

Abstract Submitted
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Experiment E1039, polarized SeasQuest ANDI KLEIN, Los Alamos National Lab, E1039 COLLABORATION COLLABORATION — We have constructed a state-of-the-art, high luminosity polarized proton and deuteron target and propose to measure the Sivers asymmetry for the \bar{u} and \bar{d} sea quarks in the nucleon for four different Bjorken x_B bins in the range $0.1 < x_B < 0.5$, using the Drell-Yan process at SeaQuest. We will: i) perform the first measurement of the Sivers asymmetry in Drell-Yan scattering for sea quarks; ii) determine the flavor dependence of the Sivers function for the \bar{u} and \bar{d} sea quarks iii) explore a unique range of virtualities and transverse momenta not accessible through Z^0/W^\pm measurements; and iv) determine the sign and possibly the magnitude of the sea quark Sivers function in Drell-Yan for comparison to future sea quark Sivers function determinations in Semi Inclusive Deep Inelastic Scattering (SIDIS). Measuring a nonzero Sivers asymmetry would provide “smoking gun” evidence for nonzero orbital angular momentum of sea quarks; determination of the \bar{u} and \bar{d} Sivers function would allow comparison of the sea quark Sivers function flavor dependence to that for valence quarks; and measuring a sign change in the Sivers asymmetry between this measurement and future measurements at the EIC would test a fundamental prediction of QCD.

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