

Re: What is Proper Time?

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2008-03/msg00960.html>

- *From:* The Ghost In The Machine <ewill@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Sun, 9 Mar 2008 20:59:27 -0700
-

In sci.physics.relativity, HW@....(Dr. Henri Wilson)
 <HW@>
 wrote
 on Sun, 09 Mar 2008 21:29:28 GMT
 <gpk8t3lg0akfigbrgo54ptls9dith43aq0@xxxxxxx>:

On Sat, 8 Mar 2008 16:48:26 -0800, The Ghost In The Machine
 <ewill@xxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:

In sci.physics.relativity, HW@....(Dr. Henri Wilson)
 <HW@>
 wrote
 on Sat, 08 Mar 2008 22:58:20 GMT

Even if the source was moving it would make no difference.
 It would simply mean that the light speed around the
 apparatus was $c+v$ instead
 of c .

If one uses a spinning device to feed the
 MMX, of size
 about 10cm in diameter and running at
 12,000 RPM, the edge
 speed is about 63 m/s, or $2.1 * 10^{-7} c$.
 Bouncing light
 off this device (assuming the edge is rotating
 in the
 opposite direction of the beam, in an attempt
 to slow it
 down) should result in something like the
 following:

$$\lambda/\lambda_0[*] \nu/\nu_0 c/c_0$$

$$n_{BAT}: 1 - 2.1 * 10^{-7} \quad 1 - 2.1 * 10^{-7}$$

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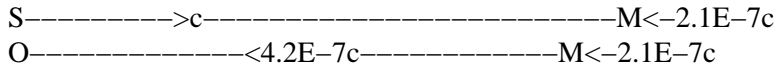
SR: $1 + 2.1 \cdot 10^{-7}$ $1 - 2.1 \cdot 10^{-7}$

Androcles: $1 - 2.1 \cdot 10^{-7}$ $1 - 2.1 \cdot 10^{-7}$

BaTH: ???

Shouldn't you double the value?

Nope. Mathematically, $v = \lambda \cdot \text{frequency}$.



speeds are shown relative to S/O.

Could you clarify this diagram, please? What do these values relate to?

BaTh says the same.

It can't say the same. All other theories are distance-independent. In other words, for both nBAT and SR the values of lambda and nu are the same regardless of whether I'm 1 meter, 1 lightyear, or 1 billion lightyears away (assuming no other artifacts exist that slow down or speed up light using gravity or other such).

Since BaTH is clearly distance-dependent from your statements, I can't say it's equal to anything.

Ghost, BaTh is quite simple.
Doppler shift is relative speed dependent.

Correct; always has been, though one might quibble as to whether we're discussing frequency ratio or wavelength ratio.

SR has both; Androcles' variant changes wavelength only; standard Newtonian changes frequency only.

It is not distance dependent, except in so far as light speed might change over distance.

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If a wave changes speed over distance, either the wavelength or the frequency or both have to change.

If one vibrates a medium with a frequency f , and the velocity of the wave in that medium is v , what is the wavelength? Simple: $w = v * t$, where $t = 1/f$, as frequency is specified in Hz, the reciprocal of seconds. For example, standard power in the US is at 60 Hz — 60 cycles per second.

If v changes, of course, one or both of w or f has to change.

A corollary, of course, is that, since $w = v/f$, $v = w * f$. This corollary can be used and has been used to measure lightspeed.

Measuring doppler shift tells us nothing except the speed of the wheel.

If the above wheel was set up on top of a high mountain and used to reflect a pulse from a laser 30 km away, the reflected pulse would travel at $1.0000042c$. The travel time difference when the wheel was and was not rotating would be about $4E-11$ seconds.

This experiment might just be possible with the latest lasers, PMs and clocks.

OK. And if the laser was 15 km, 60 km, or 400,000 km away?

The laser will have to be pretty powerful if the reflected pulses are to be observed. Also dispersion will likely make each pulse hardly recognizable. ...but the experiment MAY be possible. Faster rotational speeds may also increase the time differences but will also reduce the energy in each pulse.

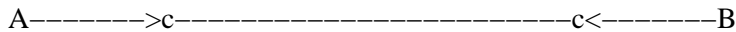
His animation uses a source 'at rest' and two observers moving in opposite directions. Naturally, they measure different times for light to travel the same distance.

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As they should, if the observers are moving at different speeds.

That's right. But that's not what Einstein's clock synching was all about. His mirror/observer was at rest wrt the source/observer.

Doesn't have to be.



A and B are mutually at rest.

Light moves at c in both directions.
Travel time is D/c in both directions.
Androcles is very confused.

But Androcles is also correct! Light from A-B-A does not have to travel such that $t(A-B) = t(B-A)$. This is routinely observed when an airplane meets a head- or tailwind, and is known (AFAIK, anyway) as the "headwind problem". Another variant is a canoe traveling between two buoys stuck in a river.

Of course it depends on the theory one is using; SR makes the explicit assumption that $t(A-B) = t(B-A)$. This is Einstein's implied Third Postulate, and is not unreasonable but is hard to verify directly.

Henri Wilson. ASTC,BSc,DSc(T)
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Einstein's Relativity is easy to understand if one has the IQ of a parrot and a gullibility index >0.95.

—
#191, ewill3@xxxxxxxxxxxxxx
Linux. Because life's too short for a buggy OS.

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