

Abstract Submitted
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A Precision Measurement of Inclusive g_2^n and d_2^n with SoLID on a Polarized ^3He Target at 8.8 and 11 GeV¹ YE TIAN, Syracuse University, Syracuse, NY, CHAO PENG, Argonne National Laboratory, Argonne, IL, SOLID COLLABORATION — A precision measurement of inclusive neutron spin structure function $g_2(x, Q^2)$, which will be run in parallel with E12-10-006 and E12-11-007 experiments by using a Solenoidal Large Intensity Device (SoLID) at Jefferson Lab (JLab) Hall A, was approved by JLab PAC48, 2020. In the proposed experiment, high statistics data will be collected within a large kinematic coverage of Bjorken scaling $x > 0.1$ and four momentum transfer $1.5 < Q^2 < 10 \text{ GeV}^2$ from inclusive scatterings of longitudinally polarized electrons off transversely and longitudinally polarized ^3He targets, at incident beam energies of 11 GeV and 8.8 GeV. In addition to mapping out the x and Q^2 dependence of g_2 , we will also extract the moment $d_2(Q^2)$ with $1.5 < Q^2 < 6.5 \text{ GeV}^2$, which is connected to the quark-gluon correlations within the nucleon. This quantity is one of the cleanest observables that can be used to test the theoretical calculations from Lattice QCD and various nucleon structure models.

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