

Contribution submission to the conference SMuK 2021

Charm production and hadronisation at the LHC with ALICE — •JIANHUI ZHU for the ALICE-Collaboration — GSI Helmholtz Centre for Heavy Ion Research

Recent measurements of charm-baryon production at midrapidity by the ALICE collaboration show baryon-to-meson yield ratios significantly higher than those in e^+e^- collisions for different charm-hadron species, suggesting that the charm fragmentation is not universal across different collisions systems. Thus, measurements of charm-baryon production are crucial to study the charm quark hadronisation in proton-proton collisions, relevant also for the description of heavy-flavour mesons. In large systems such as Pb-Pb collisions, the charm baryon-to-meson yield ratio is expected to be further enhanced if charm quarks hadronise via recombination with the surrounding light quarks in the QGP.

In this talk, the measurements of Λ_c^+ , $\Xi_c^{0,+}$ and the first measurement of Ω_c^0 baryons performed with the ALICE detector at midrapidity in pp collisions at $\sqrt{s} = 5.02$ and 13 TeV, as well as the total charm cross section and charm fragmentation fractions will be presented. In Pb-Pb collisions, the measurement of Λ_c^+ production, the nuclear modification factor and the Λ_c^+/D^0 ratio will be discussed. These results will be compared to predictions from Monte Carlo event generators and theoretical calculations based on the statistical hadronisation model and on the hadronisation via coalescence.

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