Contribution ID: **297** Type: **Poster**

SoLID PVDIS at JLab 12 GeV

In this talk, an overview of parity violation deep inelastic scattering (PVDIS) future experiment by using a Solenoidal Large Intensity Device (SoLID) at Jefferson Lab (JLab) Hall A with the 12 GeV upgrade, along with a brief description of the proposed SoLID spectrometer is discussed. We will obtain data with high statistic and large kinematic coverage for Bjorken $0.3 < x < 0.7$ and in the momentum transfer $2 < Q^2 < 10\ (GeV/c)^2$ range by a polarized electron beam scattering on unpolarized deuteron and proton targets. A measurement of PVDIS in deuteron aims to extract fundamental coupling constants C_{2q} as well as the weak mixing angle $sin^2\theta_w$ with a high precision. This measurement can also access QCD physics of searching for charge symmetry violation (CSV) in PDF's and higher-twist effects with quark-quark correlations. In addition, the proton target experiment can be a powerful probe of the d/u ratio at high x without any nuclear correction. The designed SoLID spectrometer with its unique feature of high luminosity and large acceptance provides an opportunity to probe physics beyond the Standard Model.

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Session Classification: Poster Session

Track Classification: Poster Session