A SIMPLE CHALLENGE TO SUPPORTERS OF SPECIAL RELATIVITY

by

Ardeshir Mehta

(This edition finalised on Monday, August 13, 2001)

INTRODUCTION

The following is a simple mathematical challenge to supporters of Special Relativity. I claim it cannot be answered, even though the mathematics involved is elementary. And if it cannot be answered, Special Relativity remains, at the very least, unproven, and at worst, disproved.

THE ASSUMPTIONS

Assume a spaceship A in empty space, 259,627,884 metres in length, passing rectilinearly just centimetres past a small spherical capsule or buoy B one metre in diameter. Assume that the relative speed between the spaceship A and the buoy B is exactly 0.8660254038 of the speed of light. Assume that both the spaceship A and the buoy B carry on board identical and accurate stop watches. Assume that some suitable mechanism (which can easily be devised) causes both the stop watches to measure the time interval taken for the spaceship A to pass the buoy B. Assume that as soon as the measurement is completed, some suitable mechanism causes the stop watches to stop ticking. Assume that after the stop watches stop ticking, electronic cameras snap pictures of the readouts of the stopwatches — the camera on the spaceship snapping a picture of the readout of the stopwatch on the spaceship, and the camera on the buoy snapping a picture of the readout of the stopwatch on the buoy — and then some suitable mechanism is used to beam these snapshots to earth, in much the same way the *Voyager* and *Pioneer* spacecraft beamed to earth pictures of Saturn and Jupiter. Assume that all the above is totally automated.

THE CHALLENGE

The challenge is this: calculate, giving every detail of your calculations, what the two snapshots should show. Specifically, should the two snapshots show the *same* readouts, or *different?*

If the two readouts are the *same,* then the Lorentz transformation equations, which require the existence of both time dilation and length contraction, cannot have been applied in the calculations; whereas if the two readouts are *different,* then it would be *possible* to tell which of the two, spaceship A or buoy B, is in motion and which is stationary: thereby negating the Principle of Relativity, according to which there is no such thing as absolute motion and no way to tell, of two objects in motion relative to one another, which of them is in motion and which is at rest.

Note that *there are no observers on the spaceship or the buoy.* The only observers are here on earth, and the only things being observed are the two snapshots.

INSERT YOUR CALCULATIONS HERE BELOW (use your word processor, or even a pencil if you want to snailmail me the answer):

COMMENTS

If you have any comments, please e-mail me.