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Study of TMDs with SoLID at 12-GeV Jefferson Lab

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Solenoidal Large Intensity Device (SoLID) was proposed at JLab to take the full advantage of the 12-GeV upgrade. SoLID is designed to handle high luminosities with large acceptance, which is ideal for measuring transverse momentum depended parton distribution functions (TMDs). Currently there is a highly-rated approved program focusing on the study of TMDs using semi-inclusive deep inelastic scattering (SIDIS) with longitudinal/transversely polarized ^3He target and a transversely polarized proton target. These experiments will provide a comprehensive set of data on proton and neutron (effective) in a wide range of kinematics, allowing us to perform precise 4-d (x, Q^2, P_T, z) mapping of leading-twist TMDs related spin asymmetries. The future SoLID data will allow for a precise extraction of nucleon tensor charge, and important TMDs such as Sivers, pretzelosity and worm-gear functions in the valence quark region. In this talk we will present the impact of future SoLID data on the extraction of tensor charge and Sivers function of u and d-quarks.

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