Can Mass *Really* Increase with Velocity, as Claimed by the Theory of Relativity?

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THE THEORY OF RELATIVITY claims that if an object moves in a straight line at a great speed relative to another object, its mass increases, tending towards infinity as the relative speed between the two objects tends towards the speed of light.

But is this claim *logically* consistent?

Let's see. Let's suppose — to take a rather extreme but not entirely impossible case — that one hydrogen atom is moving rectilinearly in empty space relative to another at an extreme velocity: and let's call that velocity *v.* Let *v* be so great that it is 99.999 … 9 % of the speed of light, there being one hundred 9's in the above figure: two 9's to the left of the decimal point, and ninety-eight after it.

And let's also suppose that the Theory of Relativity *is* in fact correct: in other words, that the mass of one of these two atoms would be increased in comparison to the other, the exact increase being calculated according to the Lorentz transformation <*gamma*> factor, namely $(1-v^2/c^2)^{-0.5}$.

Working this out, we get a mass difference between the two atoms of the order of 10^{50}. In other words, one of the atoms ought to be in the order of 10^{50} times more massive than the other.

Of course this increase in mass must apply to the constituent parts of that atom too — *viz.,* the electron and the proton. Each them ought also to be 10^{50} times more massive than the corresponding constituent part of the other atom.

Now the mass of an electron at rest is approximately 9.1 times 10^{-31} kg. Thus an electron moving at the speed *v* given above, if the Theory of Relativity is correct, ought to have a mass of about 10^{18} kg — or in other words, in the region of a trillion tons!

But if, in a hydrogen atom, the constituent electron is *moving* at all with respect to the proton, there is no *way* the tiny electric charge between them could keep a trillion-ton electron bound to its proton. In other words, if the Theory of Relativity is correct, a hydrogen atom moving rectilinearly at velocity *v* relative to another would no longer *be* a hydrogen atom: it would be broken up into its constituent parts, *viz.,* an electron and a proton — each going its separate way.

But now comes the twist: according to the Theory of Relativity, there should be *no way to tell* which of the two atoms is in motion, and which is stationary. In other words, there is supposed to be no *preferred* frame which can be claimed to be at *absolute* rest. To an observer at rest relative to *either* of the atoms — chosen entirely at random — it should appear that the *other* one is moving, and therefore is in the order of 10^{50} times more massive.

So then: *which* of the two atoms should be broken up and separated into electron and proton, and which one should remain a normal hydrogen atom with an electron orbiting a proton?

If we *can* tell which one would be broken up, the Theory of Relativity can't be correct when it claims that there is no preferred frame which can be said to be at absolute rest.

And if we *can't* tell which one would be broken up, the Theory of Relativity can't be correct either, because then either *both* atoms would have to be broken up, or *neither!* For if only *one* of them is broken up, we *would* be able to tell which of them is moving, and, consequently, that the other one must be at rest.

One way or another, logically speaking the Theory of Relativity must be internally inconsistent, because with the above thought-experiment, no matter how you squirm, you'll always get a contradiction!

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