

# Evolution of open charm production with event multiplicity with ALICE

## Content

Measurements of charm meson and baryon production in proton-proton collisions are an important test for perturbative QCD calculations. Measurements in p-Pb collisions provide important tools to disentangle cold nuclear matter effects (like nuclear modification of parton distribution functions). Furthermore, the study of the charm production in pp and p-Pb collisions as a function of multiplicity allows the investigation of the multi-parton interactions which are expected to have a relevant role in charged particle production at high energy at the LHC, and the role of the color reconnection in the hadronization mechanisms. Charm production measurements also provide information about possible modifications of spectra in high-multiplicity pp and p-Pb collisions with respect to minimum bias ones. These could be explained as signatures of radial flow and collectivity, phenomena typically observed in Pb-Pb collisions, suggesting that similar mechanisms could have a role also in small systems and that a smooth evolution of the heavy-flavour production measurements with multiplicity, going from pp to Pb-Pb collisions, is observed.

In this contribution, the new measurements of the self-normalized yield of prompt D-mesons and leptons from heavy-flavour hadron decays in pp collisions at  $\sqrt{s} = 13$  TeV are discussed. The results are compared to the  $J/\psi$  measurement and with model calculations. The  $\Lambda_c^+/D^0$  and  $D_s/D$  measurements as a function of multiplicity in pp collisions at  $\sqrt{s} = 13$  TeV are also presented. The nuclear modification factor of D mesons and leptons from heavy-flavour hadron decays in p-Pb collisions at  $\sqrt{s} = 5.02$  TeV as a function of multiplicity is also discussed.

## Summary

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