First measurement of heavy flavour femtoscopy using D^0 mesons and charged hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV by STAR

Priyanka Roy Chowdhury (for the STAR collaboration)

Warsaw University of Technology, Poland

Heavy quarks are produced in hard partonic scatterings at the very early stage of heavy-ion collisions and experience the whole evolution of the Quark-Gluon Plasma medium. Two-particle femtoscopic correlations at low relative momentum, are sensitive to the final-state interactions and to the space-time extent of the region from which the correlated particles are emitted. Correlations study between the charmed mesons and identified charged hadrons can shed light on their interactions in the hadronic phase and the interaction of charm quarks with the medium.

We will report the measurement of femtoscopic correlations between D^0 and charged hadrons at mid-rapidity in Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV by the STAR experiment. D^0 mesons are reconstructed via the $K^-\pi^+$ decay channel using topological criteria enabled by the Heavy Flavor Tracker. We will compare the experimental data with available theoretical models to discuss their physics implications.