Time Dilation and the Equivalence of Inertial Frames

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Abstract

It is well known that simultaneity within an inertial frame is defined in relativity theory by a convention or definition. This definition leads to different simultaneities across inertial frames and the well-known principle of relativity of simultaneity. The lack of a universal present implies the existence of past, present and future as a collection of events on a four dimensional manifold or continuum wherein three dimensions are space like and one dimension is time like. However, such a continuum precludes the possibility of evolution of future from the present as all events exist 'forever' so to speak on the continuum with the tenses past, present and future merely being perceptions of different inertial frames. Such a far-reaching ontological concept, created by a mere convention, is yet to gain full acceptance. In this paper, we present arguments in favour of an absolute present, which means simultaneous events are simultaneous in all inertial frames, and subscribe to evolution of future from the present.

Full Text

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