

Measurements of charm and bottom productions via semi-leptonic decays in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV at STAR

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Abstract

Systematic investigation of charm and bottom productions and their modifications in heavy-ion collisions is crucial for understanding the parton energy loss mechanism inside the hot and dense medium. Electrons from semi-leptonic decays of open heavy-flavor hadrons can serve as a proxy for heavy quarks with the possibility of triggering on them during data taking to gain statistics.

The STAR Heavy Flavor Tracker (HFT) provides excellent track pointing resolution which allows to separate electrons originating from open charm and bottom hadron decays based on their measured Distance of Closest Approach (DCA) to the primary vertex. In this poster, we will present the nuclear modification factor R_{AA} as well as R_{CP} of the charm- and bottom-decayed electrons as a function of transverse momentum ($2.5 < p_T < 8.5$ GeV/ c) at mid-rapidity in $\sqrt{s_{\text{NN}}} = 200$ GeV Au+Au collisions for various centrality classes. The measurements will be compared to theoretical model calculations and physics implications on the parton energy loss will be discussed.