J/Psi Production and Asymmetry in Transversely Polarized p+p Collisions at RHIC

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Abstract

Since its discovery in 1974, J/Psi particle has been used extensively by nuclear and particle physicists to study and test our understanding of fundamental interactions and structures of nucleon and nucleus. Recently, the PHENIX experiment published the first measurement of transverse single spin asymmetry (TSSA) in J/Psi production in polarized high-energy proton+proton collisions at RHIC. The measurements are sensitive to the poorly known gluon structure and dynamics in polarized p+p interaction and the results will shed new light on our understanding of the origin of large TSSAs observed in polarized hadronic interactions in the forward scattering angle that have puzzled physicists over 30 years.

It is also realized that TSSA of J/Psi could be sensitive to the J/Psi production mechanisms where experimental data confronted with several early theoretical predictions that were thought robust. I will discuss the latest PHENIX J/Psi TSSA results as well as challenges in understanding J/Psi production mechanisms in p+p interactions. Future prospects of heavy quark TSSAs with PHENIX upgrade detectors will be also discussed.