Cold Nuclear Matter Effects on J/ψ and Υ Productions at RHIC with the STAR Experiment

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Quarkonia are excellent probes for studying the properties of quark-gluon plasma formed in relativistic heavy-ion collisions at RHIC. In order to fully understand the observed suppression of quarkonium production in Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV, it is essential to understand well the cold nuclear matter (CNM) effects on the quarkonium production. Collisions of p+Au at the same energy can be used to study the CNM effects since these effects are expected to be dominant in such systems.

In this talk, we present measurements of inclusive J/ψ and Υ cross-sections in p+p collisions and their modification in p+Au collisions (the nuclear modification factor R_{pAu}) at $\sqrt{s_{\rm NN}} = 200$ GeV. The results are extracted from data recorded by the STAR experiment in 2015 using the di-electron decay channel of the quarkonia. Comparisons are made to results from other experiments as well as to model calculations and physics implications are also discussed.