

Re: Electron-positron annihilation

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Bjoern Feuerbacher writes

> *John Kennaugh wrote:*

>> *Franz Heymann writes*

>> *OTOH it predicts that a clock, or rather time, goes slower at the equator than at the poles while I understand that this in fact is not the case.*

>

> *Please provide a reference to both the calculation predicting this*

"Thence we conclude that a balance clock at the equator must go more slowly by a very small amount than a precisely similar clock situated at one of the poles under otherwise identical conditions" Albert Einstein 1905

> *and*

> *to the observations contradicting this*

I don't need to there would be massive headlines saying "relativity vindicated" if there had have been a difference. The silence is deafening. There have existed clocks accurate enough since 1971 with a time difference of 104ns per day.

> *(the calculations aren't that*

> *easy, since one has to take both the GR and SR effects into account...)*

>> *It was claimed that this was because the earth is flatter at*

>> *the poles, that the SR term is conveniently cancelled by the GR term.*

> *Reference, please. Calculations, please.*

Ref "Relativistic corrections for terrestrial clock synchronization"

Cocke Phy.Rev.Lett Vol16 1966 p662

>> *Then someone pointed out that mean sea level is a surface of constant*

>> *gravity potential by definition and there is no GR effect for two points*

>> *an equal distance above MSL leaving an experimental result which*

>> *contradicts SR.*

>

>Well, **were* both clocks at mean sea level?*

It doesn't have to be pole and equator any pair of clocks at the same height above sea level at different latitudes will do. The difference would be less than 104ns per day but should be significant over the 20 years which have elapsed.

>

>*The gravitational potential *is* different at the poles than at the equator, if you didn't know.*

>*Maybe you would like to give references for your assertions.*

"If you want to know the time ..." W.A.Scott Murray. Electronics and Wireless World Dec 1986 P28 to 31.

>*The postulate by SR that light speed is independent of the motion of the emitter and of the observer is based on Maxwell's equations, which were well known and accepted in 1905, and thus in no way absurd. How often do I need to repeat that?*

You can repeat it as often as you damn well like it isn't true. You have been taken in by a ruse used in text books. Basically text books are not so much written as compiled and a 'good' idea found in one text book will find its way into others. A text book has to satisfy the needs of the lecturer. He won't recommend it otherwise. The problem is that there isn't any legitimate justification for Einstein's second postulate and if students become aware of this they are likely to give their lecturer a hard time and the time scale will slip. There are two techniques I have noticed.

The first is to use MMX. What MMX actually showed is that the speed of light from a source **stationary w.r.t the observer** is always constant independent of the speed of the apparatus relative to the rest of the universe. This is however expressed as "... and hence the speed of light was shown to be constant independent of the motion of the observer" – in context not untrue. Then there is an intervening chapter to allow the student to forget the context before the chapter on relativity. Which starts with "as it was shown that the speed of light is constant independent of the motion of the observer....". They then state the second postulate in a form which says nothing specific about moving sources e.g. "All observers must find the same value of the free space velocity of light regardless of any motion they have" and then crack on with the maths and it is only when writing the actual equations that it is used to mean "All observers must find the same value of the free space velocity of light regardless of any motion they have relative to the source".

Sneaky what?

The second fiddle is to say that Maxwell's equations show that the speed of light is c . They do not say that the speed is $c+V_s$ where V_s is the speed of the source so they show that the speed of light is independent of the source. Utter rubbish. What Maxwell believed his equations showed is that the speed of light is c relative to the ether. He would have predicted that the speed of light relative to a source travelling at v relative to the ether would be $c-v$ in the direction of travel. Likewise he would predict that the speed of light measured by an observer travelling at v relative to the ether would measure the speed as $c+v$ from a source directly ahead. Maxwell's own interpretation of his equations put both observer and source in the same position. The speed relative to either is not c because it is c relative to the ether and they have velocity relative to the ether. If you take away the ether, i.e. you decide that it doesn't exist then there is nothing in Maxwell's equations which then indicates what c is a speed relative to. The most logical is that c is relative to the source producing the light. It cannot be constant w.r.t the observer there might not be one and in any case you have a problem with causality. i.e. what possible physical process could result in the light travelling at c relative to each and every observer.

[.....]

>> *Superficially the experiment fires high energy protons at a fixed target*
>> *and photons are produced which have a speed of c relative to the target*
>> *as would be expected by both relativity and ballistic theory.*
>
>Err, the photons come from the decay of **pions**, which are **moving** wrt
>the target.

Try reading a post before jumping in with irrelevant comments.

>> *The belief that the experiment supports the second postulate is based on*
>> *a predicted by science, based itself on relativity, that a neutral pion*
>> *(π -meson) is first produced,*

>So you want to claim that pions don't exist, or what???

