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Study of di-jets and the Sivers effect at STAR JUSTIN STEVENS, STEVE VIGDOR, JAN BALEWSKI, Indiana University, STAR COLLABORATION — It has been known for a number of years that the preferential alignment of quark spins inside the proton can account for only a small fraction of the proton's total spin. The rest of the spin must arise from some combination of gluon spin alignment and parton orbital angular momentum. One possible manifestation of orbital angular momentum of the partons is the Sivers effect: transverse spin asymmetries that arise from a directional preference in the intrinsic transverse momentum of partons, correlated with the transverse spin direction of a polarized proton. One method of quantifying this effect is measuring high energy polarized proton collisions at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory using the STAR detector. The key to the analysis was di-jet events, where the Sivers effect would be manifested by a spin-dependent change in the azimuthal opening angle, zeta, between the two jets. Monte Carlo simulations were run in order to better understand the shape of the zeta distribution for these events. Also data from the 2006 run at STAR were analyzed using electromagnetic calorimeter information only, before charged-particle tracking information allowing full jet reconstruction was available. I will report an analysis looking in different subsets of the data where theory predicts non-zero Sivers effects should be, based on earlier experimental results for transverse spin asymmetries measured in semi-inclusive deep inelastic scattering from protons.

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