

Abstract Submitted
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Persepectives of Polarized Drell-Yan Measurements with Future Fixed-Target and Collider Experiments¹ XIAODONG JIANG, KWANGBOK LEE, Los Alamos National Laboratory — Drell-Yan spin observable measurements with polarized proton or ³He beams on polarized proton or ³He targets provide valuable and unique probes to access the fundamental structure of nucleons. For example, comparing to Semi-Inclusive Deep Inelastic Scattering (SIDIS), double longitudinal spin asymmetries in Drell-Yan reactions provide a clean access to anti-quark helicity distributions without involving quark fragmentation functions. Transverse Single Spin Asymmetry (SSA) in Drell-Yan reactions can test the predicted sign change of quark Sivers function compared to that from SIDIS measurement, providing an important test of the fundamental QCD as well as our current understanding of the transverse spin phenomena. Drell-Yan SSA can also access other quark Transverse Momentum Dependent distributions (TMDs), for example, quark's transversity (h_1), and quark's "longitudinal helicity" (h_{1L}^\perp). We studied several options of polarized Drell-Yan measurements with polarized beams for fixed-target and collider cases, such as the Fermilab Main Injector's extracted proton beam, the future J-PARC 50 GeV/c beam and at the RHIC Collider. We will discuss the physics sensitivities of double-spin and single-spin Drell-Yan observable measurements.

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