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Measurement of D*+-meson production in small systems with ALICE at the LHC.

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Heavy quarks (charm and beauty) are a valuable probe to study the properties of the Quark-Gluon Plasma created in Pb–Pb collisions. In order to distinguish the hot nuclear matter effects in Pb–Pb collisions from possible Cold Nuclear Matter effects (CNM), measurements in p–Pb collisions are crucial.
Possible CNM effects, such as k_{T}-broadening, shadowing and parton energy loss in the cold nuclear matter, are studied via the comparison of the D^{*+} yield measured in p–Pb and pp collisions. This comparison is quantified by the nuclear modification factor R_{pPb}.
Furthermore, studies of the p_{T}-differential cross-section of D^{*+} mesons in pp collisions at the Large Hadron Collider (LHC) allow us to test next-to-leading-order perturbative QCD calculations at the TeV energy regime, while also providing a reference for p–Pb and Pb–Pb measurements.

The D^{*+} mesons measured with ALICE at the LHC are reconstructed at mid rapidity via the hadronic channel $\mathrm{D}^{*+} \rightarrow \mathrm{D}^0\pi^+ \rightarrow \mathrm{K}^-\pi^+\pi^+$.
In this contribution, the D^{*+}-meson production in pp collisions collected in Run I at $\sqrt{s} = 8$ TeV will be presented, as well as the latest Run II results for the D^{*+}-meson production in pp collisions at $\sqrt{s} = 13$ TeV and p–Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

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