

# Measurement of transverse single-spin asymmetries for di-jet production in polarized $p+p$ collisions at $\sqrt{s} = 200$ GeV at STAR

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The spin structure of the proton is of extreme complexity and remains one of the unresolved physics problems. The STAR experiment, located at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL), is performing a wide range of measurements to deconstruct the partonic contributions to the spin of the proton by analyzing polarized  $pp$  collisions. The Sivers effect considers a correlation between the nucleon spin ( $S_T$ ) and the parton transverse momenta ( $p_T$ ) in the nucleon, an effect that can be probed by searching for a  $p_T$  imbalance in produced di-jets that changes sign when the beam polarization direction is reversed. A previous analysis by STAR using a small dataset taken in 2006 at  $\sqrt{s} = 200$  GeV (about  $1 \text{ pb}^{-1}$ ) did not find a significant effect due to limited statistics. STAR has now accumulated much larger datasets ( $\sim 20\times$  integrated luminosity) at  $\sqrt{s} = 200$  GeV. We are also investigating methods to tag the flavor of the fragmenting partons, to avoid cancellation between  $u$  and  $d$  quark effects, which are thought to have opposite signs. This poster will present the status of the analysis and studies.