

Azimuthal Transverse Single-Spin Asymmetries of Charged Pions Within Jets from Polarized pp Collisions at $\sqrt{s} = 200$ GeV

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Abstract

Understanding the internal spin structure of the nucleon remains an open question in strong interaction physics. Transversity, which describes the transverse spin structure of quarks in a transversely polarized proton, is still quite unconstrained in global analyses. It can be accessed through channels that couple to another chiral-odd distribution like the Collins fragmentation function or the interference fragmentation function. STAR reported the first measurements of Collins asymmetries from jet + π^\pm production in polarized proton+proton collisions at $\sqrt{s} = 500$ GeV and 200 GeV based on the data taken during the years 2011 and 2012. These results probe higher momentum scales ($Q^2 \sim 960$ GeV² for 500 GeV and ~ 170 GeV² for 200 GeV) than the measurements from semi-inclusive deep inelastic scattering (SIDIS, $Q^2 < 20$ GeV²) and enable the test of the evolution, universality and factorization breaking in the transverse momentum dependent (TMD) formalisms. Status of the measurement of Collins asymmetry from 2015 proton+proton collisions at $\sqrt{s} = 200$ GeV with much higher statistics will be presented.