

# Transverse Single Spin Asymmetry Measurement with Heavy Flavors in Polarized p+p Collisions at RHIC

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The measurement of transverse single spin asymmetries gives us an opportunity to probe the quark and gluon structure of transversely polarized nucleons. Large transverse single spin asymmetries of up to 20% - 40% were found for pions produced at large  $x_F$  at  $\sqrt{s} = 20$  GeV and have been found to persist at  $\sqrt{s} = 200$  GeV by the STAR and BRAHMS experiments.

At RHIC energy, heavy flavor production is dominated by gluon-gluon fusion. Any large transverse single spin asymmetry observed in heavy flavor production cannot originate from the Collins effect because the gluon's transversity is zero. Therefore, the production of heavy flavor particles in transversely polarized pp collisions at the PHENIX experiment offers a good opportunity to gain information on the Sivers effect. Furthermore, it was shown by M. Anselmino et al. (Phys. Rev. D 70(2004)074025) that the single spin asymmetry in open charm production may be significant at forward rapidity which is well covered by the PHENIX muon detectors. So any sizable contributions of  $A_N$  in  $J/\Psi$  and open charm production can give a direct measurement of the gluon Sivers function.

During the recent polarized pp run6, the PHENIX experiment has collected  $2.7 \text{ pb}^{-1}$  data with transverse beam polarization about 56%. In this talk we will present the current status of analysis of  $A_N$  in heavy flavor production in polarized pp collisions at  $\sqrt{s} = 200$  GeV. The heavy flavor particles are measured through their decay to muons.