

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



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SoLID PVDIS at JLab 12 GeV

Thursday, 30 March 2023 10:00 (20 minutes)

In this talk, we will provide an overview of future parity violation deep inelastic scattering (PVDIS) experiments by using the Solenoidal Large Intensity Device (SoLID) at Jefferson Lab (JLab) Hall A. We will obtain data with high statistic and large kinematic coverage for Bjorken $0.25 < x < 0.75$ 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 the deuteron aims to extract fundamental coupling constants C_{2q} with a high precision, providing an opportunity to probe physics beyond the Standard Model. This measurement can also access QCD physics of searching for charge symmetry violation (CSV) in PDF's and higher-twist effects due to quark-quark correlations. In addition, the proton target experiment can be a powerful probe of the d/u ratio in the valence quark region without any nuclear correction and provide new insight into nuclear effects at high x . The designed SoLID spectrometer with its unique feature of high luminosity and large acceptance will make the precision PVDIS program possible.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

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