Nuclear modification factors and elliptic flow of electrons from open heavy flavor decays in Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV at STAR

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Abstract

Measurements of nuclear modification factors ($R_{\rm AA}, R_{\rm CP}$) and elliptic flow (v_2) for open heavy flavor hadrons are essential probes of quark-gluon plasma produced in heavy-ion collisions. Single electrons from semileptonic decays are an excellent channel to study open heavy flavor hadrons due to their large branching fractions and triggering capabilities.

The STAR Heavy Flavor Tracker 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 to the primary vertex. In this talk we will report the first STAR measurements of v_2 of bottom-decayed electrons as a function of transverse momentum, in Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV. Additionally, improved measurements of $R_{\rm AA}$ of bottom- and charm-decayed electrons and a new measurement of the double ratio of $R_{\rm CP}$ between bottom- and charm-decayed electrons will be presented. Our results will be compared to theoretical models and implications will be discussed.