

Abstract Submitted
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Absolute magnetization calibration of polarized ^{131}Xe for measurement of the ^{131}Xe nuclear pseudomagnetism using neutron spin echo EARL BABCOCK, Juelich Centre for Neutron Science at the FRMII. Forschungszentrum Juelich GmbH, 85747 Garching Germany., NOPTREX COLLABORATION COLLABORATION — We plan to investigate T violation in neutron interactions with heavy nuclei at a compound nuclear p-wave resonance by searching for a P-odd and T-odd term in the neutron forward scattering amplitude. ^{131}Xe is a good candidate because its P-odd effects have already been measured to be sufficiently large. However, the pseudomagnetic precession of polarized neutrons, caused by the previously unmeasured neutron incoherent scattering length of the polarized ^{131}Xe target, would be a large systematic error. Measurement of this incoherent neutron scattering length requires absolute polarimetry of ^{131}Xe . Here neutrons provide us a method for NMR calibration using hyperpolarized ^3He as the standard instead of the more typical thermally polarized ^1H sample. Since the ^3He polarization dependent neutron absorption cross section is accurately known, measurement of neutron absorption of the polarized ^3He gives an absolute NMR calibration. The absolute ^{131}Xe polarimetry/magnetization used to determine the neutron incoherent scattering length of ^{131}Xe as measured from its pseudomagnetic precession observed in measurements on the JNSE instrument at the FRMII is discussed [1].

[1] Heinz Maier-Leibnitz Zentrum et al. (2015). JLSRF, 1, A11.

Libertad Barrn-Palos
Universidad Nacional Autonoma de Mexico

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