

Who then Measures the Relativistic Time Dilation, ΔT ?

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One of the concepts of Special relativity (SR) is time dilation, which depends on the second postulate of this theory: the speed of light c ($\approx 3 \times 10^8 \text{ m sec}^{-1}$) is the same in all inertial frames of reference. This theory states that the time interval ΔT_0 ¹ as measured by an observer in a stationary frame is shorter than the time interval ΔT in a frame moving² with a relativistic speed v relative to the first one. It is customary to assume that this time interval is measured with a (stationary) observer on Earth, although this is impossible for him. On the other hand, the time interval measured by the moving observer is also ΔT_0 . Now the inevitable question arises: who then measures ΔT if both observers measure only ΔT_0 ?

¹ In SR, subscript 0 usually denotes the stationary reference system.

² This initial choice, which frame is stationary and which is moving, is arbitrary and it could be *vice versa*.