

# DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 288

Type: **Parallel talk**

## A Precision Measurement of Inclusive $g_2^n$ and $d_2^n$ with SoLID on a Polarized $^3\text{He}$ Target at 8.8 and 11 GeV

*Thursday, 30 March 2023 10:50 (20 minutes)*

A precision measurement of inclusive neutron spin structure function  $g_2(x, Q^2)$ , will be run in parallel with SIDIS experiments E12-010-006 (transversely polarized  $^3\text{He}$  target) and E12-11-007 (longitudinally polarized  $^3\text{He}$  target) by using a Solenoidal Large Intensity Device (SoLID) at Jefferson Lab (JLab) Hall A, as has been approved by JLab PAC48 in 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  $^3\text{He}$  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.

### Submitted on behalf of a Collaboration?

Yes

### Participate in poster competition?

**Primary author:** TIAN, Ye (Syracuse University)

**Co-author:** PENG, Chao (Argonne National Laboratory)

**Presenter:** TIAN, Ye (Syracuse University)

**Session Classification:** WG6

**Track Classification:** WG6: Future Experiments