

Abstract Submitted
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Probing Nucleon Structure in Drell-Yan and J/ψ production at COMPASS¹ APRIL TOWNSEND, University of Illinois at Urbana-Champaign, COMPASS COLLABORATION — COMPASS is a fixed target experiment in the North Area of CERN. One of the primary goals of its broad physics program is to study the Transverse Momentum Dependent (TMD) Parton Distribution Functions (PDFs) that describe the spin structure of nucleons. COMPASS accesses the TMD PDFs via the measurement of azimuthal asymmetries in the Drell-Yan (DY) process and in hadron production in Semi-Inclusive Deep Inelastic Scattering (SIDIS). Measurements of Sivers asymmetries are particularly important as they can be used to test the predicted process dependence of the Sivers TMD PDFs, which are expected to have opposite sign when measured in SIDIS and DY. In 2015 and 2018, COMPASS collected DY data by scattering a negative pion beam off a transversely polarized ammonia target. Preliminary COMPASS results are consistent with the predicted sign change of the Sivers function. During the DY data taking, COMPASS also collected a large sample of J/ψ events. Single-spin asymmetries in J/ψ production may give access to the gluon Sivers PDF and improve our understanding of the J/ψ production mechanisms. The reconstruction of COMPASS experimental and Monte-Carlo data was realized exploiting the parallel computing resources of the Blue Waters (NCSA) and the Frontera (TACC) supercomputers.

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