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2 Azimuthal transverse single-spin asymmetries of inclusive jets and
3 hadrons within jets from polarized pp collisions at $\sqrt{s} = 510$ GeV

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Abstract

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The study on the origin of transverse single-spin asymmetries has triggered the development of the twist-3 formalism and the transverse-momentum-dependent parton distribution functions (TMDs). Measurement of the azimuthal distribution of identified hadrons within a jet in transversely polarized hadronic interactions provides an opportunity to study the TMD physics, such as the Collins effect which involves the quark transversity and the Collins fragmentation functions. STAR has reported measurements of Collins asymmetries from jet + π^\pm production in transversely polarized pp collisions at a center-of-mass energy of $\sqrt{s} = 500$ GeV, based on data taken in 2011 with an integrated luminosity of 23 pb^{-1} . Additionally, an extensive measurement of azimuthal transverse single-spin asymmetries of inclusive jets and hadrons within jets from transversely polarized pp collisions at $\sqrt{s} = 200$ GeV was performed using data from 2012 and 2015. In 2017, STAR collected a significantly larger pp dataset with an integrated luminosity of 350 pb^{-1} at $\sqrt{s} = 510$ GeV, which will further improve the precision of the transverse single-spin asymmetry measurements especially at high jet transverse momentum region. In this talk, we will report the analysis status of azimuthal transverse single-spin asymmetries for inclusive jets and charged pions within jets from transversely polarized pp collisions at $\sqrt{s} = 510$ GeV.