

## Re: Building a Light Clock

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.relativity/2004-12/3700.html>

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**From:** The Ghost In The Machine (*ewill\_at\_sirius.athghost7038suus.net*)

**Date:** 12/09/04

Date: Thu, 09 Dec 2004 06:01:16 GMT

In sci.physics.relativity, Androcles

<dummy@dummy.net>

wrote

on Wed, 08 Dec 2004 19:05:54 GMT

<mgLtd.134341\$38.29842@fe2.news.blueyonder.co.uk>:

>

> *"The Ghost In The Machine"* <ewill@sirius.athghost7038suus.net> wrote in  
> message news:eigj82-22h.ln1@sirius.athghost7038suus.net...

>> *In sci.physics.relativity, jahn*

>> <susyewnshow@yahoo.com.au>

>> wrote

>> on Wed, 8 Dec 2004 06:25:31 -0500

>> <31o6meF3e1cmaU1@individual.net>:

>>>

>>> *"The Ghost In The Machine"* <ewill@sirius.athghost7038suus.net> wrote  
>>> in message news:1ifi82-g48.ln1@sirius.athghost7038suus.net...

>>>> *In sci.physics.relativity, jahn*

>>>> <susyewnshow@yahoo.com.au>

>>>> wrote

>>>> on Tue, 7 Dec 2004 04:59:06 -0500

>>>> <31ld81F3d5dv3U1@individual.net>:

>>>>>

>>>>> *"The Ghost In The Machine"* <ewill@sirius.athghost7038suus.net>

>>>>> wrote in message

>>> news:qotf82-mds.ln1@sirius.athghost7038suus.net...

>>>>>> *In sci.physics.relativity, jahn*

>>>>>> <susyewnshow@yahoo.com.au>

>>>>>> wrote

>>>>>> on Sun, 5 Dec 2004 11:17:20 -0500

>>>>>> <31gqlcF3ba32dU1@individual.net>:

>>>>>>>

>>>>>>> *"Androcles"* <dummy@dummy.net> wrote in message

>>>>>>> news:v5Gsd.102344\$38.6638@fe2.news.blueyonder.co.uk...

>>>>>>>>

>>>>>>>> *Your spikey nose lacks a fingernail to detect the fiducial*

>>>>>>>> *grooves, or*

>>>>>>>> *your slide rule is of the printed wooden variety. I recommend*

>>>>>>>> *an*

sci.physics.relativity: Re: Building a Light Clock

>>>> >> >> *upgrade to plastic. Either that or wear your specs. BTW, it*  
>>>> >> >> *isn't*  
>>>> >> >> *true that guys don't make passes at girls who wear glasses.*  
>>>> >> >  
>>>> >> > *It must be... I've tried everything else.*  
>>>> >> > <http://www.smittenkitten.org/glasses.jpg>  
>>>> >> >  
>>>> >> > *Sue...*  
>>>> >> >  
>>>> >>  
>>>> >> *No no...that's rose-colored \*glasses\*. Not hair.*  
>>>> >>  
>>>> >> :-)  
>>>> >  
>>>> > *Indeed!*  
>>>> > <http://brotherhug.com/family/laura/slides/0301%20Laura%20with%20funny%20glasses.jpg>  
>>>>  
>>>> *Awwwww...they're so cute at that age. ;-)* *Of course*  
>>>> *for me that was more than 4 decades ago.*  
>>>>  
>>>> *\*creee-e-e-e-e-e-eak\**  
>>>>  
>>>> >  
>>>> > *You guys are looking better already.*  
>>>> > *If I don a cap and gown, do ya think It'll help*  
>>>> > *Androcles keep his cubes and squares straight?*  
>>>>  
>>>> *Depends on the cap and gown. A standard matriculation*  
>>>> *affair might impress him, but one might also have*  
>>>> *a jester's cap and a ballroom gown, or a baseball*  
>>>> *cap and a birthday gown (I'm assuming it's the female*  
>>>> *variant of the birthday suit), neither of which somehow*  
>>>> *would quite work as well...*  
>>>>  
>>>> *You'd have to ask him.*  
>>>>  
>>>> *As it is, I think SR's fairly well shown here; one*  
>>>> *nicely repeatable experiment, for instance, involves*  
>>>> *decaying (and moving) pi\_0 mesons. Another involves*  
>>>> *positrons and electrons, one of which is moving*  
>>>> *faster. Still another involves a supernovae, although*  
>>>> *that's more an observation than an experiment.*  
>>>>  
>>> *Howz about a link for that :nicely "repeatable*  
>>> *experiment" ?*  
>>  
>> *Best I can do is provided in Google Scholar:*  
>>  
>> [http://prola.aps.org/abstract/PR/v83/i3/p685\\_1](http://prola.aps.org/abstract/PR/v83/i3/p685_1)  
>>  
>> *which pulls up Lederman, Booth, Byfield, and Kessler in 1951.*

