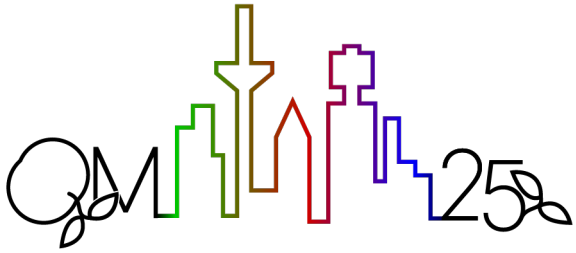

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Multiplicity dependence of J/ψ and ψ(2S) charmonium states in $p+p$ collisions at $\sqrt{s}$ =200 GeV measured by the PHENIX collaboration

Previous studies at RHIC and LHC observed that heavy flavor probe yields grow with the charged particle multiplicity of the collision. These measurements brought to the attention the importance of multi-parton interactions (MPI) in a single $p+p$ collision. Collisions with high activity can also produce an environment dense enough to break weak charmonium states, such as ψ(2S). The PHENIX experiment has a unique configuration of spectrometers covering positive, mid-, and negative rapidities. This configuration was used to study the multiplicity dependency of J/ψ decays, where the charmonium state and the event activity are measured with distinct rapidity gaps which isolates potential auto-correlations biases in the measurements. The ψ(2S) production relative to J/ψ is also measured to verify if co-moving particles in high activity events can break ψ(2S) states. This presentation will show the final result of these measurements and if they reveal the existence of MPIs at RHIC energies after considering potential auto-correlations in previous results.

Category

Experiment

Collaboration (if applicable)

PHENIX

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