

Re: relativity of simultaneity – real or perceived?

Source: <http://sci.tech–archive.net/Archive/sci.physics.relativity/2005–05/msg01016.html>

- *From:* jtbell@xxxxxxxxxx (Jon Bell)
 - *Date:* Sat, 14 May 2005 16:42:08 +0000 (UTC)
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In article <1116086135.741617.95740@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>, Curious <anthonyroseuk–curious@xxxxxxxxxx> wrote:

>Frame 2:
> A->.....? meters.....<-B
> O2(Observer -> at 0.5c relative to O1)
>
>Question: Where is photon B calculated (not perceived) to be in Frame 2
>at the moment in Frame 2 when photon A in Frame 2 is at $x'_A = x_A = 0$?

I worked this out for you numerically a few days ago, using two different methods, and got the value $x'_B = 0.86603$ light–seconds.

>To put it another way, If there was a 1.5 light–second long box between >A and B in Frame 1, so that the photons were at each end of the box at >this moment, then I would expect that in Frame 2 also the two photons >would be at each end of the box simultaneously.

No, they would not arrive at the two ends of the box simultaneously in frame 2. In frame 2, photon A arrives at the left end of the box at $t'_A = 0$, whereas photon B arrives at the right end of the box at $t'_B = -0.86603$ seconds. That is, photon B arrives at its end of the box first, then, 0.86603 seconds later, photon A arrives at *its* end of the box.

>The distance however
>between them would be calculated to be less. What is that distance?

At which moment in frame 2? When photon B arrives at the right end of the box, or when photon A arrives at the left end of the box?

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- *Follow–Ups:*
 - ◆ *Re: relativity of simultaneity – real or perceived?*
◇ *From:* Jon Bell

Re: relativity of simultaneity – real or perceived?

◆ **Re: relativity of simultaneity – real or perceived?**

◇ From: Curious

• **References:**

◆ **relativity of simultaneity – real or perceived?**

◇ From: Curious

◆ **Re: relativity of simultaneity – real or perceived?**

◇ From: Paul Stowe

◆ **Re: relativity of simultaneity – real or perceived?**

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