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Posted by Rbwinn - 2008/06/27 23:45

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which of _my_ states corresponds to the state of the finnish line (who apparently has the most to do with this assertion) observing the first runner crossing it ; which of _your_ states corresponds to that state of the finnish line, etc. Having obtained this calibration, we might go on to derive pairwise distance from that (e.g. through Einstein's associated distance definition); we might find that one or the other observer pair moved wrt. each other in the course of the run (most of all each runner wrt. the finnish line , perhaps). Further, having obtained those coordinate relations and using them as constraints in a problem of variational calculus, we could calculate the most probable potential in the region of this experiment, as it is sampled by each observer individually (e.g., given enough measured constraints, we might find that the track let's the runners bounce off throughout the race, etc.). At least that's the procedure being conducted in QFT. The Lorentz equations ... a.k.a. Lorentz transformations , IIUC ... are an approximation. They do not give an absolute depiction of reality. An approximation wrt. which other measured quantities? How, if not through the Einstein procedures, do you suggest to obtain a depiction of reality which (being reality) should be reproducible/understandable by all others? Frank, I have no idea what you are doing with four dimensions. I have no way of even visualizing it. I use three dimensions. One thing that is obvious using three dimensions is that four dimensions have you overlooking some very obvious facts. First of all, all clocks in a frame of reference will agree with one another. Now you say that from another frame of reference they do not using the Lorentz equations. What difference does that make? The value of t is measured from the frame of reference in which it exists , not from another frame of reference. Any clock in a frame of reference can be put next to an event and will show the time of that event, and, secondly, will agree with all other clocks in that frame of reference, assuming all clocks are operating correctly. Robert B. Winn

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What do they read from each frame of reference when the astronaut reaches the second mark? Since t' denotes a state/time of the second mark'/clock', the corresponding t' = the astronaut reaches the second mark' . Which (if any) state/time/reading t of the first mark/clock corresponds to that, I don't know a priori. Again, which calibration procedure would you suggest in order to determine that experimentally? Regards, Frank W ~@) R

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and t' = 0 , i.e. one of the readings/states at the _other_ clock'/mark'. Since t denotes a state/time of the first mark/clock, apparently the states/times t = 0 and t = the astronaut reaches the first mark are the same states/times; we might as well write t = 0_the astronaut reaches the first mark . The point being: it is not abvious how to do arithmetic with readings/states/times. Consequently, secondly: What do you mean by t' when the astronaut reaches the first mark ?, IOW, which procedure do you suggest to determine whether or not the state/time t = 0_the astronaut reaches the first mark of the first clock/mark corresponds to the state/time t' = 0 of the second clock'/mark' ? (In order to discard the trials in which this were not found, or in order to adjust otherwise.) Hint: Recall Einstein's train and lightning example to which you referred earlier. What do they read from each frame of reference when the astronaut reaches the second mark? Since t' denotes a state/time of the second mark'/clock', the corresponding t' = the astronaut reaches the second mark' . Which (if any) state/time/reading t of the first mark/clock corresponds to that, I don't know a priori. Again, which calibration procedure would you suggest in order to determine that experimentally? Frank, You are making this too complicated. Event 1 ,the astronaut reaches the first mark Event 2 the astronaut reaches the second mark Now you are saying that no other events can be proven to happen at the same time these events happen. I went all through this with some other scientists last summer with Einstein's train and lightning problem. I understand what you are saying, but it is wrong. Let me show you what I showed them, and maybe it will clarify this for you. Here is what scientists are saying happens in the train and lightning problem. We run a train by an observer by the track in the manner in which Einstein described. When an observer on the train at the middle is opposite an observer on the ground, theoretically, the observers could reach out and touch hands, although, at the speeds described, if they did so, they would both lose the hands in question. So at the exact instant that the observers touch hands, lightning strikes the front and rear of the train simultaneously in both frames of reference. Now, according to the Lorentz equations, this will take four bolts of lightning, so let us consider where the four bolts of lightning hit. We stipulate that all four bolts of lightning hit the front and rear of the train, each bolt of lightning leaving a mark on the railroad track. Now we look at where the Lorentz equations say the marks on the track are. FROM THE FRAME OF REFERENCE OF THE TRACK _A________B_____O_____C__________D 1. The rear of the train reaches A and lightning strikes the rear of the train. 2. The front of the train reaches C and the rear of the train reaches B, and lightning strikes the front and rear of the train simultaneously. 3. The front of the train reaches D and lightning strikes the front of the train. If you need the distances for these points, I can give them to you. FRAME OF REFERENCE OF THE TRAIN _A_______B_________C_________D___ 1. The front of the train reaches C and lightning strikes the front of the train. 2. The front of the train reaches D and the rear of the train reaches A, and lightning strikes the front and rear of the train. 3. The rear of the train reaches B, and lightning strikes the rear of the train. Now I do not believe that this is the way it happens, but this is what scientists say happens. This is what the Lorentz equations show. What I believe happens is that there are only two bolts of lightning which strike in the following manner: __A_______B____o_____C_______D____ The observer on the train reaches the position of observer o on the ground, the front of the train is at C, and the rear of the train is a B, lightning strikes the front and rear of the train simultaneously in both frames of reference. The distance from B to C is the rest length of the train. This is what I believe happens. If you can find an error in what I say, go ahead and show it. Robert B. Winn

