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Overview of recent STAR open heavy flavor measurements

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The experiments at RHIC and LHC have produced convincing evidence that strongly interacting partonic matter, Quark Gluon Plasma (QGP), is created in central ultrarelativistic collisions of heavy ions. Charm quarks are ideal probe of the QGP since they are dominantly produced in hard gluon-gluon interactions in early stages of nuclear collisions at RHIC energies. Therefore, they are sensitive to the whole evolution of the hot and dense matter. Thanks to the excellent vertex resolution provided by the Heavy Flavor Tracker detector, STAR is able to measure charm quark production in multiple channels via reconstruction of hadronic decays of D^0 , $D^{+/-}$, D_s and Λ_c hadrons. In this talk we will present recent STAR measurements of nuclear modification factors of D^0 and $D^{+/-}$ mesons, D^0 directed, elliptic and triangular flow and D_s/D^0 and Λ_c/D^0 yield ratios. These measurements will be discussed in context of charm quark energy loss, charm quark transport in the QGP and final hadronization.

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