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Measurements of open heavy-flavour production in pp and p-Pb collisions with ALICE

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In hadronic collisions, heavy quarks (charm and beauty) are produced in hard scattering processes with large momentum transfer. The measurement of the production cross sections of heavy-flavour hadrons in pp collisions provides an important test of pQCD calculations. Some insight into the role of multi-parton interactions (MPI) and the interplay between hard and soft mechanisms for particle production can be obtained by studying heavy-flavour production as a function of multiplicity of charged particles produced in these collisions. The measurement in pp collisions also provides a crucial baseline for heavy-ion collisions.

In p-Pb collisions, heavy-quark production is expected to be sensitive to cold nuclear matter effects, such as the modification of parton distribution functions in nuclei compared to nucleons and k_T broadening or energy loss in cold nuclear matter. To better understand the relation between cold nuclear matter effects and the number of particles produced in the collision, heavy-flavour production can be studied as a function of charged-particle multiplicity.

With the ALICE detector at the LHC, heavy-flavour production is studied by reconstructing D^0 , D^+ , D^{*+} and D_s^+ mesons via their hadronic decay channels and, alternatively, via the measurement of leptons (electrons and muons) from semi-leptonic decays of heavy-flavour hadrons.

In this contribution, we present results on open heavy-flavour production cross sections and their dependence on charged particle multiplicity in pp ($\sqrt{s} = 2.76$ TeV and $\sqrt{s} = 7$ TeV) and p-Pb collisions ($\sqrt{s_{NN}} = 5.02$ TeV). We also present azimuthal correlations of D mesons and heavy-flavour decay electrons with charged hadrons in pp and p-Pb collisions.

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