Recent heavy flavor results from the STAR experiment

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Abstract

Quarkonia and open-charm hadrons are important probes to study the properties of the Quark-Gluon Plasma (QGP). Heavy quarks are produced predominantly in hard partonic scatterings at the very early stage of heavy-ion collisions, and subsequently experience the whole evolution of the hot and dense medium. Measurements of quarkonia and open charm hadron production yields and J/ψ anisotropic flow provide comprehensive information about the QGP properties, such as degree of charm quark thermalization, quarkonium dissociation as well as the charm quark hadronization mechanisms.

In this talk, we will present measurements of J/ψ elliptic flow in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\rm NN}} = 200$ GeV, and quarkonium nuclear modification factors in p+Au, Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\rm NN}} = 200$ GeV as well as in Au+Au at $\sqrt{s_{\rm NN}} = 54.4$ GeV. We will also present measurements of the nuclear modification factors for D^0 and $D^{\pm}$ mesons, the transverse momentum and centrality dependences of $D^{\pm}$, D_s, and Λ_c over D^0 meson yield ratios as well as the total charm quark production cross section in Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV.