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The Michelson-Morley experiment in an accelerated reference frame DENNIS CROSSLEY, University of Wisconsin-Sheboygan — The absence of an observed fringe shift in the Michelson-Morley experiment precludes using the Michelson-Morley interferometer *in an inertial reference frame* to measure the speed of that frame relative to a preferred absolute reference frame. Interestingly, an analysis of the Michelson-Morley experiment in an accelerated reference frame predicts a fringe shift that to leading order is proportional to the acceleration and to higher order also depends on the translational speed of the experimenter relative to an absolute reference frame. This analysis assumes that the experimental apparatus is subject to relativistic length contraction and reduces to the observed null result when the acceleration is zero. Details of the calculation of the velocity-dependent fringe shift will be presented, and the possibility of using this to measure absolute translational speed will be discussed.

Prefer Oral Session
 Prefer Poster Session

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