

Abstract Submitted
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SoLID SIDIS $^3\text{He}/n$ Experiments at Jefferson Lab¹ TIANBO LIU, Shandong University, SOLID COLLABORATION — Semi-inclusive deep-inelastic scattering (SIDIS), which simultaneously detects the scattered lepton and a hadron in the final state, is one of the main processes to investigate transverse momentum dependent parton distributions (TMDs). The proposed Solenoidal Large Intensity Device (SoLID) in Hall A at Jefferson Lab will make an unprecedentedly precise measurement of TMDs in the valence quark region. In this talk, we will focus on the two approved SIDIS experiments with transversely and longitudinally polarized ^3He targets, which serve as effectively polarized neutron targets. Both 11 GeV and 8.8 GeV beams will be utilized for wide kinematic coverage. The high statistics from the high luminosities and large acceptance will allow for four dimensional binning of single-spin and double-spin asymmetry measurements with high precision. Combining the ^3He and the proton SIDIS data to be collected in another SoLID experiment, one will be able to have the flavor separation in the extraction of corresponding TMDs. Taking the Sivers and transversity distributions as examples, we will present the SoLID SIDIS program's physics impact. We will also discuss the SoLID projection of the tensor charge and its impact on new physics explorations.

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