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Upsilon measurements via the di-muon channel in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV with the STAR experiment

Measurements of quarkonium production have played an important role in understanding the properties of Quark Gluon Plasma (QGP) formed in relativistic heavy-ion collisions. The suppression of quarkonia in the medium due to color screening has been proposed as a direct signature of the QGP formation. However, other effects, such as regeneration of quarkonia by the coalescence of uncorrelated quark-antiquark pairs and co-mover absorption, add additional complications to the interpretation of observed quarkonium suppression. Compared to charmonia, bottomonia suffer much less from regeneration contribution and co-mover absorption. Furthermore, the different bottomonium states may dissociate at different temperatures, known as "sequential melting", which can be used to help constrain the temperature of the medium.

In early 2014, the Muon Telescope Detector (MTD), which provides muon triggering and identification capabilities at mid-rapidity, was fully installed at the STAR experiment. It opens the door to measuring quarkonia via the di-muon channel. In this poster, we present the measurements of Υ suppression in Au+Au collisions at $\sqrt{s_{NN}} = 200$ˆGeV via the di-muon channel, based on a data sample of 20 nb^{-1} in total taken in RHIC 2014 and 2016 runs. The centrality and transverse momentum dependences are presented and compared to those at the LHC and theoretical calculations.

Preferred Track

Quarkonia

Collaboration

STAR

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