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Measurements of open bottom and charm hadron production through multiple decay channels in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV with the STAR experiment

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Heavy quarks are predominantly produced at early stages of the relativistic heavy-ion collisions before the creation of the QCD medium, known as the Quark-Gluon Plasma (QGP). Heavy quarks may traverse the QGP throughout its evolution, and thus are suggested as an excellent probe to study the properties of the QGP. Comparing the yield of heavy-flavor hadron decayed electrons at large transverse momenta in Au+Au collisions with that in p+p collisions at sNN⁻⁻⁻⁻ $\sqrt{} = 200$ GeV, a significant suppression has been observed. This suppression is believed to be caused by the energy loss of heavy flavor quarks through interactions with the QGP, which is expected to be different for bottom and charm quarks because of their different masses. Measurements of open bottom and charm hadron production separately in Au+Au collisions are crucial to test the mass hierarchy of the parton energy loss.

In this talk, we will present measurements of open bottom and charm hadron production through multiple decay channels in Au+Au collisions at $sNN^{---}\sqrt{2} = 200$ GeV by the STAR experiment. Specifically, measurements of nuclear modification factors for electrons, D0 and J/ ψ from open bottom hadron decays will be shown. The decay products are topologically identified utilizing the Heavy Flavor Tracker, a silicon vertex detector installed at STAR during the period of 2014 - 2016. These results will be compared to those of open charm hadrons to study the mass dependence of the parton energy loss in the QGP at RHIC.

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