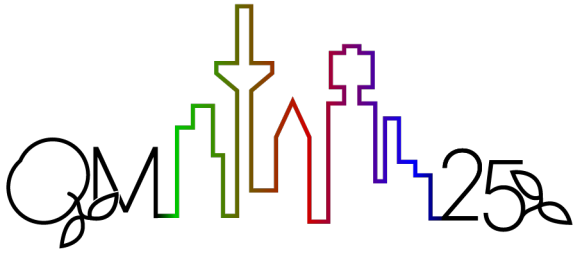

Contribution ID: **508** Type: **Oral**

Studying charm-quark hadronization via charm-baryon production measurements in pp at the LHC with ALICE

Tuesday 8 April 2025 10:00 (20 minutes)

Charm-baryon production measurements in proton-proton (pp) collisions at the LHC are fundamental to investigate the charm-quark hadronization, and to test perturbative QCD-based calculations. Recent measurements in pp collisions show baryon-to-meson ratios significantly higher than those in e^+e^- collisions, challenging the validity of theoretical calculations based on the factorisation approach and assuming universal fragmentation functions across collision systems. Several QCD-inspired effective models (e.g. Catania, POWLANG, QCM) and Monte Carlo generators (e.g. PYTHIA 8, EPOS 4) take different approaches to describe the charm-quark hadronization, and to explain the observed baryon production at the LHC. However, most of them do not manage to describe simultaneously the production of strange and non-strange charm baryons. Precise measurements of strange and non-strange charm-baryon production are crucial to put constraints on model calculations, and to understand the mechanisms governing the charm-quark hadronization in pp collisions at the LHC.

In this contribution, the first measurement of strange ($\Xi_c^{0,+}$) and non-strange (Λ_c^+, $\Sigma_c^{0,++}(2455)$, $\Sigma_c^{0,++}(2520)$) charm-baryon production utilising the large data sample of pp collisions at $\sqrt{s} = 13.6$ TeV harvested from the start of LHC Run 3 are presented, and the comparison with model predictions are discussed.

Category

Experiment

Collaboration (if applicable)

ALICE

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