

Abstract Submitted
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Accessing the Sea Quark Orbital Angular Momentum Contribution to the Proton's Spin¹ DAVID KLEINJAN, Los Alamos National Laboratory, E1039 COLLABORATION, SEAQUEST COLLABORATION — Past experimental measurements have shown that about half of the spin of the proton comes from the spin of its quarks and gluons. More recent theoretical and experimental efforts focus on how the orbital angular momentum (OAM) of the quarks and gluons contribute to the proton's spin. QCD calculations and indirect measurements indicate that the OAM contribution of the sea quarks could be large, but direct measurements remain inconclusive. Measurements accessing the sea quark Sivers distribution will provide a direct probe of the sea quark OAM contribution. The upcoming E1039 experiment at Fermilab will access this distribution via the Drell-Yan process using a 120 GeV unpolarized proton beam directed on a polarized target. At E1039 kinematics where the u-ubar process dominates the Drell-Yan cross section ($x_{Target} = 0.1 - 0.35$), the measured Drell-Yan single-spin asymmetry should be zero if the u-bar quark carries zero angular momentum, and vice versa. The E1039 experiment is a continuation of the currently running Seaquest experiment.

¹For the E1039 Seaquest Collaboration

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