

Abstract Submitted  
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**Study of  $J/\psi$  spin alignment in proton-proton collisions at  $\sqrt{s} = 200$  GeV in the PHENIX experiment at RHIC<sup>1</sup>** KOHEI SHOJI, Kyoto University, RIKEN, PHENIX COLLABORATION — Non-relativistic QCD calculations using Color Octet Models (COMs) succeed in describing the production cross section of heavy quarkonia measured by CDF and other experiments. However, these models can not reproduce the experimental data for  $J/\psi$  spin alignment (polarization). The understanding of the heavy quarkonium production mechanism cannot proceed without additional experimental measurements. The  $J/\psi$  spin alignment is experimentally determined by measuring the decay angular distribution of leptons in the  $J/\psi$  center of mass system. The anisotropy in the helicity frame was measured at CDF; however, the necessity of analyzing data with respect to another frame like Collins-Soper was recently discussed because the proper polarization axis which is sensitive to the interesting physics phenomenon is not known well. Moreover, measurements of not only the polar angular distribution but also the azimuthal one are important. Proton-proton collision experiments are in progress at the Relativistic Heavy-Ion Collider (RHIC) at Brookhaven National Laboratory. The PHENIX experiment at RHIC has muon spectrometers which can detect decay muons from  $J/\psi$  at forward and backward rapidity,  $1.2 < |\eta| < 2.2$ . We present the status of our  $J/\psi$  spin alignment study in proton-proton collisions at  $\sqrt{s} = 200$  GeV.

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