Recent heavy flavor results from the STAR experiment

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Abstract

J/ψ and open-charm hadron are important probes to study the properties of the Quark-Gluon Plasma (QGP) as the charm quarks are produced predominantly in hard partonic scatterings at the very early stage of heavy-ion collisions which means that they experience the whole evolution of the hot and dense medium. Measurements of J/ψ anisotropy flow, J/ψ and open-charm hadron nuclear modification factor in heavy-ion collisions and p+Au collisions will provide a comprehensive information of QGP properties, like the charm thermalization, color-screening effect, cold nuclear matter effects, as well as the charm quark hadronization schemes.

In this talk, we will present the J/ψ anisotropy flow results measured in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\rm NN}} = 200$ GeV, J/ψ nuclear modification factor results in p+Au, Ru+Ru and Zr+Zr at 200 GeV as well as in Au+Au at 54.4 GeV, the nuclear modification factor of D^0 and $D^{\pm}$ mesons in Au+Au at 200 GeV, the transverse momentum and centrality dependence of the open-charm hadron ($D^{\pm}$, D_s, and Λ_c) over D^0 meson yield ratios as well as the total charm quark production cross section in Au+Au at 200 GeV.