

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

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

---

*Source:* <http://sci.tech--archive.net/Archive/sci.physics.relativity/2007-06/msg02345.html>

---

- *From:* "paparios@xxxxxxxx" <paparios@xxxxxxxx>
  - *Date:* Tue, 19 Jun 2007 18:11:27 -0700
- 

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](mailto: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 rear of the car in Einstein's experimen.

Which experiemet? 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.

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

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 ---->  
  
^  
\* ^  
\* ^  
\* ^  
\* ^  
\*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:  
=====

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

^  
=====

at t=1:  
=====

^  
  
=====

at t=2:  
=====  
^

=====

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

^  
^  
^

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.

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

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

^  
^  
^

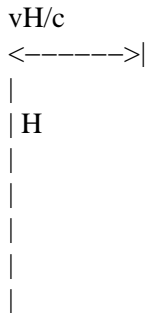
ie further inclined in the direction of the train than classical physics would tell us. This is sometimes called the headlight effect.

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  $v*t=vH/c$

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



See last part of [http://en.wikipedia.org/wiki/Relativistic\\_aberration](http://en.wikipedia.org/wiki/Relativistic_aberration)

Miguel Rios

.