Recent Transverse Spin Measurements from Polarized pp Collisions at STAR

W.W. Jacobs, for the STAR Collaboration

CEEM / Indiana University, Bloomington IN, 47408 USA

The STAR Collaboration at RHIC investigates the internal spin structure of the proton with a broad range of measurements in polarized pp collisions. Transverse spin studies aim to elucidate 3D transverse momentum structure and parton transversity. Dijet opening angle measurements are sensitive to the Sivers $\langle k_T \rangle$ and a non-zero spin dependent result in pp collisions is observed for the first time. Individual parton contributions (u, d, gluon+sea) to the measured $\langle k_T \rangle$ are extracted through a matrix inversion of the charge-sorted $\langle k_T \rangle$ data. Additionally, transverse single-spin asymmetries of fully reconstructed $W^{\pm}$ bosons from pp collisions address the process dependence of the Sivers function; the increased luminosity of 2017 data at $\sqrt{s} = 510$ GeV significantly improves on previous $W^{\pm}$, as well as related Z-boson, results. Separately, the transverse spin dependent correlation of charged pion pairs, interference fragmentation functions, are used to probe transversity. Results from pp collisions at $\sqrt{s} = 200$ and 500 GeV with additional integrated luminosity further enhance the first observations of transversity in pp collisions and the constraints that they provide. Finally, the transverse single-spin dependence of the azimuthal modulation of pions in jets probes the Collins function, while additional modulations ("Collins-like" effect) place limits on gluon linear polarization. The current status of these and related analyses (forward π^0 and forward EM-jet A_N), and prospects for their extension in the near future will be presented and discussed.