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Measurement of D-meson production as a function of charged-particle multiplicity in proton-proton collisions at $\sqrt{s} = 13$ TeV with ALICE at the LHC

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Heavy quarks (charm and beauty) are produced at the initial stages of the relativistic hadronic collisions in hard scattering processes, and the study of their production in proton-proton (pp) collisions is an important test for calculations based on perturbative Quantum Chromodynamics (pQCD). Analysis of heavy flavor production as a function of charged-particle multiplicity provides insight into the processes occurring at the partonic level and the interplay between the hard and soft particle production mechanisms in pp collisions.

In this poster, measurements of open heavy-flavor production as a function of multiplicity, via the study of the D-meson self-normalized yields in pp collisions at the center-of-mass energy of $\sqrt{s} = 13$ TeV is presented. The D-meson yields are measured in different p_T intervals from 1 GeV/c to 24 GeV/c at midrapidity via their hadronic decay channels. The D-meson self-normalized yield is found to increase stronger than linearly with increasing charged-particle multiplicity. The measurements are compared to PYTHIA 8 calculations, and with the results at $\sqrt{s} = 7$ TeV.

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