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lightning strikes the front and rear of the train simultaneously in both frames of reference. cannot be realized at all (unless front and rear are the same and the trainlength is zero; or the frames are same throughout the signal exchange and therefore cannot move wrt. each other). Best regards, Frank W ~@) R

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cannot be realized at all (unless front and rear are the same and the trainlength is zero; or the frames are same throughout the signal exchange and therefore cannot move wrt. each other). Now, you can consider the problem any way you want to as long as you concede one thing: If we put a row of clocks along the ground at intervals of one foot for a mile, in the frame of reference of the track, the clocks all agree with one another. If we put a row of clocks down the middle of the train from front to back at intervals of one foot, in the frame of reference of the train, all of these clocks agree with one another. That is all I need to prove my equations. Robert B. Winn

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As I have said, I am a welder, not a mathematician. But I'll assume that you can count nevertheless.

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the ends of the train are at L*sqrt(1-v^2/c^2)/2 in each direction from the observers. Yes. From the frame of reference of the train, the ends of the train are L/2 in each direction, where L is the length of the train at rest. Fine. Frank, Ok, let's take it from where we agree. We agreed that the two observers could be opposite one another. We agreed where the Lorentz equations put the front and rear of the train at that particular moment from each frame of reference. Now suppose that we emit a light from the position of the observers in each frame of reference. What will this light do in each frame of reference? In the frame of reference of the track the light will go in each direction from the observer by the track at a rate of c. In the frame of reference of the train, the light will go in each direction from the position of the observer on the train at a rate of c. So, if we have two marks on the track a distance of L/2 in each direction from the observer by the track, the light will reach the marks in a time of t=L/2c. How far has the light gone at this time in the frame of reference of the train? t'=(L/2c) (c-v)/c d=*c=(L/2c)(c-v) This means that the light emitted at the position of the observer on the train has not yet reached the ends of the train when t has expired in the frame of reference of the track. Robert B. Winn

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has not yet reached the ends of the train when t has expired in the frame of reference of the track. No, it has, in the backward/towards_rear case + ; and yes, it hasn't, in the forwards/towards_front case - . Btw., using both directions, as prescribed in the distance definition, would result in measurement of length contraction : what the track claim to be L/2 forwards + L/2 backwards == L is being measured by the train as L/2 (1 - (v/c)) / sqrt(1 - (v/c)^2) + L/2 (1 + (v/c)) / sqrt(1 - (v/c)^2) == L/2 sqrt(1 - (v/c)^2) . Length contraction is mutual, as expected; or rather: as one requires when deriving the Lorentz transforms in the first place. Regards, Frank W ~@) R

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to time evaluated at the specified point in time.

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ahead and show it. Robert B. Winn This may be so if light has infinite speed. But for scientist who out of train A whit time becomes closer and D farther. There for when light reaches A, D will be still in dark. For scientist in the train A and D move with him and light reaches them at the same time. This is because the speed of light is finite and does not depend on reference frame. Aleks Kleyn.

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send him by the section of the accelerator with the two marks. When astronaut reaches the first mark, a scientist by the acceleratro starts his stopwatch, and the astronaut starts his stopwatch. When the astronaut reaches the second mark, both stopwatches are stopped. The scientist's stopwatch reads t, the astronaut's stopwatch reads t', where t'=t(c-v)/c. This means that from the frame of reference of the astronaut, the sides of the accelerator are going by him at a rate of vt/t', which could be faster than c. My belief is that if a particle is accelerated to a velocity faster than c it will emit light. Robert B. Winn Hi I like how you follow. But in SR definition of velocity is not 3-dimentional. We have space-time, so 4 dimentions. In general, we draw the history line. It goes from past into future. Then we find vector that is tangent to this line and has length 1. This is 4-dimentional velocity. Its derivative is 4-dimentional aceleration. For regular body acceleration is orthogonal to velocity. Aleks Kleyn. Aleks, Sorry to take so long to answer this. I was in Montana where computers are scarce. I am only a welder in a steel fabrication shop, and only have a high school education, so I cannot really address the considerations of four dimensions, since I cannot even visualize the concept. What I can do is describe what I have described here, which seems to me to conform to reality. For instance, an astronaut in a sattelite will get a different value if he divides the distance of his orbit by the time registered on his clock than a scientist on earth would get if he divides the distance of the orbit by the time on his clock. My belief is that the two times in question will conform to the equation t'=t(c-v)/c, where t' is the time on the astronaut's clock and t is the time on the scientist's clock, and v is velocity as calculated by the scientist on earth. My belief is that the astronaut and the scientist will get the same value for the distance of the orbit, which can be proven fairly simply, a radar on the sattelite will give the same distance to earth as a radar on earth will give to the sattelite, making the radius of orbit the same from either place. Therefore, we have the relationship, d/t'd/t, where d is the distance of the orbit. There is no distance contraction indicated by this, but velocity has to be calculated from earth because the sattelite is moving relative to earth, whereas, earth is not moving relative to the sattelite. The Lorentz equations do not show this, but indicate that velocity is the same from either frame of reference. The fact remains that the earth is not moving relative to the sattelite, except perhaps rotating on its axis, which will not affect the orbit of the sattelite. My belief is that the Lorentz equations do not show time as it actually exists, but are only valid for comparisons of one atom to another in the same field of gravitation, such scientists have used these equations in the past. Robert B. Winn

