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J/ψ production in U+U collisions at the STAR experiment

Quark-gluon plasma (QGP), a novel state of deconfined nuclear matter, has been extensively studied in high-energy heavy-ion collisions at the Relativistic Heavy Ion Collider (RHIC). Suppression of heavy quarkonium production (e.g. J/ψ , Υ) in heavy-ion collisions compared to proton-proton collisions due to the color screening of the quark-antiquark potential is expected to be an indicator of the partonic phase. However, there are also other effects that may influence the expected suppression pattern of heavy quarkonia (e.g. secondary production in the QGP, cold-nuclear-matter effects). To understand those different contributions we need to study production of heavy quarkonia in various colliding systems. At RHIC, effects of the hot medium on heavy quarkonia have been studied in Au+Au and U+U collisions. Since U nuclei are larger than Au nuclei and are non-spherical, it is expected that in the most central U+U collisions the energy density of the created medium is higher than in Au+Au collisions. Thus they allow for further testing of the color screening hypothesis.

In this poster we will present preliminary results on nuclear modification factor of J/ψ production reconstructed at midrapidity via di-electron decay channel in minimum-bias U+U collisions at $\sqrt{s_{NN}} = 193$ GeV at the STAR experiment and current status of analysis of J/ψ production in central U+U collisions.

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