

Re: Rigid rod problem

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2005-09/msg00522.html>

- *From:* Kim B <spamfree@xxxxxxx>
 - *Date:* Tue, 06 Sep 2005 22:01:18 +0200
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On 6 Sep 2005 12:33:42 -0700, russell@xxxxxxx wrote:

>russ...@xxxxxxx wrote:
>> Spoonfed wrote:
>> >>
>> >> All parts of the rod are traveling at same speed ... but time passes
>> >> not synchronously along the rod. Clocks run slower at the back end
>>
>> I don't see in what sense your first statement could
>> be true; it certainly isn't true in the original inertial
>> frame, where at all $t > 0$ the rear of the rod is moving a
>> tiny bit faster than the front.
>
>By "your" I meant "Kim B's". That is, I knew this was
>Kim B's writing but didn't notice that Spoonfed had
>provided no attribution. So I am following up, to
>clarify.

If you choose a point on the rod a use its current speed as your FOR, the the rest of the rod will fit nicely in this FOR (along the FOR's line of simultaneity) ... with the same speed all along and the correct proper length, exactly as it fits in our "rest" frame at the base line ... all frames are equal, assuming the rod has accelerated and will accelerate forever.

>And also, to make the following correction [after a snip]:
>
>> One thing I do know is true, is that in the original frame
>> the rod will always have length L/γ , where L is the
>> original proper length.

The rod's length in the "rest frame" is not that simple to calculate (it's the horizontal distance between the hyperbolas of the ends).

Kim
>
>Er, this was rather silly of me since I just finished
>saying that the rod is moving at different speeds

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>in this frame — so which gamma do we use? It seems
>there are pitfalls at every turn, in talking about
>this.
>
>(Sure, if the acceleration is not great, the statement
>is more or less true no matter which gamma we pick,
>since they are all about the same. But I think I'd
>better stop saying such categorical things about a
>problem that I don't even know how to specify exactly.
>Indeed it seems like the specification is really the
>only hard part here, yet I don't think anyone in this
>discussion has seriously addressed that part of it yet.)

- *Follow-Ups:*

- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* russell

- *References:*

- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* russell
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* Spoonfed
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* russell
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* Spoonfed
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* Kim B
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* Spoonfed
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* russell
- ◆ [**Re: Rigid rod problem**](#)
◇ *From:* russell

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