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ALICE measurements of heavy-flavour production as a function of multiplicity and angular correlations in pp and p-Pb collisions at the LHC

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The study of the production of hadrons containing charm and beauty quarks in proton-proton (pp) collisions at the LHC provides a way to test calculations based on perturbative QCD at high collision energy. Heavy-flavour hadron production in p-Pb collisions is sensitive to Cold Nuclear Matter (CNM) effects. In addition to transverse momentum and rapidity differential trends, measurements as a function of multiplicity and of angular correlations provide further constraints on the description of heavy-flavour production in pp and p-Pb collisions. The measurement of heavy-flavour production in pp collisions as a function of the charged-particle multiplicity could provide further insights into the role of multi-parton interactions and the interplay between hard and soft mechanisms in particle production. The multiplicity-differential measurements of heavy-flavour production in p-Pb collisions are sensitive to the dependence of CNM effects on the collision geometry and on the density of final-state particles. The measurement of azimuthal correlations of D mesons and charged particles in pp collisions provides a way to characterize charm production and fragmentation processes, while in p-Pb collisions they could give insights into possible collective effects in small systems.

Prompt D^0 , D^+ and D^{*+} meson yields measured as a function of charged-particle multiplicity in pp collisions at $\sqrt{s} = 7$ TeV will be presented, along with results obtained for inclusive J/ψ and non-prompt J/ψ . The measurement of the yields of D mesons and of electrons from heavy-flavour hadron decays as a function of charged-particle multiplicity in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be shown as well. The centrality dependence of heavy-flavour nuclear modification factor will also be discussed.

The measurement of azimuthal correlations of D mesons and charged particles in pp collisions at $\sqrt{s} = 7$ TeV and in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will also be presented.

Comparisons with model calculations will be discussed.

Summary

Presentation type

Oral

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Session Classification: Parallel Session I: Hard Probes in p+p and p+A Collisions (I)