

Longitudinal and Transverse Spin Transfer to Lambda and anti-Lambda in Polarized p+p Collisions at 200 GeV at STAR

Thursday, 13 September 2018 17:55 (25 minutes)

The longitudinal or transverse spin transfer to Lambda and anti-Lambda hyperons in polarized proton-proton collisions is expected to be sensitive to the helicity or transversity distributions of strange and anti-strange quarks of the proton, and to the corresponding polarized fragmentation function. We report the first measurement of the transverse spin transfer to Lambda and anti-Lambda along the polarization direction of the fragmenting quark, D_{TT} , in transversely polarized proton-proton collisions at 200 GeV with the STAR detector at RHIC. The data correspond to an integrated luminosity of 18 pb^{-1} , and cover a kinematic range of $|\eta| < 1.2$ and transverse momentum p_T up to 8 GeV/c. We also report an improved measurement of the longitudinal spin transfer D_{LL} to Lambda and anti-Lambda with p_T up to 6 GeV/c, using data with about twelve times larger figure-of-merit than the previously published STAR results. The prospects of hyperon polarization measurements in the forward pseudo-rapidity region ($\eta \sim 3$) in p+p collision in the year of 2021 and beyond will also be discussed, which is based on STAR forward detector upgrade plan including a forward tracking system and a forward calorimeter system.

Primary author: XU, Qinghua (Shandong University)

Presenter: XU, Qinghua (Shandong University)

Session Classification: 3D Structure of the Nucleon: TMDs

Track Classification: 3D Structure of the Nucleon: TMDs