an exercise in algebra.

As I told you before, *that* is your problem.

Dirk Vdm– Hide quoted text –

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– Show quoted text –

Hi Dirk Vdm,

Do you know relativity? I am not interested in discussing relativity with someone who does not even know what the length contraction and time dilation equations are.

The formula of the length contraction can be found at

http://en.wikipedia.org/wiki/Length_contraction

The equation for the time dilation can be found at

http://en.wikipedia.org/wiki/Time_dilation

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The equation "Distance = Speed * Time" was taught in grade school. I don't expect that you do not know that. Distance is a scalar quantity. Distance is always positive. Please don't add a negative sign to make it negative.