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Measurements of open charm hadrons at STAR experiment

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Charm quarks are predominantly produced in the early stages of the heavy-ion collisions via hard scattering because of their high mass. Thus, they experience the entire evolution of the Quark-Gluon Plasma created in such collisions. Compared to light quarks, charm quarks thermalize more slowly. The open charm hadrons present, therefore, a unique probe to the properties of the hot and dense nuclear matter by measuring their energy loss and degree of thermalization in the medium. Furthermore, with the combined measurements of D mesons, D_s, and Λ_c, we can study multiple modes of coalescence of charm quarks with light quarks in heavy-ion collisions.

The newly installed Heavy Flavor Tracker at the STAR experiment enables full topological reconstruction of open charm hadrons. It opens the door to reconstructing D_s and Λ_c for the first time at RHIC and greatly improves measurements of D^0 mesons.

In this talk, we present the latest results from the direct reconstruction of open charm hadrons via hadronic channels at the STAR experiment. In addition, we discuss comparisons to model calculations of the charm hadron production and similar measurements of other particle species.

Summary

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