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J/ψ production in p+p and Au+Au collisions at STAR experiment

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The production of heavy quarkonia has been extensively used to probe Quark-Gluon Plasma (QGP) created in heavy ion collisions. The suppression of J/ψ in a deconfined medium due to Debye color screening of the charm quark potential has been proposed as a signature of the QGP formation. Interpretation of J/ψ suppression requires good understandings of both its production mechanism in elementary collisions and contribution from coalescence of uncorrelated c and $\bar{c}$ quraks in the medium. Despite decades of efforts, the J/ψ production mechanism in p+p collisions is still not fully understood. J/ψ measurements in p+p collisions at $\sqrt{s}$ = 500 GeV will provide additional insights into its production mechanism. On the other hand, precise measurements of the nuclear modification factor (R_{AA}) and elliptic flow (v_2) for J/ψ over a broad kinematic range in Au+Au collisions can help better understand the feature of Debye color screening.

We report measurement of J/ψ cross-section and yield dependence on event multiplicity in p+p collisions at $\sqrt{s}$ = 500 GeV using both the di-electron and di-muon channels. J/ψ R_{AA} and v_2 measurements in the di-muon channel in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV with the full data sample taken during RHIC 2014 run will also be presented.

Summary

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