Contribution ID: **457** Type: **Oral**

Measurements of charmonium production in p+p, p+Au, and Au+Au collisions at √sNN = 200 GeV with the STAR experiment

Tuesday 7 February 2017 14:00 (20 minutes)

Quarkonium production is an important probe to study the properties of the Quark Gluon Plasma (QGP) formed in relativistic heavy-ion collisions. The suppression of J/ψ due to the color-screening effect in the medium was initially proposed as direct evidence of the QGP formation. However, the interpretation of J/ψ suppression is still challenging due to the regeneration contribution from the coalescence of uncorrelated $c\bar{c}$ pairs in the medium and the cold nuclear matter effects. By comparing productions of different charmonium states in p+p, p+Au, and Au+Au collisions, the cold and hot nuclear matter effects can be systematically studied in detail.

In the 2014 and 2015 RHIC runs, the STAR experiment recorded a large amount of data in p+p, p+Au, and Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV for charmonium studies via both the dielectron and dimuon channels. In this talk, we present precise measurements of nuclear modification factors for J/ψ production over a broad kinematic range in both p+Au and Au+Au collisions. We will also present the first measurements of the double ratio of ψ(2s) and J/ψ production rates at mid-rapidity in p+p and p+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. We will compare these results with model calculations and discuss physics implications of the measured cold and hot nuclear matter effects for extracting the QGP properties.

Preferred Track

Quarkonia

Collaboration

STAR

Author: Dr TODOROKI, Takahito (Brookhaven National Laboratory)

Presenter: Dr TODOROKI, Takahito (Brookhaven National Laboratory)

Session Classification: Parallel Session 3.3: Quarkonia (I)

Track Classification: Quarkonia