



Contribution ID: 44

Type: Longer talk

## Recent Transverse Spin Measurements from Polarized $pp$ Collisions at STAR

Thursday, 26 May 2022 15:15 (20 minutes)

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  $\pi^0$  and forward EM-jet  $A_N$ ), and prospects for their extension in the near future will be presented and discussed.

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**Session Classification:** Plenary session