

A little generalization of special theory of relativity

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It is shown that there exists a more general group of linear transformations which respect the invariance of the velocity of light. We give two proofs of its existence. The first is purely formal while the second is based on the generalization of the Einstein radiolocation method. The conventionality problem of Special Theory of Relativity is discussed and it is shown that this problem can be removed by the observation that all relativity groups with non equal forward and backward velocity of light are similar to the standard relativity group. Kinematical description of motion is realized in terms of specific velocity mixed tensor. The shape of this tensor is explicitly constructed. The dynamical aspect of motion is realized by a twice covariant energy momentum pseudotensor density. Such an approach shows that both the kinematical and dynamical aspects of classical mechanics are exactly the same as in standard Special Relativity based on Lorentz transformations. But our approach has the advantage that it allows to consider both motions with subluminal and superluminal velocities. One particular example is considered in detail. This example shows that in motions both with subluminal and superluminal initial velocities the velocity of motion asymptotically tends to the velocity of light.