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Nucleon Spin Structure with SoLID-SIDIS Program

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Solenoidal Large Intensity Detector (SoLID) is a large acceptance, high luminosity device proposed for exploiting the full potential of the Jefferson Lab 12 GeV energy upgrade. The scientific program of SoLID includes three semi-inclusive deep inelastic scattering (SIDIS) experiments with multiple run-group experiments. One of the major tasks of SoLID is to deepen our knowledge of the nucleon structure, which,
in terms of its partons constituents, can be described by a five-dimensional quantum phase space distribution called Wigner distribution. Integrating the Wigner distribution over its intrinsic transverse coordinates leads to the transverse-momentum-dependent (TMD) parton distribution function. The TMD is experimentally accessible via the SIDIS process. It depicts a three-dimensional momentum imaging of the nucleon and plays an essential role in understanding its spin structure. In this talk, an overview of the SoLID-SIDIS program and projections of the 3D imaging of the nucleon will be presented.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

No

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