>>  
>> *Not quite, nor is*  
>>  
>> [http://prola.aps.org/abstract/PR/v83/i6/p1085\\_1](http://prola.aps.org/abstract/PR/v83/i6/p1085_1)  
>>  
>> *which is Wiegand's experiments in 1951 on pi+ lifetime.*  
>>  
>> *Grrr.*  
>>  
>> *I'll have to refer you to Sam Wormley, who has a list of*  
>> *significant light speed measurements and other such*  
>> *experimental results.*  
>>  
>>>  
>>> *Sigh... Yes, Androcles is a stubborn Brit and like*  
>>> *most Brits ya can't tell 'em that matriculation will*  
>>> *grow hair on their palms.*  
>>  
>> *\*looks at palms\**  
>>  
>> *Hmm. I've got a BA in Math.*  
>  
> *Then you should be aware of the meaning of consistency.*  
> *Tell us, bachelor, which is correct?*  
> *"But the ray moves relatively to the initial point of k,*  
> *when measured in the stationary system, with the velocity  $c-v$ ..."*  
> *or*  
> *"It follows, further, that the velocity of light  $c$  cannot be altered by*  
> *composition with a velocity less than that of light.*  
> *For this case we obtain  $V = (c+w)/(1+w/c) = c$ ."*

Neither is correct, as neither is properly stated.

The best I can do here:

[1] Light rings make a circular pattern from a point source, motionless with respect to the observer. The apparent velocity of two points on that expanding ring can be made to be anything from  $-2c$  to  $+2c$ , at least near the source, simply by selecting appropriate angles from the point source and extending the lines. This also means that Earth can broadcast information to two other planets faster than light (with respect to each other). Of course the two planets won't know that the other has received said info until sometime later — though guessing is an honored pastime. :-)

[2] The velocity of light from a moving point A is measured to be  $c$  from any observer which happens to hit it. However, light is virtually unseen otherwise; it makes a perfect stealth weapon. The best one

can do is observe indirect effects, as in observing sunbeam direction by watching motes of dust reflecting the light. The SR addition formulae are consistent with constant lightspeed but cannot be meaningfully applied without some care, in light of [1]. However, they are easily derivable from the Lorentz.

The proper method (if one can call a theory "proper") is this:

Assume three points O, A and B. A is moving away from O at velocity  $v$ . B is moving away from A at velocity  $w$ . (These are both measured from A, if one wishes. O cannot measure  $w$ . B cannot measure  $v$ .)

The \*apparent\* velocity of B with respect to O -- or O with respect to B -- is of course  $v+w$ , as A sees it. However, if one were to sit on O (warning: different frame of reference here) and observe B, or sit on B and observe O, the observer would see the other moving away using the formula  $(v+w)/(1+vw/c^2)$ .

Certain other phenomena would also be apparent, though because of the frameshift it is difficult to properly compare notes. However, O sees things slowing down on both A and B (B more so than A). A sees O and B slowing down. B sees O and A slowing down.

All perfectly consistent, if very mind-bending. Arguably the best method of reconciling all this is to use Minkowski invariance or some such, using the value  $dx^2 - c^2 dt^2$ . Or one can use light cones.

- >
- > *Hint... looking at your palms will not help. Hanging your head in shame*
- > *may be more appropriate.*

And high-speed decaying  $\pi_0$  mesons generate gamma rays that go at precisely what speed, exactly?

- >
- > *Androcles*
- >
- >>
- >>>
- >>> *Sue...*
- >>>
- >>>>
- >>>> >
- >>>> > ;-) *Sue...*
- >
- >

sci.physics.relativity: Re: Building a Light Clock

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#191, ewill13@earthlink.net  
It's still legal to go .sigless.