>> *that this is moving at $0.999c$*

>If pions exist, then this speeds follows quite simply from conservation
>of momentum. Do you dispute this conservation, too?

>

>

>> *and it is*

>> *this which decays. Unless it has been shown theoretically that if the*
>> *ballistic theory were correct the neutral pion would still be predicted*
>> *as being involved it hasn't really proved anything.*

>

>You **really** want to claim that the existence of neutral pions has never
>been shown???

How can you *show* the existence of a particle which decays in 8.4×10^{-17} s ? You can't. Theory predicts it and its existence is then *confirmed* by viewing its decay products. Or alternatively the decay products are noted and theory used to predict the particle. If the theory is wrong...

>
>> *Even if one accepts the existence of the neutral pion it has a lifetime of about 10^{-15} s*
>
>Err, no. $(8.4 \pm 0.6) * 10^{(-17)}$ s.
><<http://pdg.lbl.gov/2002/mxxlight.pdf>>

You are forgetting time dilation. If you read up on the experiment it is travelling at 0.99975c. I thought I was the one who didn't know anything about physics.

>
>> *so it will only travel 0.003mm before decaying so*
>
>Even less.
Considerably less if the theory it is trying to disprove is correct.

>> *unless it is a very thin target the decay will still take place within the target*
>
>Yes.

>> *and no matter how thin, within the near field of the target making the stationary target the affective source.*
>
>Absolute total non sequitur. The photons come from the pion. What on earth has the near field of the target to do with that???

If the second postulate of relativity is wrong then light is ballistic where c is the speed at which photons relative to the source. Unlike ether based theories such as relativity there is nothing which says that the speed of the photons will remain at c come hell or high water.

On the contrary. As H.Aspsden pointed out to Waldron if a photon was emitted by an atom at c relative to the atom it would travel at the velocity c plus the thermal agitation velocity of the atom and that does not appear to be the case. One has to assume therefore that c is the natural interaction speed of a photon and an em field and that a photons speed leaving a source is at a speed relative to the average field produced by many atoms at the surface. i.e. there is a near field effect producing the final velocity. Photons from the pion, if still within the near field of the target will therefore be affected by the near field effect and have a speed c relative to the target, and not relative to the pion. Look up 'extinction' ref Tolman or Ewald–Oseen.

>> *There are other*
>> *things which could influence the result like a strong magnetic field.*
>
>*How would the result?*
>
>*And why do you think there was such a field?*

You don't seem to have read up on the experiment. There was a magnetic field after the target to deflect any charged particles. You don't hit a beryllium target with high speed protons and expect only pions to be produced. They assumed that it would not have any affect on the photons. Which is why I said:

>
>> *Very convincing for those already convinced but no one defined the*
>> *theory it was supposed to disprove to see whether it does actually*
>> *disprove it.*

>
>> *The second postulate, which basically says the speed of light is*
>> *constant w.r.t the observer observing it, is absurd from both a*
>> *causality point of view*

[...]

>> *It is even more absurd if one tries to deny the existence of the*
>> *ether.*

>*Care to suggest an experiment which would observe it?*

Any experiment which shows source independence shows the existence of the ether. It is the only explanation of source independence.

>> *If a source is surrounded by nothing which can effect the speed of light*
>> *(no ether)*
>
>*Space?*
>
>
>> *there is nothing c can be referenced to other than the*
>> *source.*
>
>*Why?*

D'oh! You have a source surrounded by billions of miles of space in all directions. If there is no ether then there is nothing which can affect the speed of light for billions of miles in all directions. c is a speed. A speed is meaningless unless it is a speed relative to something and the only 'something' there is, is the source. But then you have it wrong anyway.

[...]

>> *If you apply the postulate directly:*
>> *A S*
>> *B-->v*
>> *Then light leaves the source at c to go to A and leaves the source*
>>*at*
>> *c-v to go to B (because that is c relative to B)#.*
>
>*Err, no. If you apply the postulate directly, the light leaves the*
>*source at c to go *both* to A and B.*

No that cannot be

>> *# Note if a wave passes both A and B going at c relative to each then*
>> *the only way you can explain Doppler shift is if the light left the*
>> *source at a different speeds for A and B.*

>*Nonsense again. The Doppler shift is explained by the motion of the*
>*source relative to A and B.*

This is another little fiddle used by text books which has taken you in. What the book will say is that the speed is c but that distance changes with time. Spotted it? Distance changing with time is speed. I am applying the second postulate totally correctly. It requires the speed of light be c everywhere in an observers frame of reference whether it is going away from him, towards him or across his line of sight. In his FoR it leaves the source a c relative to him whatever that happens to be relative to the source.

