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Heavy-flavour decay lepton production in Pb-Pb and Xe-Xe collisions at the LHC with ALICE

Tuesday 15 May 2018 15:00 (20 minutes)

Heavy quarks, i.e. charm and beauty, are formed on a shorter time scale with respect to the strongly-interacting Quark-Gluon Plasma (QGP) produced in high-energy heavy-ion collisions. Therefore, they are sensitive probes to study the mechanisms of parton energy loss, hadronisation in the hot and dense medium, the medium evolution and its transport coefficients. The heavy-flavour nuclear modification factor (R_{AA}) and the elliptic flow (v_2) are two of the main experimental observables that allow us to investigate the interaction strength of heavy quarks with the constituents of the expanding medium. The comparison of the R_{AA} of charm, beauty and light-flavour hadrons provides information about the colour-charge and parton-mass dependence of parton energy loss. At low p_{T} the v_2 is expected to give insights into the degree of thermalisation of heavy quarks in the deconfined medium, and at high p_{T} it carries information on the path-length dependence of in-medium parton energy loss.

In this talk, measurements of R_{AA} and v_2 of open heavy-flavour hadrons via semi-leptonic decays to electrons at mid-rapidity and muons at forward rapidity in Pb-Pb collisions at LHC energies will be discussed. The progress on the analysis of the production and anisotropy of electrons from beauty-hadron decays will also be discussed. In addition, the R_{AA} of heavy-flavour hadron decay leptons in Xe-Xe collisions will be presented, along with the prospects for measuring the total charm cross section in this collision system. Comparisons with model calculations including the interaction of heavy quarks with the hot, dense, and deconfined medium will be also shown.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

Author: ALICE COLLABORATION

Presenter: DUBLA, Andrea (GSI)

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