Measurements of J/ψ production in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV from STAR experiment

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Abstract

Quankonia are an important probe to study the properties of the quark-gluon plasma (QGP) created in heavy-ion collisions. In particular, the J/ψ nuclear modification factor, R_{AA}, probes hot nuclear matter effects, such as the dissociation arising from the color screening effect and and the regeneration by deconfined charm and anti-charm quarks. On the other hand, the J/ψ elliptic flow, v_2, provides information about the charm quark thermalization and J/ψ regeneration. Measurements of J/ψ v_2 and R_{AA} together can provide a deep insight into the thermal and dynamical properties of the QGP. In 2018, the STAR isobar program (Ru+Ru and Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV) collected the largest heavy-ion data sample so far, which provides a unique opportunity to study the J/ψ production in these collisions with good precision. In this talk, we will present measurements of J/ψ v_2 and R_{AA} as a function of transverse momentum and centrality in Ru+Ru and Zr+Zr at $\sqrt{s_{NN}} = 200$ GeV.