Femtoscopic correlations between D^0 mesons and identified hadrons in Au+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV at STAR

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Heavy quarks, like charm quarks, are produced early in the relativistic heavy-ion collisions and probe all stages of the evolution of the created medium – known as the Quark Gluons Plasma. Two-particle correlations at low relative momentum (the femtoscopic correlations) are sensitive to the interactions in the final state and the extent of the region from which correlated particles are emitted, so-called region of homogeneity. A study of such correlations between charmed mesons and identified hadrons could shed light on their interactions in the hadronic phase and interaction of charm quarks with the bulk partons.

We will present a study of 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 by the STAR experiment. D^0 mesons are reconstructed via the K^--π^+ 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.