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Extraction of Bottom Production via the Semi-leptonic Decay Channel in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV by the STAR Experiment

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Quantum Chromodynamics (QCD) predicts that heavy quarks lose less energy than light quarks in the Quark-Gluon Plasma (QGP) created in relativistic heavy-ion collisions. However, recent measurements of the nuclear modification factor (R_{AA}) and elliptic flow (v_2) for open charm mesons at RHIC show results comparable in magnitude to those of light hadrons, suggesting that charm quarks also interact strongly with the QGP medium. This could mean that the charm quark may not be heavy enough to clearly exhibit the mass dependence of parton energy loss in these measurements at RHIC. Thus it is of particular interest to study the bottom quark energy loss in the medium since bottom quarks are about three times heavier than charm quarks.

In this poster, we will present an analysis based on a data-driven method for determining the yields of electrons from charm and bottom hadron decays, respectively, in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. The former is estimated from the measured charm hadron yields, and is subtracted from the inclusive heavy-flavor electrons to obtain the latter. The electron R_{AA} and v_2 from charm and bottom hadron decays will be presented separately. Model comparison will be discussed as well.

Content type

Experiment

Collaboration

STAR

Centralised submission by Collaboration

Presenter name already specified

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