

STAR measurements of bottom to charm ratio and heavy quark interaction with the QCD medium through non-photonic electron-hadron correlations

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FOR THE STAR COLLABORATION

Heavy Quarks are mostly produced through gluon fusions during the initial stage of the heavy ion collisions. Experimentally heavy quarks are found to suffer a considerable energy loss in the QCD medium with the nuclear modification factor for non-photonic electrons (NPE) from heavy quark decays much smaller than unity in central Au+Au collisions at RHIC. To better understand the heavy flavor production and energy loss mechanism it is crucial to determine experimentally the relative contributions of Charm and Bottom meson decays to NPE and to study detailed characteristics of heavy quark interactions with the bulk QCD medium. We will present the STAR measurements of relative charm and bottom contributions to NPE from p+p collisions at 200 and 500 GeV energies. We report the total bottom quark production cross section from p+p collisions at 200 GeV extracted from NPE spectrum and B to D ratios. We will also present the NPE-hadron correlations from Au+Au collisions at 200 GeV from the 2010 RHIC run where we have collected high statistics data set with low photonic conversion background. The evolution of the NPE-hadron azimuthal angular correlation as a function of collision centralities and in comparison with that from d+Au collisions will be indicative of dynamics of heavy quark interactions with the QCD medium created in Au+Au collisions. Comparisons with theoretical calculations will also be discussed.

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