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

Renu Bala, for the ALICE Collaboration
University of Jammu, Jammu

Heavy quarks (charm and beauty) are an effective tool to investigate the properties of the Quark-Gluon Plasma in heavy ion collisions as they are produced in initial hard scattering processes and as they experience all the stages of the medium evolution. The measurement of heavy-flavour production cross sections in pp collisions at the LHC, besides providing a reference for heavy-ion studies, allows one to test perturbative QCD calculations. A brief review of ALICE results on the production of heavy flavoured hadrons measured from fully reconstructed decay topologies in pp collisions at $\sqrt{s} = 2.76$ and 7 TeV will be presented.

Furthermore, heavy-flavour production was also studied as a function of the particle multiplicity in pp collisions. This allows to investigate the interplay between hard and soft QCD processes and to study the role of multi-parton interactions. It is interesting to remark that the highest multiplicities reached in pp collisions at 7 TeV are similar to those measured in Cu-Cu collisions at RHIC energies. A measurement of the inclusive J/Psi yield as a function of the charged-particle pseudorapidity density was performed by the ALICE Collaboration at the LHC in pp collisions at $\sqrt{s} = 7$ TeV. An approximately linear increase of the J/Psi yield with increasing multiplicity was observed. In this context, the study of the yield of D mesons as a function of the charged-particle multiplicity could provide a deeper insight into charm-quark production in pp collisions. We will present the first results obtained for prompt D0, D+, and D*+ mesons using hadronic decay channels at midrapidity in pp collisions at $\sqrt{s} = 7$ TeV as a function of the charged-particle multiplicity. The prompt D meson yields as a function of multiplicity are measured in different pT intervals. These yields will be compared to the results obtained for inclusive and non-prompt J/Psi.

Primary author: Dr BALA, Renu (University of Jammu (IN))

Presenter: Dr BALA, Renu (University of Jammu (IN))

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