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Non-strange and strange D-meson and charm-baryon production in heaavy-ion collisions measured with ALICE at the LHC

Thursday, 20 December 2018 14:30 (15 minutes)

Heavy quarks (charm and beauty) are a powerful probe of the Quark-Gluon Plasma (QGP) formed in high-energy heavy-ion collisions. They are produced in hard scattering processes on a timescale shorter than the QGP formation time and experience the whole system evolution. The measurement of the nuclear modification factor ($R_{\rm AA}$) of open heavy flavours can provide important information about the microscopic interactions of heavy quarks with the medium constituents, in particular on the colour-charge and parton-mass dependence of heavy-quark energy loss. The measurements of the elliptic flow (v_2) at low $p_{\rm T}$ can give insight into the participation of the heavy quarks to the collective expansion of the system and their thermalization in the medium. These two observables can also help in understanding possible modifications of heavy-quark hadronisation in the medium. In particular, the role of the recombination mechanism can be studied for charm via the comparison of D mesons without strange-quark content with $\rm D_s^+$ and charm baryons.

Measurements of charm-baryon production in pp and p–Pb collisions are also essential to establish a baseline for Pb–Pb collisions. The measurements in pp collisions provide critical tests of models of charm hadronisation in vacuum and the measurements in p–Pb collisions are useful to study cold nuclear matter effects.

In this talk, the latest results on $p_{\rm T}$-differential $R_{\rm AA}$ and v_2 of D mesons measured at mid-rapidity in Pb-Pb collisions with ALICE will be presented. The $p_{\rm T}$-differential cross section of the Λ_c^+ baryon in pp and p–Pb collisions will be presented. Finally, the Λ_c^+ production in Pb–Pb collisions will be shown. The measurements will be compared with model predictions.

Type

Parallel talk

Sessions (parallel only)

Heavy Flavor

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