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Measurements of Open Charm and Bottom Production in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV with the STAR Experiment at RHIC

Tuesday, May 15, 2018 3:40 PM (20 minutes)

Heavy flavor quarks are unique tools for studying the properties of the Quark Gluon Plasma (QGP) produced in high-energy nuclear collisions. In this talk we will present measurements of various charm hadrons (Λ_c^\pm , D_s^\pm , $D^{*\pm}$, D^\pm and D^0 (\bar{D}^0)), as well as open bottom production through displaced decay daughters ($B \rightarrow J/\psi$, D^0 , e), at mid-rapidity in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV, using the STAR Heavy Flavor Tracker. With the high statistics data collected in 2016 and the use of supervised machine learning methods for topological reconstruction of charm hadrons, the Λ_c^\pm and D_s^\pm signal significances are improved significantly. This allows us to study the p_T and centrality dependences of their production. We will also report on $D^{*\pm}$, D^\pm and D^0 spectra measured in various centralities and the total charm quark cross section extracted from these extensive measurements as well. In addition, we will present the nuclear modification factors for daughters from decays of bottom hadrons and compare them to those for charm hadrons as well as to theoretical calculations. Physics implications of these measurements for the mass dependences of parton interactions with the QGP, as well as the charm quark hadronization in the medium will be discussed.

Content type

Experiment

Collaboration

STAR

Centralised submission by Collaboration

Presenter name already specified

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