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

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The measurement of open heavy-flavour production is a powerful tool to test next-to-leading-order perturbative QCD calculations in hadronic collisions in the TeV energy regime of the Large Hadron Collider (LHC). Moreover, the  $D^{*+}$ -meson  $p_T$ -differential production cross section in pp collisions provides the reference for the study of nuclear matter effects on  $D^{*+}$ -meson yields in Pb–Pb collisions, as quantified by the nuclear modification factor ( $R_{AA}$ ). This observable compares the measured particle yield in Pb–Pb collisions with the yield in binary-scaled pp collisions. As heavy-flavour quarks (charm and beauty) are primarily produced in hard scattering processes in the early stage of collisions, they provide excellent probes for the Quark-Gluon Plasma produced in Pb–Pb collisions.

The ALICE detector at the LHC collected data in pp collisions at center-of-mass energies of 2.76, 7, 8 TeV and, starting from June 2015, at 13 TeV, as well as in Pb–Pb collisions at 2.76 TeV and in p–Pb collisions at 5.02 TeV. In ALICE,  $D^{*+}$  mesons are reconstructed at mid-rapidity via the  $D^{*+} \rightarrow D^0 \pi^+ \rightarrow K^- \pi^+ \pi^+$  decay channel.

In this contribution, we present the latest results on the  $D^{*+}$ -meson nuclear modification factor in Pb–Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV as well as discuss prospects for  $D^{*+}$ -meson measurements in pp collisions at  $\sqrt{s} = 13$  TeV using the LHC run-2 data.

### On behalf of collaboration:

ALICE

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