SYMMETRICAL "TWIN PARADOX"

by

Ardeshir Mehta

Tuesday, November 20, 2001

Ottawa, Canada

The following argument proves that the Relativistic phenomenon of "time dilation" cannot exist.

1. Let there be two identical spaceships at a single location in deep space, each carrying an identical and synchronised clock. Let the clocks be capable of registering, not only seconds, minutes and hours, but also days.

2. When each of the clocks reads 0.00, let the two spaceships *accelerate* away from each other in exactly opposite directions at a rate of acceleration equal to $\mathbf{g = 9.80665\ m/s^2}$ for a period of time $\mathbf{t_1 = 150}$ **days**, or **12,960,000 seconds** (as registered by each spaceship's own clock). {N.B.: $\mathbf{g = 9.80665\ m/s^2}$ is the acceleration due to the earth's gravity, and thus the clocks are quite capable of withstanding it.}

3. The two spaceships will each reach a velocity, relative to an un-accelerated observer located at their starting point, of $\mathbf{v = gt_1}$ = **127,094,184 m/s**, and thus their velocity **V** relative to one another will be twice that, namely **254,188,368 m/s**, which is almost the speed of light (actually, about **85 %** of the speed of light.)[1]

4. Let the two spaceships now coast *without* acceleration for **1,000,000 days** (again, each time period as indicated by each spaceship's own clock.)

5. After **1,000,000 days**, let each spaceship *decelerate* at a rate $\mathbf{g = 9.80665\ m/s^2}$ for a time period **T = 300 days** (again, each time period indicated by each spaceship's own clock.)

6. Thus at the end of **300 days**, the two spaceships will be in motion *towards* one another at velocity **V = 254,188,368 m/s**.

7. And after another **1,000,000 days** (again, each time period indicated by each spaceship's own clock), let each spaceship *re-accelerate* for a time period $\mathbf{t_2 = 150}$ **days** at $\mathbf{g = 9.80665\ m/s^2}$, thereby causing each of them to slow down to a zero speed relative to one another.

---

[1] Even if instead of the Galilean formula for "addition of velocities" we use the Relativistic formula for "compounding of velocities", namely $\mathbf{V = (v_1 + v_2)/(1 + v_1v_2/c^2)}$, to calculate the velocity of any one of the spaceships relative to the other, we still get **V = 0.85/1.19 = 0.71**, or **71 %** of the speed of light, which results in a <*gamma*> factor of **1.43**, a very significant <*gamma*> factor indeed!

8. And let there be a mechanism which causes the clocks to stop working when the two spaceships come in contact with one another after their long journey.

9. So now we can compare the clocks, which have stopped. Since the motion of each of the spaceships has been governed by the spaceship's own clock, each clock must register *exactly* **2,000,600 days**.

10. But during **2,000,000** of those **2,000,600 days** — i.e., more than **99 %** of the time — each spaceship will have been travelling relative to the other at *much more than half the speed of light!* And the rest of the time each spaceship will have been accelerating at *exactly the same rate as the other*.

Thus if Relativity were correct, each clock should indicate a time period significantly *less* than that indicated by the other: which of course is logically impossible.

POSTSCRIPT

Added Friday, November 23, 2001

Alternatively, at Stage 4. above, the spaceships could just keep on accelerating for **500,000 days**, then decelerate at **g = 9.80665 m/s^2** for **1,000,000 days**, and then again accelerate for **500,000 days**. If Relativity is correct, for most of the **2,000,000 days** of this journey, each spaceship will have been travelling relative to the other at pretty much the highest speed it ever could achieve, namely the speed of light; and thus the clock carried on board each spaceship should have virtually stopped ticking compared to the clock carried on board the other. So when the two spaceships return to their point of origin, each clock should show a reading *enormously* lesser than that of the other clock — which of course is quite impossible.

Any comments? e-mail me.