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Measurements of heavy-flavour production in p–Pb collisions with ALICE

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The ALICE experiment's heavy-ion programme allows us to study the hot, high energy-density state of matter formed in ultrarelativistic nuclear collisions. In particular, heavy quarks (charm and beauty) serve as calibrated probes of the medium, since they are predominantly produced during the initial hard scatterings in the collision. ALICE's excellent tracking, vertexing and particle identification capabilities allow it to fully reconstruct the hadronic decays of open-charmed D mesons, as well as enabling the study of leptons stemming from charm and beauty decays at forward and mid-rapidity.

Measurements in p–Pb collisions allow us to disentangle experimental observations arising due to the hot and dense medium from those occurring due to cold nuclear matter effects such as momentum broadening, initial-state energy loss, and the modification of nuclear PDFs in the Pb nucleus. In particular, it is possible to measure nuclear modification factors in p–Pb and Pb–Pb collisions in order to determine whether the observed suppression of particles at high p_T in central Pb–Pb collisions is a medium-induced effect. Further insight into cold nuclear matter effects can be obtained by examining the yields of D mesons as a function of charged-particle multiplicity in p–Pb collisions.

Here we present the most recent results from ALICE for charm and beauty production in p–Pb collisions via heavy-flavour decay electrons at mid-rapidity, heavy-flavour decay muons at forward rapidity, and the hadronic decays of D^0 , D^+ , D^{*+} and D_s^+ mesons at mid-rapidity.

On behalf of collaboration:

ALICE

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