

Abstract Submitted
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Spin-Dependent Pion-Induced Drell-Yan Measurement at COMPASS CAROLINE RIEDL, University of Illinois at Urbana-Champaign, COMPASS COLLABORATION — Transverse-momentum dependent parton distribution functions (TMDs) offer a description of nucleon structure in terms of the parton's transverse momentum and its transverse spin. The so-called Sivers TMD, which represents the correlation between the quark's transverse momentum and the nucleon transverse spin, has been measured in semi-inclusive deep-inelastic scattering (SIDIS) at HERMES and COMPASS to be non-zero, a finding that is indicative of quark orbital angular momentum. A crucial test of the TMD formalism remains to be performed: the measurement of the Sivers TMD and other TMDs in spin-dependent Drell-Yan scattering (DY). The Sivers TMD is predicted to be of equal magnitude but of different sign when accessed from DY compared to SIDIS. At COMPASS (CERN), a 190 GeV beam of negatively charged pions will in 2014 scatter off a fixed target of transversely polarized protons, constituting the worldwide first measurement of spin-dependent DY. The event sample will almost entirely consist of reactions in which the anti-u quark from the beam pion annihilates with a u-quark from the polarized-target proton, avoiding cancellation by the d-quark Sivers TMD, which is of opposite sign to the u-quark Sivers TMD.

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