

Re: The velocity of light going pass a moving train.

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Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2007-06/msg02353.html>

- *From:* Dono <sa_ge@xxxxxxxxxxxx>
 - *Date:* Tue, 19 Jun 2007 18:42:48 -0700
-

On Jun 19, 6:11 pm, "papar...@xxxxxxxxxx" <papar...@xxxxxxxxxx> wrote:

On 19 jun, 20:27, Dono <s...@xxxxxxxxxxxx> wrote:

On Jun 19, 4:30 pm, "Jeckyl" <n...@xxxxxxxxxxxx> wrote:

"Dono" <s...@xxxxxxxxxxxx> wrote in message

news:1182267983.118374.84480@xx

On Jun 19, 7:05 am, "Jeckyl"
<n...@xxxxxxxxxxxx> wrote:

If you
understood
as you
claim you
will not
have any
trouble
explaining
(with math)
the
following :
1. Why can
light be
aberrated
towards the

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rear of the
car in
Einstein's
experimen.

Which experiement? We
were talking about a light
beam that was pointing
vertically in the frame of the
train .. and you said it would
be pointing
backward in the opposite
direction to the way the train
is moving from
the
frame of the track .. that is
clearly nonsense.

1. Upward light trip as viewed from the track

Train Motion ---->
^
^Center of Ceiling Mirror

^ Off-Center Strike on Ceiling Mirror
^
^
^
^Light Emittor on the Train Floor

2. Downward light trip as viewed from the
track

Train Motion ---->

^
* ^

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* ^

* ^

*Light Strike on the Train Floor

Totally wrong

Here is what you see from the track (where the '^' represents the light and the "===" the floor and roof of the train

-----> motion of train

at t=0:

=====

^

=====

at t=1:

=====

^

=====

at t=2:

=====

^

=====

note the path of the light as seen from the track over time is

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^
^
^

as seen from the train it is

=====
^
^
^
=====

Note the when seen from the track, the light is moving diagonally in the direction of the train.

Relativistic aberration would actually make what is observed from the track ACTUALLY more like

^
^
^

ie further inclined in the direction of the train than classical physics would tell us. This is sometimes called the headlight effect.

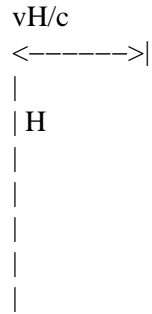
What is seen from the track is that the laser beam ("pencil") propagates vertically in finite time while the train advances from left to right. Thus, from the perspective of a frame anchored in the track, the ray of light gets further and further to the left with respect to the car. The "trace" left by light on the car is inclined from right to left.

Say that the height of the car is H. The light beam covers the distance from the floor to the ceiling in $t=H/c$

In the meanwhile, the car moves from LEFT to RIGHT by $v*t=vH/c$

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So, the figure seen against the train back wall is:



See last part of http://en.wikipedia.org/wiki/Relativistic_aberration

Miguel Rios

Yes, I kept trying to get dr.Jekyll to understand itI already showed him the formula, to no avail (at least, so far).

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