Re: time dilation

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- *From*: kenseto <kenseto@xxxxxxxxxx>
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On Apr 10, 7:40 pm, rbwinn <rbwi...@xxxxxxxx> wrote:

> The work of famous scientist Galileo Galilei provides us with a question about time dilation and Dr. Albert Einstein's statement that the laws of physics must remain the same in all frames of reference. Galileo carried two lead weights of unequal sizes to the top of the leaning tower of Pisa and dropped them at the same time, disproving the idea of scientists of his time that the heavier of the two weights would strike the ground first. Of course, it took some time before scientists accepted the results of his experiment. They did not all believe in the principle of equivalence the moment the two lead weights hit the ground.
>
> This brings us to another question about falling objects which arises from the idea of dropping an object in a moving train car, which writers of textbooks about relativity often use to show how the Lorentz equations work. If a weight is dropped from the top of a train car to the floor, it falls a distance of y'. In any transformation equations this is always expressed as y'=y. The object travels the same distance vertically in S' as it does in S.
> In Galileo's equations, it takes the same amount of time for the object to travel from the roof of the train car to the floor in either frame of reference. t'=t.
>
> In the Lorentz equations, a clock in S', the frame of reference of the train car, is slower than a clock in S, the frame of reference of the train tracks.
> t'=(t−vx/c^)/sqrt(1−v2/c^2). According to this equation, it takes less time for the object to fall from the roof of the train car to the floor in S' than it does in S. So how are the laws of physics the same in both frames of reference?
>
> If a clock in S ticks once while an object is falling in the train car, it will not tick in S' until after the object has hit the floor. This means that the object is falling with a faster velocity in S' than in S.
>
> I am sure that some of our scientific friends who believe in a distance contraction will be anxious to explain this phenomenon.
> Robert B. Winn

SR cannot explain your question. IRT explains your question as

follows:
t' seconds = t*gamma seconds
What this mean is that the passage of a second in the train represents the passage of gamma seconds in the track frame.
In other words, even though t' is a smaller number but in terms of absolute time both t' and t*gamma contains the same amount of absolute time.
BTW that's the reason why both the train and the track observer measure the speed of light to be a constant c as follows:
Light paht length of ruler (299,792,458 m long physically)/the absolute time content for a clock second co−moving with the ruler.
The above new definition for the speed of light gives rise to a new theory of relativity called Improved Relativity Theory (IRT). A paper entiltled "Improved Relative Theory and Doppler Theory of Gravity" is available in my website:
http://www.geocities.com/kn_seto/index.htm

Ken Seto
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