

# Re: Question about light clock and derivation of time dilation

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*Source:* <http://sci.tech-archive.net/Archive/sci.physics.relativity/2005-07/msg00430.html>

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- *From:* "Androcles" <Androcles@ MyPlace.org>
  - *Date:* Fri, 08 Jul 2005 22:25:54 GMT
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"Daryl McCullough" <stevendaryl3016@xxxxxxxxxx> wrote in message  
[news:damjib0urk@xxxxxxxxxxxxxxxxxxxx](mailto:news:damjib0urk@xxxxxxxxxxxxxxxxxxxx)

> Ken S. Tucker says...

>

>>Using the light clock, the time axis "t"  
>>is the path of the light-ray as it's used,  
>>and that's fine.

>

> Hmm. Usually, the time axis is chosen to be a timelike vector.

I think your "timelike vector" lacks an identity.

V is a commutative group under addition of vectors

- 1.. There exists an additive identity element 0 in V, such that for all elements v in V,  $v + 0 = v$ .
- 2.. For all v in V, there exists an element w in V, such that  $v + w = 0$ .
- 3.. Vector addition is associative:  $u + (v + w) = (u + v) + w$ .
- 4.. Vector addition is commutative:  $v + w = w + v$ .

[http://en.wikipedia.org/wiki/Vector\\_space](http://en.wikipedia.org/wiki/Vector_space)

So where is your element w so that  $v+w = 0$ ?

Or can you travel backward in time to when you were?

> I've heard of coordinate systems using lightlike vectors as  
> basis vectors, but I don't know much about them.

I've heard of bright green flying elephants that lay eggs, too.  
I bet I know more about them than you do. :-)

In 2-D spacetime,

> you can let

>

>  $u = x + ct$

>  $v = x - ct$

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Sure, but  $u$  and  $v$  are vectors of position, and  $t$  is always positive.  
You can return to where you were quite easily, I'd like to see you  
return to when you were.  
 $v = x - c(-t)$  is kinda hard to do.

Androcles.

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• **Follow-Ups:**

- ◆ **Re: Question about light clock and derivation of time dilation**  
◇ From: Daryl McCullough

• **References:**

- ◆ **Question about light clock and derivation of time dilation**  
◇ From: john\_doe\_ph\_d
- ◆ **Re: Question about light clock and derivation of time dilation**  
◇ From: Ken S. Tucker
- ◆ **Re: Question about light clock and derivation of time dilation**  
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