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Non-prompt D^0-meson production in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV in STAR

Heavy flavor quarks (c, b) are produced dominantly by the interactions of the initial incoming partons, and thus experience the entire evolution of the hot and dense medium created in high-energy nuclear collisions. Systematic investigations of charm and bottom hadron production in heavy-ion collisions will shed lights into the understanding of the parton energy loss in the Quark-Gluon Plasma (QGP), which can help constrain the transport parameters of the QGP medium.

In this poster, we will present the first measurement of non-prompt D^0-meson production from bottom hadron decays using the Heavy Flavor Tracker (HFT) in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV by the STAR experiment. Distributions of the Distance of Closest Approach (DCA) for reconstructed D^0-mesons are studied, and fitted with the template distributions for the prompt and non-prompt D^0-mesons obtained from Monte Carlo simulations. Fractions of non-prompt D^0-mesons are extracted in the transverse momentum region 3 $< p_T <$ 8 GeV/c. The results are compared to model calculations and physics implications on the bottom production will be discussed.

Preferred Track

Open Heavy Flavors

Collaboration

STAR

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