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J/ψ production as a function of charged particle multiplicity in $p+p$ collisions at $\sqrt{s}=510$ GeV

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In a high energy proton-proton collision, more than one inelastic parton-parton interaction can occur, which is described as multiple parton interaction (MPI). Each of the parton interaction would contribute to the overall particle multiplicity, as well as higher probability of producing a J/ψ particle in the collision. Therefore, the MPI scenario can be tested by studying the yield of J/ψ as a function of multiplicity. In addition, such measurement also provides additional information on the J/ψ production mechanism, which is still not fully understood. During the 2013 RHIC run, the PHENIX experiment collected high statistics proton-proton collision data at $\sqrt{s}=510$ GeV. Using the PHENIX muon spectrometers covering $1.2<|\eta|<2.4$, J/ψ particles are identified by detecting the decayed $\mu^+\mu^-$ pairs. The J/ψ yield was studied against the charged particle multiplicity, measured by the recently installed forward silicon detectors. In this talk, the latest status of this analysis will be presented.

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