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Production of D_s^\pm mesons in Au+Au collision at $\sqrt{s_{NN}} = 200$ GeV by STAR

Summary

Charm quarks are excellent probes to study properties of the Quark-Gluon Plasma (QGP) created in ultra-relativistic heavy-ion collisions. In particular, measurements of the D_s^\pm meson production can provide valuable information on the strangeness enhancement in the QGP as well as the charm quark hadronization mechanisms in heavy-ion collisions.

In this talk, we will present results from the STAR experiment on invariant yields of D_s^\pm mesons as a function of transverse momentum for different centrality classes of Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. The measurements utilize the data with the Heavy Flavor Tracker from 2014 and 2016.

The ratio between strange (D_s^\pm) and non-strange (D^0) open charm mesons will also be shown, and compared to PYTHIA and model calculations. A clear enhancement relative to the PYTHIA calculation is seen in the ratio, while model calculations incorporating strangeness enhancement and charm quark coalescence hadronization are closer to data. These results suggest that recombination of charm quarks with equilibrated strange quarks in the QGP plays an important role in charm quark hadronization.

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