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Transverse spin-dependent azimuthal correlations of charged pion pairs measured in $p\uparrow+p$ collisions at $\sqrt{s} = 500$ GeV

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The transversity distribution is a fundamental component of the spin structure of the nucleon, and is only loosely constrained by existing semi-inclusive deep inelastic scattering data. The di hadron interference fragmentation function (IFF), which describes the fragmentation of transversely polarized quarks, is expected to give rise to spin-dependent di-hadron correlations in $p\uparrow+p$ collisions. Significant asymmetries in di-hadron correlations have already been measured at RHIC in $p\uparrow+p$ collisions at $\sqrt{s} = 200$ GeV at mid-rapidity. In 2011, STAR collected an integrated luminosity of 25 pb^{-1} from $p\uparrow+p$ collisions at $\sqrt{s} = 500$ GeV, allowing STAR to extend these di hadron asymmetries into a previously unexplored kinematic region. The charge-ordered pion pair asymmetry measurement from $\sqrt{s} = 500$ GeV $p\uparrow+p$ collisions at STAR is presented as a function pion pair transverse momentum, invariant mass, and pseudorapidity.

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