

Abstract Submitted
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Polarized ^3He Target in High Magnetic Field at CLAS12¹ DIEN NGUYEN, Jefferson Lab, XIAQING LI, Massachusetts Institute of Technology MIT, JAMES MAXWELL, Jefferson Lab, JEFFERSON LAB-MIT COLLABORATION — A nuclear spin polarized ^3He target provides a unique advantage as an effective polarized neutron target in spin-dependent measurements of electron scattering from the neutron. Although optical pumping techniques for polarization of ^3He in low-magnetic-field environments have produced successful scattering targets, increased wall relaxation has limited the effectiveness of these targets at high magnetic fields. Recent developments in high-magnetic-field optical pumping, including a polarized ^3He ion source at RHIC for the EIC, have opened the possibility of a polarized ^3He target within high-magnetic-field experimental facilities such as the CLAS12 spectrometer in Hall B at Jefferson Lab. A double-cell cryogenic target using the metastability exchange optical pumping method² has been designed for a proposed experiment of spin-dependent electron scattering from a polarized ^3He target at CLAS12³. In this talk, the conceptual design, recent development, and future work of such a target will be presented.

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²J. Maxwell and R. Milner, arXiv:1911.06650

³JLab Conditionally Approved Proposal PR12-20-002: *A Program of Spin-Dependent Electron Scattering from a Polarized ^3He Target in CLAS12*, Co-Spokespeople: H. Avakian, J. Maxwell, R. Milner, D. Nguyen

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