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Proposed Experiment to Measure the Parity-Odd Asymmetry in the 0.73 eV Neutron Resonance in Polarized ^{139}La[1] GABRIEL OTERO MUNOZ, WILLIAM SNOW, Indiana University Bloomington, NOPTREX COLLABORATION — The 0.7 eV p-wave resonance in ^{139}La can amplify both parity-odd (P) and time-reversal odd (T) effects from mixing of s-wave and p-wave resonances [1], and a null test of T is possible for this observable [2]. To quantify potential sources of systematic errors and to fix the spectroscopic parameter κ which determines the P-odd/T-odd measurement sensitivity, we propose to measure the P-odd correlation term A from $\mathbf{k} \cdot \mathbf{I}$ in the forward scattering amplitude, where $\mathbf{k}$ is the neutron momentum and $\mathbf{I}$ is the nuclear polarization. We present an experiment to measure A using the neutron diffraction instrument POLI at the FRM research reactor, which views a hot graphite neutron moderator. The only previous experiment [3] measured $A = 0.31 \pm 0.09$, which does not suffice to determine κ. We describe our experimental design and approach which can lower the error by an order of magnitude and determine κ. [1] V. P. Gudkov, Physics Reports 212, 77 (1992). [2] J. D. Bowman and V. P. Gudkov, Phys. Rev. C 90, 065503 (2014). [3] V. P. Alfimenkov et al, Phys. Atm. Nucl. 59, 1861 (1996).

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