



Contribution ID: 503

Type: Poster

## Investigating the role of strangeness in charm hadronisation with strange charm-meson production in pp collisions with ALICE

Precise measurements of charm-strange hadron production are crucial for validating perturbative QCD calculations based on the factorization approach. In particular, comparing production yields of strange and non-strange charm hadrons is essential for understanding heavy-quark hadronization in hadronic collisions and for constraining models with different quark hadronisation approaches.

In this context, recent advances in charm-meson spectroscopy have led to the discovery of several excited charm-strange states, whose production yields in hadronic collisions remain unmeasured. Quantifying these yields would provide valuable insights into charm quark hadronization, given the significant contribution to the ground-state charm-hadron yields from their decays. Moreover, the production of short-lived resonances allows us to obtain information on the hadronic phase of the system created in heavy-ion collisions, and potentially present also in smaller collision systems.

This contribution presents new production measurements of the orbitally excited charm-strange mesons  $D_{s1}(2536)^+$  and  $D_{s2}^*(2573)^+$  in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV by the ALICE Collaboration. Their production-yield ratios relative to ground-state D mesons are reported, complementing and extending recent final results from proton-proton collisions at  $\sqrt{s} = 13$  TeV. Production yield ratios of  $D_s^+$  to  $D^+$  mesons in proton-proton collisions at  $\sqrt{s} = 13.6$  TeV will also be reported and compared to state-of-the-art model predictions. The influence of the surrounding color-charge density on charm quark hadronisation, and the potential impact to charm-strange resonance production from a hadronic phase in high-multiplicity proton-proton collisions, will be investigated by performing the measurements in different event-multiplicity intervals.

### Category

Experiment

### Collaboration (if applicable)

ALICE

**Authors:** COLLABORATION, ALICE; AGLIETTA, Luca (Universita e INFN Torino (IT))

**Presenter:** AGLIETTA, Luca (Universita e INFN Torino (IT))

**Session Classification:** Poster session 2

**Track Classification:** Heavy flavor & quarkonia