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Measurement of prompt D^0 , Λ_c^+ , and $\Sigma_c^{0,++}(2455)$ production in proton–proton collisions at $\sqrt{s} = 13$ TeV with ALICE

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The measurement of relative production rates of different charm hadrons allows us to study hadronization mechanisms of charm quarks and to investigate different hadronization models. Various hypotheses are inspected like recombination, colour reconnection and decay from unknown excited states.

The results discussed in this contribution provide the first $\Sigma_c^{0,++}$ production measurement in hadronic collisions and show that the hadron production is significantly larger than in e^+e^- collisions, indicating that baryon enhancement in hadronic collisions extends also to the Σ_c .

The measurements of the p_T -differential cross section of prompt D^0 , Λ_c^+ , and $\Sigma_c^{0,++}(2455)$ in pp collisions at $\sqrt{s} = 13$ TeV performed by the ALICE experiment at the LHC at midrapidity will be shown. The baryon-to-meson ratios Λ_c^+/D^0 and $\Sigma_c^{0,++}/D^0$ as well as the fraction of Λ_c^+ feed-down from $\Sigma_c^{0,++}$ will be discussed and compared to expectations from theoretical models including: the Statistical Hadronisation Model (SHM) combined with Relativistic Quark Model (RQM), the Catania model, the quark (re-)combination mechanism (QCM) model, and various tunes of PYTHIA8.

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