

Re: Evil Twin Paradox

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- *From:* David <dseppala@xxxxxxxxxxxxxx>
 - *Date:* Wed, 08 Aug 2007 08:33:33 -0500
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On Wed, 8 Aug 2007 06:08:35 -0700, "N:dlzc D:aol T:com \((dlzc\)" <dlzc@xxxxxxx> wrote:

Dear David:

"David" <dseppala@xxxxxxxxxxxxxx> wrote in message <news:3g9jb3d02c9bbq31e126aqkjirneu6jf4m@xxxxxxxxxxx>

On Tue, 7 Aug 2007 20:50:55 -0700, "N:dlzc D:aol T:com \((dlzc\)" <dlzc@xxxxxxx> wrote:

"David" <dseppala@xxxxxxxxxxxxxx> wrote in message <news:djeib3d29fuqhf6jqphp86197mqe13mhbe@xxxxxxxxxxx>

...

In this problem as I stated relative to each spaceship the projectile travels perpendicular to the ship.

Then the bullet is **much** narrower than the gap in the wall, and there is no paradox.

That is the rest frame view (good twin's frame).

No, it is (based on your geometry) the frame of the good twin **and** that of the bullet. The bullet is travelling at right angles to the path of the evil twin, so the opening in the wall is 10 ly wide.

In the evil twin's frame, the bullet is also narrower (upon

Re: Evil Twin Paradox

firing) than the opening in the wall.

No paradox.

David A. Smith

I don't see how to view things from the moving frame (evil twin's frame). In this frame the evil twin is firing a 100 millimeter projectile along the y axis. If the steel wall along the x axis was stationary as measured in his frame, the gap in the wall would have to be at least 100 millimeters wide for the bullet to pass through without hitting the steel wall.

Now let's look at the problem with a very low velocity for the steel wall and for the projectile as viewed in the evil twin's frame.

If the 100 millimeter projectile takes one second to cross the x-axis as it travels along the y-direction, and if the steel wall is moving at $V=10$ m/s along the x-axis, the gap in the wall must be far larger than 100 millimeters for the projectile to pass through without hitting the walls – the gap would have to be around 10.1 meters wide for the projectile to pass.

Now here's what I don't follow. In the moving frame (the evil twin's frame) what does he measure the size of the gap to be? When I apply the simple formula $L' = L * (\text{SQRT}(1 - V^2/c^2))$ and I let V get sufficiently close to c , I find that L' (the length of the gap in the moving frame) is less than 100 millimeters. How does the moving frame observer (evil twin) measure the gap so that its larger than 100 millimeters required for the projectile to pass through?

Thanks,
David