Resolution of the Ehrenfest Paradox in the Dynamic Interpretation of Lorentz Invariance

F. Winterberg

University of Nevada, Reno, Nevada 89557-0058, USA

In the dynamic Lorentz-Poincaré interpretation of Lorentz invariance, clocks in absolute motion through a preferred reference system (resp. aether) suffer a true contraction and clocks, as a result of this contraction, go slower by the same amount. With the one-way velocity of light unobservable, there is no way this older pre-Einstein interpretation of special relativity can be tested, except in cases involving rotational motion, where in the Lorentz-Poincaré interpretation the interaction symmetry with the aether is broken.

In this communication it is shown that Ehrenfest's paradox, the Lorentz contraction of a rotating disk, has a simple resolution in the dynamic Lorentz-Poincaré interpretation of Lorentz invariance and can perhaps be tested against the prediction of special relativity.

Reprint requests to Prof. F. Winterberg. Fax: (702)784-1398