"But the ray moves relatively to the initial point of k [moving source], when measured in the stationary system, with the velocity $c-v$," – ON THE ELECTRODYNAMICS OF MOVING BODIES By A. Einstein June 30, 1905

Of course an observer at the source travelling with the source will see it leave the source at c but that is a different FoR.

>
>*"c relative to B" makes no sense. You would know that if you had*
>*understood anything about SR.*
>
>
>> *If it arrives just as*
>> *A and B coincide it means that it set out at different speeds*
>
>*No, it doesn't mean anything like that.*
>
>
>> *arrived at*
>> *the same time so must have set out at different times*
>
>*False premise ==> false conclusion.*

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No absolutely standard relativity. Look up 'ascribing times to distant events' I am not presenting anything non standard I am just not using the usual carefully chosen wording.

>

>

>> *(I'm ignoring the*

>> *second order effect that B sees distance A–S as slightly less than A*

>> *does, because it does not affect the argument).*

>

>*Why is that a "second order effect"? Second order in which parameter?*

The change in distance is a second order effect dependent on a term with v^2/c^2 whereas the difference in time involves first order quantities involving v/c .

>> *So what the second*

>> *postulate says is that the same light *appears* to leave the source at*

>> *two different times setting out at two different speeds.*

>

>*No, it says nothing like that. Why on earth do you think so?*

I have just shown that to be the case based on the normal interpretation of the second postulate. I am not presenting anything non standard I am just not using the usual carefully chosen wording or deriving things using Lorentz transforms.

>> *SR and LET are very similar but if you insist SR is not LET,*

>> *and most relativists do,*

>

>*Yes. SR explains the effects by essentially postulating*

You do not *explain* something by postulating. SR explains nothing. Quite the contrary. You are obviously a beginner. Relativity was declared to be a 'principle theory' i.e. little more than a mathematical model by AE. The standard answer is "Relativity does not attempt to answer those sorts of question". You have to watch relativists they are a sneaky bunch they say things like "relativity has nothing to do with the ether" when actually it means "relativity has nothing to say on the subject of whether there is an ether or not, it isn't the sort of theory which deals with such matters". SR does not rule out LET because LET is mathematically compatible with SR.

>*that the same effects are observed differently in frames which are*

>*moving wrt each other, whereas LET says that there is an ether, an*

>*absolute speed (the speed wrt the ether) can be defined, and this*

>*absolute speed causes actual time dilations, length contractions etc.*

I note the implication that in SR Time and length dilation is not *actual* but the result of observational differences. You don't accept

the standard result of the twin paradox then? That requires actual time difference.

A S
B-->v

What Lorentz says is that light leaves S at c relative to the ether. It is travelling at different speeds relative to A and B because it is travelling at c relative to the ether. A and B's measuring rods and clocks are differently affected by their motion through the ether in accordance with Lorentz transforms with the result that they end up getting the same value c for the speed of light. They calculate the time of the distant event as being different because their rods and clocks are differently affected by their different speeds relative to the ether.

>If you can't see the difference between SR and LET, then you haven't understood SR, plain and simple.

In order to overcome the "relativity does not attempt to answer those sorts of question I have developed a technique where I say "If we assume that SR is not LET then" as I effectively did as follows

*>> SR and LET are very similar but if you insist SR is not LET,
>> and most relativists do,
>> then I have to amend my statement to say 'What the
>> second postulate says is that the same light *actually* leaves the
>> source at two different times setting out at two different speeds'.
>
>No. The second postulate says nothing like that. How could a postulate
>which says that the speed of light is the same for every observer say
>that light leaves the source at two different speeds??????????*

In A's FoR the source is stationary. In his FoR light travels at c so leaves the source at c relative to the source. In B's FoR the source is moving but in B's FoR light still travels at c relative to his FoR but the source is travelling relative to the FoR so light speed relative to the source is $c-v$ because that is c relative to the FoR of B.

"But the ray moves relatively to the initial point of k [moving source], when measured in the stationary system, with the velocity $c-v$," – ON THE ELECTRODYNAMICS OF MOVING BODIES By A. Einstein June 30, 1905

*>> LET allows you to have two distortions of a single reality.
>
>SR allows you to have two different observations of a single reality.*

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accordance with Lorentz transforms with the result that they end up getting the same value c for the speed of light. They calculate the time of the distant event as being different because their rods and clocks are differently affected.

Take away the ether and A and B measure the speed as c because it *is* c relative to each of them. If it *is* c relative to each of them then it must have *actually* left the source at two different speeds. There is nothing which can distort A's instruments differently to B's so if they calculate different times for the event it is because it did *actually* take place at different times.

--

John Kennaugh

to email convert the number from hex to decimal