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Spin Dependent Components of Slow Neutron-Nucleus Scattering in ^{131}Xe and other Heavy Nuclei: Pseudomagnetic Precession Measurement and Calculation[1] HAO LU, KYLIE DICKERSON, WILLIAM SNOW, Indiana University Bloomington, BOYD GOODSON, Southern Illinois University, EARL BABCOCK, Forschungszentrum Jlich GmbH, NOPTREX COLLABORATION — In Neutron OPtics Time Reversal Experiment (NOPTREX) collaboration's searches for new time reversal sources, spin dependent components of slow neutron-nucleus scattering introduce a significant source of systematic error in forward scattering amplitude. We plan to measure for the first time the pseudomagnetic precession effect caused by spin dependent scattering in neutron transmission through polarized ^{131}Xe and ^{129}Xe. This experiment takes place at FRM II in Germany where we use a Neutron Spin Echo (NSE) device to measure pseudomagnetic precession and a Spin Exchange Optical Pumping (SEOP) system to polarize Xe isotopes. Furthermore, as the mechanism which gives rise to the pseudomagnetic precession has never been calculated before, we will theoretically evaluate the incoherent scattering length produced by the difference of $a_+ - a_-$, which are the two neutron-nucleus scattering amplitudes corresponding to the two total angular momentum scattering channels $J = I \pm 1/2$. Here we will present our calculation of the contribution from both potential scattering and resonance scattering, as well as our predictions of $a_+ - a_-$ in Xe and other heavy nuclei, with the help of extensive n-A resonance data from National Nuclear Data Center (NNDC).

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