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Open heavy flavor production with the STAR experiment at RHIC

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Open heavy flavor production is a crucial probe for the understanding of the QCD matter under extreme conditions created in heavy ion collisions. Heavy flavor quarks are produced predominantly in hard partonic scatterings at the very early stage of heavy ion collisions and experience the whole evolution of the hot and dense medium. Open heavy flavor production provides access to studying charm and beauty quark interactions with the hot and dense medium, so called Quark Gluon Plasma (QGP). Through the measurements of open heavy flavor production in A+A and p+p collisions, the effects due to the QGP can be disentangled from those occuring in hadronic interactions without QGP formation, based on the expectation that these effects are less prominent or absent in p+p collisions.

In this talk, we will present results of open heavy flavor production, for example nuclear modification factors of identified charmed hadrons and of beauty and charm hadron decayed electrons, measured with the STAR experiment at the Relativistic Heavy Ion Collider. These results will be compared with theoretical calculations and physics implications will be discussed.

In-person participation

Yes

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