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Recent Transverse Spin Measurements in pp Collisions with STAR

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The STAR Collaboration at RHIC is exploring the partonic origin of the proton spin with a broad range of measurements in polarized pp collisions. STAR measurements of the transverse single-spin asymmetry, A_N, for W boson production provide the first experimental investigation of the non-universality of the Sivers function. Precise follow-up measurements of A_N for direct photon production, Drell-Yan di-electron production, and W boson production are underway that will both provide a definitive test of the non-universality and constrain evolution of transverse-momentum-dependent distributions (TMDs) over a very wide Q^2 range. STAR has measured di-pion interference fragmentation functions and the transverse single-spin dependence of the azimuthal modulation of pions in jets in pp collisions at $\sqrt{s}$ = 200 and 500 GeV. The results provide the first observations of transversity in pp collisions, and enable tests of universality and factorization-breaking effects for TMDs in hadronic interactions. Additional transverse modulations provide limits on gluon linear polarization in polarized protons and the twist-3 analog of the gluon Sivers distribution. The current status of these analyses and the prospects to extend them in the near future will be discussed.

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