

Re: Hard SR questions?

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- *From:* jt64@xxxxxxxx
 - *Date:* 13 Aug 2006 12:06:53 -0700
-

N:dlzc D:aol T:com (dlzc) skrev:

Dear jt64:

<jt64@xxxxxxxx> wrote in message
news:1154870281.617016.89810@xx

Ship (A) travel 0.99c approaching earth.

Presumably earth = B?
Presumably the 0.99c is as determined by B?

$\gamma = \sim 7$
let $c = 300,000$ km/sec

At a distance of 300 000 km as seen from planet (B) inertial frame the ship start a framed TV transmission.

... assumed the transmission is periodic, continuous, and the last frame is completed as A passes B.

The transmission is such that 60 frames will be sent from ship (A) during the distance of 300 000 km relative earths inertial frame.

Now my question.

... Question*s* ...

1. How long time will it take to travel to

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planet using (ship point of view).

"It"? Do you mean the transmission or the ship? It is a continuous data stream, whose last frame exits A's transmitter just as A passes B, right?

The distance travelled during this transmission is $(300,000 / 7)$ km. The ship also measures B moving at $0.99c$. So the duration is

$$1/7 = (1 + 0.99)*t$$
$$t = 0.07 \text{ sec.}$$

2. What is the framerate for the transmission within the ship.(ship point of view)

To meet your givens:
 $60 / 0.07 = 840$ frames per second.

3. How long will it take until the front of first frame is received at planet.(planet point of view)

How about the frame previous to the one that started emitting at 300,000? The math is cleaner. The one that just finished at 300,000 km arrived 1 second later.

4. How long will it take until the ship pass planet. (planet point of view)

$$1 / 0.99 = 1.01 \text{ seconds}$$

(*5*) How long was the time span between the first and last frame(planet point of view)

From the *start* of the first frame...

0.01 seconds.
framerate: $60 / 0.01 = 6000$ Hz
checking to see if we get ship's gamma:
 $6000 / 7 = 857$ Hz ... the difference between this and 840 Hz is roundoff error.

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No one expects you to *like* relativity. But you will find that it is self-consistent.

And then again $840/60=14$ and $14*300\ 000=4200000\text{km}$
and yet $300\ 000/0,141=2127659\text{km}$ as expected by the contraction.

Seem you somehow managed to *DOUBLE THE FREQUENCY* Kenny

David A. Smith