

Measurement of heavy-flavour production, correlations and jets with ALICE in Pb-Pb collisions with ALICE

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Heavy-flavour (charm and beauty) production provides relevant information to understand the strongly interacting medium, Quark-Gluon-Plasma (QGP), formed in heavy-ion collisions at ultra-relativistic energies. Heavy quarks are produced primarily in the initial hard partonic interactions, and they propagate through the QGP. A strong suppression of heavy-flavour hadron production has been observed in the most central heavy-ion collisions with respect to binary-scaled pp collisions at intermediate and high p_T . This is ascribed to energy loss of heavy flavours in the dense matter. In addition, the positive v_2 (elliptic flow) observed at low p_T in semi-central heavy-ion collisions suggests that heavy flavours participate in the collective motion of the system. These results indicate strong interaction of heavy quarks in the medium.

Further understanding of properties of heavy quarks in the QGP can be obtained by measurements of jets and azimuthal correlation of particles originating from heavy flavours, and which are sensitive to the possible modification of fragmentation of heavy quarks. Such measurements in pp and p-Pb collisions allow studies of jet properties, and address to investigate cold nuclear matter and collective effects of heavy quarks.

In this presentation, recent ALICE measurements of the R_{AA} and v_2 of leptons, electrons at mid-rapidity ($|y| < 0.6$) and muons at forward rapidity ($2.5 < y < 4$), from heavy-flavour hadron decays in Pb-Pb collisions ($\sqrt{s_{NN}} = 2.76$ and 5.02 TeV) are shown. The results of D-tagged jet production cross-section in pp and p-Pb collisions at $\sqrt{s} = 7$ TeV and $\sqrt{s_{NN}} = 5.02$ TeV will be presented. In addition, the azimuthal correlation of D mesons with charged hadrons in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV as well as of electrons from heavy-flavour hadron decays with charged hadrons in p-Pb collisions and Pb-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be also presented to discuss heavy-flavour jet properties in various collision systems and the possibility of collective effect in the small system.

List of tracks

Heavy-flavour (open and hidden)

Primary author: ALICE COLLABORATION

Presenters: SAKAI, Shingo (Istituto Nazionale Fisica Nucleare (IT)); SAKAI, Shingo (University of Tsukuba (JP))

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