

Abstract Submitted
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NOPTREX, An Experiment to Search for T Violation in Polarized Neutron Optics JONATHAN CUROLE, Graduate Student -Indiana University- GAANN Fellow, WILLIAM SNOW, Professor - Indiana University — Sensitive experimental searches for new sources of time reversal violation can uncover new phenomena beyond the Standard Model of particle physics and may be important for our understanding of the baryon asymmetry of the universe. We describe the concept behind an experimental search for a P-odd and T-odd term in the polarized neutron-polarized nucleus forward scattering amplitude ¹. This takes advantage of the approximate 10^5 — 10^6 amplification of P-odd amplitudes in certain epithermal p-wave n-A resonances in nuclei such as ¹³⁹La ². A measurement of such a P-odd/T-odd forward amplitude constitutes a null test for T violation. Recent developments of MW-class spallation neutron sources, neutron polarization technology using ³He, and a motion-reversal-based measurement strategy enable a scientifically interesting sensitivity ³.

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