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Probing beauty and charm production in p-Pb collisions with high p_T electrons measured with ALICE

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Lattice Quantum Chromodynamics (QCD) calculation predicts that a colour-deconfined Quark-Gluon Plasma (QGP) is formed at high temperature and high energy density reached in ultra-relativistic heavy-ion collisions. Heavy quarks (charm and beauty) are mostly produced by initial hard scatterings before the formation of the QGP. Therefore heavy-flavour hadrons are ideal probes to investigate the properties of the hot and dense QCD matter. In Pb-Pb collisions, a strong suppression of the production of heavy-flavour hadrons with high transverse momentum has been observed.

A deeper understanding of heavy-flavour production in nucleus-nucleus collisions requires detailed studies of Cold Nuclear Matter (CNM) effects in order to clarify the role of initial- and final-state effects on their production. CNM effects include shadowing and/or saturation of partons, energy loss in CNM and k_T -broadening. Such effects on heavy quark production can be studied in proton-nucleus collisions by measuring electrons from heavy-flavour hadron decays.

The nuclear modification factor of electrons from heavy-flavor hadron decays was measured up to $p_T = 20$ GeV/ c in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ eV. The result suggests that heavy-flavour production in p-Pb collisions scales with the number of binary nucleon-nucleon collisions. High p_T electrons are particularly interesting because they mainly originate from beauty hadron decays. In this poster we will present new results on the production of electrons from heavy-flavor hadron decays and its nuclear modification factor up to approximately 30 GeV/ c in p-Pb collisions at $\sqrt{s_{NN}} = 8.16$ TeV collected in LHC-Run2 in 2016.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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