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The observer on the train reaches the position of observer o on the ground, the front of the train is at C, and the rear of the train is a B, lightning strikes the front and rear of the train simultaneously in both frames of reference. The distance from B to C is the rest length of the train. This is what I believe happens. If you can find an error in what I say, go ahead and show it. Robert B. Winn This may be so if light has infinite speed. But for scientist who out of train A whit time becomes closer and D farther. There for when light reaches A, D will be still in dark. For scientist in the train A and D move with him and light reaches them at the same time. This is because the speed of light is finite and does not depend on reference frame. Aleks Kleyn. Aleks, Once again, I am not pretending to know exactly what happens. However, I believe that scientists are reading too much into the result of the Michaelson-Morley experiment when they say that they know exactly how light gets from one place to another and how fast it is going. I say that what the experiment shows is that light reacts with the elements in that particular time and place at a rate of c, and that is about all you can say about it. Robert B. Winn

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Robert B. Winn

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nswer. Beleve me this is not hard task to switch in 4 dim. You did this but in your space time is independent. I am not sure for my english expression but you think sharp and this means that you can go this way. Why t'c=t(c-v). If you want to synchronize their clocks you need create loop: send and receive signals. Then you will see that clocks go with different speed. My belief is tha Aleks, The way I visualize this is from a set of equations that I use to represent the light. Starting with Einstein's explanation of coordinates, we see that he concludes that distance and time are contracted in the direction of the motion. I have a different idea about this. Einstein starts out with the idea of motion in the x direction with a beam of light in the same direction for which he gets x'=(x-vt)/(1-v^2/c^2) instead of x'=x-vt. The difference I have with Einstein is that he also uses the equations y'y,z'=z, which do not make sense to me. How does the light get a distance of y or z in a time of t'? t' is less time than t. Now on pages 33 and 34 of Einstein's book there are two more little equations which do make sense. x=ct, x'=ct'. The distance light travels in a frame of reference is equal to time in that frame of reference times the speed of light. Consequently, I took these two little equations and substituted in for x and x' to obtain ct'=ct-vt. From this we get t'=t(c-v)/c. This shows a time dilation, but no distance contraction. Then to show a true representation of what light does in each frame of reference, we say ct=sqrt(x^2+y^2+z^2) and ct'=sqrt(x'^2+y'^2 +z'^2), which shows light expanding in each frame of reference in a sphere with a radius of c times time in that frame of reference. This is how I visualize light. Robert B. Winn

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times time in that frame of reference. This is how I visualize light. Robert B. Winn You work on light cone. And realy, if you picture how light distributes in your reference frame, you will see sphera. Lihgt does not know that his source moves. He left it and spoke good bye. The last paragragh that you wrote does not have relation for all another. This is what was postulated before. Time dilation that follows from special relativity was proved in nature a lot of time. In particular, physics have it in mind when work with accelerator. For instance synchrophasatron. Another case cosmic rays. There are a lot of particles there that cannot reac earth according Newton mechanics. Physics were surprised by this fact but then they remind what speed cosmic rays have. Aleks Kleyn

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lot of time. In particular, physics have it in mind when work with accelerator. For instance synchrophasatron. Another case cosmic rays. There are a lot of particles there that cannot reac earth according These equations I use have a time dilation. t'=t(c-v)/c At about 400 km per second, the time dilation agrees with the Lorentz equation time dilation to about six or seven decimal places. However, the equation is saying something different about time than the Lorentz equations. Robert B. Winn

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saying something different about time than the Lorentz equations. Robert B. Winn You use time dilation that is good approximation for small speed. More exactly it looks like t'=t (1-1/2 v^2/c^2)=t (1-1/sqrt(2) v/c) (1+1/sqrt(2) v/c) When v is small we can ignore second (). sqrt(2)=1.41... . So we can receive your approximation. May be there is another way how you received it. But here you have to be careful. Aleks Kleyn.

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