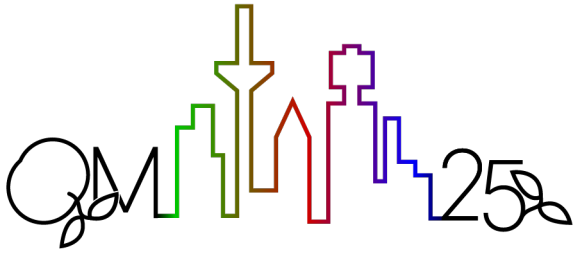

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Measurement of heavy-flavor electron production in Au+Au collisions at $\sqrt{s_{NN}}$ = 54.4 GeV at STAR

Studying heavy-flavor quarks can enhance our understanding of parton interactions with the Quark-Gluon Plasma (QGP). Due to their significant mass, heavy quarks (charm and bottom) are primarily produced during the early stages of high-energy heavy-ion collisions, where hard scatterings dominate, allowing them to experience the entire evolution of the QGP. One approach to investigate heavy-quark transport properties in QGP is through the measurement of heavy-flavor electrons (HFE), which are electrons emitted from the semi-leptonic decays of heavy-flavor hadrons.

In this contribution, we present measurements of HFE yield and central-to-peripheral nuclear modification factor as functions of transverse momentum (p_{T}) in Au+Au collisions at $\sqrt{s_{NN}} = 54.4$ GeV by the STAR experiment - making this the first such result at this energy. Strong HFE suppression has been observed in central Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. This measurement at energies below the RHIC top energy provides new insights into the heavy-quark transport coefficient dependence on QGP temperature and collision system baryon chemical potential, and complements existing results at $\sqrt{s_{NN}} = 200$ GeV and the recent HFE elliptic flow measurements at $\sqrt{s_{NN}} = 54.4$ GeV. The obtained results will also be compared with available model predictions.

Category

Experiment

Collaboration (if applicable)

STAR

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