

Measurement of femtoscopic correlation function between D^0 mesons and charged hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV in STAR

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Heavy quarks are produced in hard partonic scatterings at the very early stage of heavy-ion collisions and they experience the whole evolution of the created Quark-Gluon Plasma medium. Femtoscopic correlations, i.e., two-particle correlations at low relative momentum, are sensitive to the final-state interactions and the extent of the region from which correlated particles are emitted. A study of such correlations between charmed mesons and identified charged hadrons could shed light on their interactions in the hadronic phase and the interaction of charm quarks with the bulk partons.

We will present femtoscopic correlations of D^0 - π , D^0 -K, D^0 -proton pairs at mid-rapidity in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV using data taken in the year 2014 and 2016 by the STAR experiment. D^0 mesons are reconstructed via the $K^-\pi^+$ decay channel using topological criteria enabled by the excellent track pointing resolution provided by the Heavy Flavor Tracker. We will present the femtoscopic correlation function for D^0 transverse momentum above 1 GeV/c in the 0-80% centrality.