

Abstract Submitted
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The Polarized-Target System for the SpinQuest Experiment at Fermilab ZULKALIDA AKBAR, University of Virginia, SPINQUEST COLLABORATION — The SpinQuest experiment at Fermilab aims to measure the Sivers asymmetry for the \bar{u} and \bar{d} sea quarks in the range of $0.1 < x_B < 0.5$ using the Drell-Yan production of dimuon pairs. A nonzero Sivers asymmetry would provide an evidence for nonzero orbital angular momentum of the sea quarks. The proposed beam intensity is 1.5×10^{12} of 120 GeV unpolarized proton/sec. The experiment utilizes a target system consisting of a 5T superconducting magnet, transversely polarized NH_3 and ND_3 targets, a ^4He evaporation refrigerator, a 140 GHz microwave source and a large pumping system. The expected average target polarization is 80% for the protons and 32% for the deuterons. The polarization will be measured with three NMR coils per target cell. A quench analysis and simulation in the superconducting magnet are performed to determine the maximum intensity of the proton beam before the magnet become resistive. A GEANT based simulation is used to calculate the heat deposited in the magnet and the subsequent cooling processes are modeled using the COMSOL Multiphysics.

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