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A Precision Measurement of the Parity Violation Present in the 0.734 eV p-wave Resonance in ^{139}La Using the 'Double Lanthanum' Technique: Preliminary Results and Analysis[1] DANIELLE SCHAPER, University of Kentucky, Los Alamos National Laboratory, NOPTREX COLLABORATION — The Neutron OPtics Time Reversal EXperiment (NOPTREX) Collaboration aims to measure potential time-reversal (T) violating processes in neutron-nucleon forward scattering interactions in parity (P) violating nuclear resonances. Because the proposed theoretical T-violating cross-section is directly proportional to a P-violating cross-section, precision spectroscopy of these resonances is of critical importance. In particular, the 0.734 eV p-wave resonance in ^{139}La exhibits a well known 10% P-violation effect, making it an outstanding candidate for the NOPTREX experiment. We aim to measure this effect in ^{139}La to 1% precision, improving upon previous (room temperature) measurements by using cryogenic targets (15K) to reduce Doppler broadening effects as well as running for a longer period of time to reduce statistical uncertainty. This experiment was conducted at Los Alamos National Laboratory in 2017-2019. This talk will briefly cover the experimental setup, the efforts to constrain systematic uncertainties, the data analysis process, and preliminary results.

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Danielle Schaper
University of Kentucky, Los Alamos National Laboratory

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