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A First Measurement of the Spin-Dependent Neutron-Nucleus Forward Scattering Amplitudes in Polarized Neutron-Polarized ^{131}Xe and ^{129}Xe Nuclei Using Pseudomagnetic Precession[1] HAO LU, Indiana Univ - Bloomington, NOPTREX COLLABORATION — Spin-dependent amplitudes in polarized neutron-polarized nucleus forward scattering can cause systematic errors in NOPTREX. We performed the first measurement of neutron pseudomagnetic precession[2] in neutron transmission through polarized ^{131}Xe and ^{129}Xe with the J-NSE Neutron Spin Echo spectrometer at FRM II reactor facility in Germany[3]. We are also constructing an optical model for the incoherent scattering lengths in all nuclei using the extensive n-A resonance data from National Nuclear Data Center (NNDC). We will present the experimental setup of the polarized Xenon pseudomagnetic precession measurement, the result, and the theoretical calculation as applied to Xenon nuclei.

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[2]Zimmer, O., Ehlers, G., Farago, B. et al. A precise measurement of the spin-dependent neutron scattering length of 3He. EPJ direct 4, 128 (2002). https://doi.org/10.1007/s1010502a0001
[3]Heinz Maier-Leibnitz Zentrum. (2015). J-NSE: Neutron spin echo spectrometer. Journal of large-scale research facilities, 1, A11. http://dx.doi.org/10.17815/jlsrf-1-34

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