

Abstract Submitted
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Why is the Speed of Light the Same in All Reference Frames?

SCOTT GORDON, Univ of Central Florida — The speed of light as a constant is one of the first lessons taught in undergraduate physics. We learn that the speed of light does not vary whether measured in a reference frame that is relatively moving or not moving. . . But why is this so? Maxwell's equations suggested that the speed of light would have the same value in all reference frames because in the derivation of these equations, no distinction was made as to the relative motion of the reference frame Maxwell's mathematics was applied to. Einstein took note of this property and used the speed of light as a constant in all reference frames as a postulate to develop the theory of special relativity. He then went on to derive general relativity and gave us an extremely valid model of the universe. . . BUT with all this theoretical knowledge, the model we currently use still does not tell us why the speed of light is a constant in all reference frames. In order to understand the underlying nature of light moving through spacetime, a more fundamental model that is consistent with our current model is required, a model which can tell us. . . Why is the speed of light the same in all reference frames?

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