

Investigating of charm-quark hadronisation into baryons and its collision-system dependence with ALICE

Monday 23 September 2024 17:50 (20 minutes)

Charm-baryon production measurements in proton-proton (pp) collisions at the LHC are fundamental tools to investigate the charm-quark hadronisation and to test pQCD calculations. Recent measurements in pp collisions have shown baryon-to-meson ratios significantly larger than those in e^+e^- collisions, challenging the validity of theoretical calculations based on the factorisation approach, which assumes universal charm fragmentation functions across collision systems. Additionally, these measurements allow for the study of possible hadronisation modifications in presence of nuclear-matter effects in larger collision systems (e.g. p-Pb).

In this contribution, preliminary results on the production of $\Sigma_c^{0,++}(2455)$ and $\Sigma_c^{0,++}(2520)$ baryon resonances in pp collisions at $\sqrt{s} = 13.6$ TeV are presented. A first look at the Λ_c^+/D^0 production-yield ratios in the same collision system is also discussed. Additionally, the final ALICE results on the fragmentation fractions of charm quarks into hadrons in pp and p-Pb collisions from Run 2 data sample are presented, along with the final measurement of Ω_c^0 baryon from the semileptonic decay channel $\Omega^- e^+ \nu_e$ in pp collisions at $\sqrt{s} = 13$ TeV. The results are compared with predictions from novel theoretical models that consider different hadronisation mechanisms with respect to in-vacuum fragmentation.

Category

Experiment

Collaboration

ALICE

Primary authors: COLLABORATION, ALICE; ZANONE, Federica (Heidelberg University (DE))

Presenter: ZANONE, Federica (Heidelberg University (DE))

Session Classification: Parallel 6: heavy quarks in medium

Track Classification: 3. Heavy quarks and quarkonia