

Re: Time for a photon.

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- *From:* "tomgee" <tyropress@xxxxxxxxx>
 - *Date:* 12 Apr 2006 02:30:16 -0700
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Phil wrote:

Okay, maybe I can work with this. I think I'm going to have to start referring to the "LRD", the "link refutation defense," where a bunch of links are provided, and the person claims that "all the answers are in the links, just read them," only no one can find the answers, and the person cannot be "bothered" to post the relevant part of the post.

You are misunderstanding what link references mean. They are usually a direct admission that the poster is stumped by your claim and has no way to rebut it. IOWs, you win the point!

But those who provide a link and just below it quote or paraphrase the parts of the link that support his point are valid rebuttals to your point and you can rebut that if you so wish. That way, the rules of debate are upheld, and a decent conversation can be maintained. Those who refuse to follow the rules show they are genuine trolls out for revenge

upon those who have a better knack for reasonable thought.

Let me see if I follow you, because I probably do not have all the understanding of physics necessary here. In response to my comment that:

"First, physicists do think that oscillation = rest mass, and they state specifically that oscillation could NOT occur if neutrinos were massless particles."

You said:

"That is not true. Oscillations occur because the mass eigenstates are not the weak eigenstates. If all of the masses were the same then there would be no oscillations, because the eigenstates would be defined by the weak interaction alone and the mass eigenstates would be the same as the weak eigenstates."

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Above, the poster (a well-known troll hereabouts) offers support for his claim that what you quoted is untrue, but the support offered does not show at all that your quote is false. It just simply explains the quote more in detail and does in fact support it and thus contradicts his falseness claim.

I won't pretend that I know enough to fully understand this explanation, but I can certainly follow that equal rest masses would prevent oscillations because of "something." However, your first words were "That is not true." Ummm ... does that mean that oscillation COULD occur even if neutrinos were massless?

That only means he thinks so, and not that your quote is wrong or false.

The websites I saw definitely said what I quoted, and while I certainly CAN believe that it was "simplified," I can't quite see what the quotes could possibly be a simplification of. In other words, if massless particles can oscillate, how could even reporters — including all the science reporters — claim that oscillation implies rest mass when it has no implications whatsoever for rest mass?

That is not as unusual as you think. Indeed, it can and does happen. In this case, however, they try to make it sound more official by using the term "rest mass" redundantly to describe the basis for saying the particle in such a case can be said to have mass. The process involved is not that simple to understand, so it's no wonder the poster cannot understand it well enough to argue the details and so instead makes a pointless rebuttal.

As I understand it, so long as the three neutrino types do not "oscillate" — i.e., transform into a different type, there is no mass in any of them. When any one of them changes into another type by interacting with it, mass is created in the process. To me, this supports my model where real matter (RM) is created by Dark Matter (DM) interactions where negative mass (DM) interacts with other DM and RM is created in the process. The RM neutrino acquires its mass through that same process. There's a little more to it than that, but in a nutshell, that's it.

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This includes the guys I saw on the NOVA show (I so need to find a transcript of that). Are you CERTAIN that massless particles can oscillate, or perhaps more to the point, that physicists BELIEVE that massless particles can oscillate? Before you answer, let me add that I do not expect you to do my homework for me, but if you can provide some links — I know, I know — that would be greatly appreciated (the "LRD" refers to claims that "these links provide the info" as a way of dodging the question, as opposed to actually pointing to the answer).

The experiment revealed that muon neutrinos were absent where they should be evident. It was determined that they were there originally as expected, but that at times they went into the tau neutrino (and were transformed from a muon to a tau neutrino). From there, it was stated that no transformations (oscillations) can occur unless some mass was present in the process. You read the research correctly and the other poster, if he saw it, misunderstood it completely. I would not look to him for help with anything dealing with physics.

and later you said:

"If neutrinos oscillate, then at least one neutrino must have a mass which differs from the other two. Since $m = 0$, is a mass of zero, the existence of oscillations requires that at least one neutrino must have a mass different from zero."

Not if, but when, "neutrinos oscillate". All neutrinos have up to this new research been thought of as massless and not a single physicist I've heard of ever contested that notion. My model hints at the possibility for neutrino particles to have some mass, but it went right through the poster's brains cells without setting off a single synapse. Now he has worked out in his head how to argue against the findings that everyone is readily accepting, and which he believes is a rational argument. His argument that at least one neutrino must have a mass different from the others shows that he does not understand the process revealed by the experiments. None of the neutrinos have mass until the muon interacts with the tau and is CHANGED into a tau in a process that creates mass!

Next, he argues that the mass of the three neutrinos is equal to zero, which is true before the said interaction occurs, but after that, the

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muon

has disappeared into the tau particle and in the exchange mass was created!

My one remaining question is, assuming that massless neutrinos cannot oscillate, does that have ANYTHING to do with what I heard on the show, namely that a change of state = "time passing," and it is impossible for "time to pass" for any particle, massless or otherwise, when its speed = c ? Again, I won't ask you to "do the homework" for me, but do you know, off the top of your head, where I might look for the "official" answer to those questions?

That was the result of some hedging on the part of the scientists on the show who do not want to talk about time. My model explains the above in suggesting that for change to occur, time must pass. Oscillations cannot occur unless time is involved. It has nothing to do with c !

The speed of light is c , which is a finite number. That means light travels at a certain speed which requires the passage of time for it to get from here to there. Some people correlate that to the claim that light is massless because it consists of em waves and massless photons. They have found at least two ways to support their claim, but no way to reconcile the claim where it directly contradicts the Principle of Conservation of Mass and Energy nor to the formula $E=mc^2$.

If light was massless, it would exist external to the time dimension and it would not experience the passage of time. It would not age. Some wonder how light speed can be finite if light does not experience time.

While it takes light time to get somewhere, that does not have to do with whether or not light ages. The two are distinct arguments unrelated to each other such that they can both be true.

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