

J/ψ production in p+p collisions at $\sqrt{s} = 500$ GeV at the STAR experiment

Understanding J/ψ meson hadroproduction has been a long-term effort both experimentally and theoretically. However, none of the existing theoretical models can successfully describe both J/ψ transverse momentum (p_T) spectrum and the polarization. Furthermore, the composition of inclusive J/ψ is complicated, including direct production via gluon fusion, parton fragmentation, and feed-down from excited charmonium states and B hadrons. Measurements of J/ψ production at a different beam energy can shed new lights on the understanding of different J/ψ production mechanisms, and help to constrain model calculations.

We report measurements of J/ψ production in p+p collisions at $\sqrt{s} = 500$ GeV in both the di-electron and di-muon channels. By combining measurements from these two channels, the p_T spectrum of J/ψ is measured from 0 to 20 GeV/c and compared with NLO NRQCD and CGC+NRQCD calculations at different kinematic ranges. Feed-down contributions from $\psi(2S)$ is studied in the p_T range of $4 < p_T < 12$ GeV/c. In addition, measurements of the J/ψ production as a function of charged-particle multiplicity will be presented. A strong increase of the relative J/ψ yield with multiplicity is observed for all p_T bins with significant p_T dependence. The results are compared with predictions from the Percolation model and PYTHIA8

Preferred Track

Quarkonia

Collaboration

STAR

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