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Measurement of charm production cross-section in p+p collisions at 200 GeV by PHENIX

The extraction of charm quark cross sections at RHIC energies is crucial for understanding heavy quark dynamics in the Quark-Gluon Plasma (QGP) and the underlying mechanisms of charm production. Multiple partonic interactions (MPIs) from simultaneous scatterings within a single collision event, may significantly influence the production of charm quark. Accounting for MPI is essential in distinguishing primary charm production from secondary effects such as recombination or thermal production within the QGP. In this talk, PHENIX presents a new measurement of the charm production cross-section via the dielectron spectrum in the intermediate mass range ($m_\phi < m_{ee} < m_{J/\psi}$) in p+p collisions at 200 GeV, alongside the azimuthal correlation of electron-muon pairs across rapidities. These results are compared with single-electron spectra from heavy-flavor decays and Pythia8 simulations to assess possible contributions from MPI.

Category

Experiment

Collaboration (if applicable)

PHENIX

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