

Investigating Transversity and Fragmentation Functions with Hadrons in Jets at STAR

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The Solenoidal Tracker at RHIC (STAR) collaboration investigates nucleon spin structure through collisions of spin-polarized beams of protons. One way STAR accesses the transversity distribution function is through the “Collins mechanism,” measuring spin-dependent azimuthal distributions of hadrons within jets from transversely polarized proton collisions. Data from STAR provide access to transversity over a range of x complementary to semi-inclusive deep inelastic scattering (SIDIS) experiments but at much higher Q^2 . STAR data at $\sqrt{s} = 500$ GeV and preliminary results at 200 GeV suggest that the universality of the Collins mechanism extends to proton-proton collisions, as it does in SIDIS and e^+e^- . The STAR data provide unique insight to the in-jet transverse momentum dependence of the Collins asymmetry, crucial for a deeper understanding of the Collins fragmentation function. Furthermore, spin-averaged multiplicities of hadrons-in-jets from the same datasets will provide unique insight into unpolarized fragmentation functions. The STAR Collins asymmetry data will be presented and discussed in context with recent global transversity analyses and model calculations.