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Parity Violation in the 3.2 eV p-wave Neutron Resonance in ^{131}Xe[1] GABRIEL OTERO MUNOZ, WILLIAM SNOW, JONATHAN CUROLE, Indiana University Bloomington, DANIELLE SCHAPER, University Of Kentucky, BOYD GOODSON, Southern Illinois University, KYLIE DICKERSON, Indiana University Bloomington, NOPTREX COLLABORATION[2] — Time reversal (TR) violation in polarized neutron transmission through polarized nuclei can be used to search for beyond the Standard Model physics. A few heavy nuclei including ^{139}La, ^{81}Br, and ^{131}Xe can amplify both parity-odd and parity-odd/time-reversal odd effects due to their mixing of s-wave and p-wave resonances[1]. We focus on ^{131}Xe, where a previous experiment observed a large P-odd asymmetry in the 3.2eV p-wave resonance of ^{131}Xe[1,2]. We present the design for a cryogenic, solid Xe target to be used in a remeasurement of the P-odd asymmetry on the 3.2 eV resonance to higher precision. We will use a polarized 3He neutron spin filter to polarize the 3.2 eV neutrons. It has also been shown that ^{131}Xe is polarizable using spin exchange optical pumping techniques[1,3], which will be important for future tests measuring TR asymmetry. [1] J.J. Szymanski, W. M. Snow, et al., Phys. Rev. C**53**, R2576 (1996). [2] A. Komives, J. D. Bowman, et al., *Resonance parameters and analyzing powers of neutron resonances in natural Xenon*, unpublished (1999). [3] Stupic KF, Cleveland ZI, Pavlovskaya GE, Meersmann T, *Hyperpolarized ^{131}Xe NMR spectroscopy*, Nucl. Phys. **A401**, Journal of Magnetic Resonance. **208**: 5869 (2011).

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[2]Neutron OPtics Time Reversal EXperiment collaboration.

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