

Abstract Submitted
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A Galilean Transformation Consistent with Special Relativity

FRANK TANGHERLINI, emeritus — As shown earlier [1], a linear transformation with the same form for the spatial coordinates as the Lorentz transformation (LT) that keeps simultaneity invariant and allows for time dilation, predicts the same results as the LT for the out-and- back speed of light, as well as numerous other tests of special relativity. Using this transformation, which is now interpreted as involving external synchronization, rather than the superluminal synchronization discussed previously [1], it will be shown that two frames moving uniformly with speed v , but in opposite directions relative to an inertial frame, can be related to one another by a Galilean transformation with a relative velocity $V = 2v/(1 - (v/c)^2)$, when their clocks are synchronized externally to that frame. This entails a predicted aberration of $\arctan(V/c)$, which agrees with the aberration predicted by the LT using the relativistic relative velocity $2v/(1 + (v/c)^2)$.

[1] F.R. Tangherlini, “The Velocity of Light in Uniformly Moving Frames,” Ph.D. Thesis, Stanford (1958). Publ. in the Abraham Zelmanov Jour.2,44(2009), includes 2009 preface. See <http://Zelmanov.ptep-online.com/papers/zj-2009>

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