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Heavy quarkonium production at the STAR experiment

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In the collisions of heavy ions the nuclear matter can undergo a phase transition from hadrons to a state of deconfined quarks and gluons, the Quark-Gluon Plasma (QGP). Suppression of heavy quarkonia due to Debye-like screening of the quark-antiquark potential, has been predicted to be a sensitive indicator of the thermodynamical properties of the created QGP. However, cold nuclear effects and secondary production in the QGP via heavy quark recombination could also alter the observed suppression picture. Measurements of J/ψ production at different collision energies, collision systems, and centralities can shed new light on the interplay of these effects on J/ψ production and medium properties. Moreover, Υ production is expected to be less affected by $b - \bar{b}$ recombination and interactions with hadrons in the final state. It hence provides a cleaner probe for studying the interaction of heavy quarkonia with the partonic medium.

In this talk I will present recent results from the STAR experiment on J/ψ and Υ production in heavy-ion collisions at various energies. I will discuss the energy dependence of J/ψ production in Au+Au collisions at $\sqrt{s_{NN}}=39, 62.4$ and 200 GeV and in U+U collisions at $\sqrt{s_{NN}} = 193$ GeV. I will report Υ production in Au+Au collisions at $\sqrt{s_{NN}} = 200$ and in U+U collisions at $\sqrt{s_{NN}} = 193$ GeV.

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