

1 Azimuthal Transverse Single-Spin Asymmetries of Inclusive
2 Jets and Identified Hadrons Within Jets in Polarized pp
3 Collisions at $\sqrt{s} = 200$ GeV

4 Ting Lin, for the STAR Collaboration
5 Shandong University

6 February 10, 2022

7 **Abstract**

8 Understanding the origin of transverse single-spin asymmetries is a long-standing chal-
9 lenge in strong interaction physics. Significant progresses have been made in the last few
10 decades from both the experimental and theoretical sides, which fueled the rapid development
11 of twist-3 and transverse-momentum-dependent (TMD) factorization schemes. Measurement
12 of the azimuthal distribution of identified hadrons produced during the fragmentation of a
13 large transverse momentum jet offers a unique opportunity to study the TMD physics in
14 hadronic collisions, such as the Collins effect which involves the correlation of the quark
15 transversity and the Collins fragmentation functions. In 2012 and 2015, STAR collected ~ 22
16 pb^{-1} and $\sim 52 \text{pb}^{-1}$ of transversely polarized pp data at $\sqrt{s} = 200$ GeV, respectively. These
17 datasets enable the most precise measurement of the transverse single-spin asymmetries in
18 200 GeV pp collisions to date. Results of the asymmetries for inclusive jets and identified
pions, kaons, and protons in jets using these datasets will be presented.