

Measurement of D^{*+} -meson production in p–Pb and pp collisions with ALICE at the LHC

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Measurements of open heavy-flavour production in p–Pb collisions at the Large Hadron Collider (LHC) allow the study of cold-nuclear matter effects, such as shadowing, k_T broadening and initial-state energy loss. Heavy quarks (charm and beauty) are a valuable probe for the Quark-Gluon Plasma created in Pb–Pb collisions, since they are produced in hard scattering processes in the initial stages of the collision.

The comparison between p–Pb and Pb–Pb collisions makes it possible to distinguish between cold- and hot-nuclear matter effects, the latter expected to be present in high-energy Pb–Pb collisions.

Besides providing a reference for p–Pb and Pb–Pb collisions, the measurement of the D^{*+} p_T -differential production cross section in pp collisions also provides an excellent test of next-to-leading-order perturbative QCD calculations in hadronic collisions at the TeV energy regime.

In ALICE, D^{*+} mesons are reconstructed at mid-rapidity via the hadronic decay channel $D^{*+} \rightarrow D^0 \pi^+ \rightarrow K^- \pi^+ \pi^+$. Cold-nuclear matter effects on the D^{*+} -meson yield in p–Pb collisions are studied via comparison to the binary scaled D^{*+} -meson yield in pp collisions. This comparison is quantified by means of the nuclear modification factor R_{pA} .

In this contribution, we present the latest measurement of D^{*+} -meson production in pp collisions at $\sqrt{s} = 7$ and 8 TeV from Run I and in pp collisions at 13 TeV and p–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV from Run II.

List of tracks

Heavy-flavour (open and hidden)

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