

1 Longitudinal double spin asymmetry of Λ , $\bar{\Lambda}$, K_S^0 and inclusive
2 jets with high- z π^\pm tagging in polarized proton-proton collisions
3 at $\sqrt{s} = 200$ GeV at STAR

4 Yi Yu, for the STAR Collaboration
Institute of Frontier and Interdisciplinary Science, Shandong University, Qingdao, China

5 Understanding the origin of the proton spin is one of the most fundamental and challenging questions
6 in QCD. Much progress has been made since the first surprising result by the EMC experiment in the late
7 1980s. However, the helicity distributions of strange quarks and anti-quarks inside the proton are still
8 not well constrained by the experimental data. Measurement of the longitudinal double spin asymmetry,
9 A_{LL} , of Λ , $\bar{\Lambda}$ and K_S^0 in the longitudinally polarized proton-proton collisions may shed light on the
10 strange quark and anti-quark helicity distributions. In addition, the A_{LL} of the inclusive jets tagged
11 with a π^+/π^- carrying high jet momentum fraction, z , in proton-proton collisions can provide further
12 constraints on the gluon helicity distribution in the proton.

13 In this talk, we will present the status of the A_{LL} measurements of Λ , $\bar{\Lambda}$ and K_S^0 , and the inclusive
14 jets tagged with a high- z π^\pm . We will utilize the longitudinally polarized proton-proton collisions at
15 $\sqrt{s} = 200$ GeV collected by the STAR experiment with an integrated luminosity of about 52 pb^{-1} .