



Contribution ID: 1053

Type: **Parallel Talk**

D-meson and charmed-baryon measurements in pp and p-Pb collisions with ALICE at the LHC

Thursday, 6 July 2017 11:45 (15 minutes)

Measurements of charmed-hadron production in pp collisions are important to test predictions from perturbative QCD and provide an essential baseline for the studies in A-A collisions. Measurements in p-A collisions also allow studies of possible modifications of the charmed-hadron yields due to cold nuclear matter effects. The study of charm production as a function of the multiplicity of charged particles can give insight into multiparton interactions and into the interplay between hard and soft processes. The charmed baryon-to-meson ratio is sensitive to hadronisation mechanisms in pp and p-A collisions and it will offer a unique probe of the role of coalescence and predicted presence of diquark states in A-A collisions.

ALICE measures hadrons containing charm quarks in wide momentum and rapidity ranges in pp and p-A collisions. We will present the recent results for D^0 , D^+ , D^{*+} and D^+s mesons reconstructed via their hadronic decays at mid-rapidity in pp collisions at $\sqrt{s} = 5.02, 7, 8$ and 13 TeV and in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV, collected with the ALICE detector during the LHC Run-1 and Run-2. In particular, we will show the production cross section, nuclear modification factor, multiplicity-dependent studies and the charm production measurement down to $p_T = 0$.

We will report the first measurement of the p_T -differential cross section of the Λ_c^+ baryon in pp collisions at $\sqrt{s} = 7$ TeV, and in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV through the full reconstruction of two of its hadronic decay channels and the partial reconstruction of one of its semileptonic decay channels. We will also show the p_T -differential cross section times branching ratio of the Ξ_c^0 baryon measured in the decay channel $\Xi_c^0 \rightarrow e^+ \Xi^- \nu_e$ in pp collisions at $\sqrt{s} = 7$ TeV. The results will be compared with theoretical model predictions.

Experimental Collaboration

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Session Classification: QCD and hadronic physics

Track Classification: QCD and Hadronic Physics