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Measurement of open-charm production as a function of charged-particle multiplicity in pp collisions at \sqrt{s} = 7 TeV with ALICE at the LHC

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The ALICE detector was designed for the study of the high energy-density QCD matter produced in highenergy heavy-ion collisions. Heavy quarks (charm and beauty) are important probes of this matter, as they are produced in initial hard scattering processes and they experience all the stages of the medium evolution. Therefore measurements of heavy-flavour hadron production provide important information on the early stage of the collision and the parton-medium interaction. Open heavy-flavour production measurements in pp collisions provide the necessary baseline to understand the results in Pb-Pb collisions and a test of pQCD (perturbative quantum chromodynamics) calculations. Furthermore, the study of open heavy-flavour production in pp collisions as a function of charged-particle multiplicity allows us to investigate the interplay between hard and soft mechanisms in particle production. In particular, it could give insight into the role of multi-parton interactions (MPI), i.e. several hard partonic interactions occurring in a single collision at high centre-of-mass energies.

In this contribution, the measurement of open heavy-flavour per-event yields as a function of charged-particle multiplicity in pp collisions at \sqrt{s} =7 TeV recorded with the ALICE detector will be presented. D⁰, D⁺ and D^{*+} mesons are reconstructed from their hadronic decay channels in the central rapidity region, and their yields are measured in different multiplicity and $p_{\rm T}$ intervals. These yields will be compared to the results obtained for inclusive and non-prompt J/ ψ . Finally, comparisons with model calculations will be reported.

On behalf of collaboration:

ALICE

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