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Heavy Quarkonium Production at RHIC

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The dissociation of quarkonia due to color screening in a Quark-Gluon Plasma is a classic signature of de-confinement in relativistic heavy-ion collisions. Results at RHIC show that the suppression of the J/ψ as a function of centrality (the number of participants) is similar to that observed at the SPS, even though the energy density reached in collisions at RHIC is significantly higher. Possible production mechanisms such as sequential suppression, $c\bar{c}$ recombination were proposed to explain this. In this talk, recent results of heavy quarkonia production in p+p and d+Au collisions at RHIC will be presented to understand quarkonia production mechanisms in hadron-hadron collisions and possible cold nuclear medium effect. The system size, rapidity, and pT dependence of heavy quarkonia production in Cu+Cu and Au+Au collisions will be reported to study the effect of color screening and their other possible production mechanisms. Future measurements with detector upgrades at RHIC will also be discussed.