

Heavy flavour production in ALICE at the LHC

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Heavy quarks, charm and beauty, are excellent probes to investigate QCD processes in hadronic interactions, and to characterize the deconfined medium produced in high-energy heavy-ion collisions, the Quark-Gluon Plasma. They are produced dominantly through hard partonic scattering processes in the earliest stage of the hadronic collisions and thus they experience the whole history of the collision. ALICE at the LHC is the experiment dedicated to study the physics of nucleus-nucleus collisions, and particularly the physics of heavy quarks. High resolution tracking down to low transverse momentum, and good particle identification give access to many hadronic and semileptonic decay channels of heavy-flavour hadrons, both at mid- and at forwardrapidity. A selection of results from pp collisions at $\sqrt{s} = 2.76$ and 7 TeV, and from Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV will be presented. In proton-proton collisions, the high precision measurements provide an important test of perturbative QCD predictions. The precise vertex reconstruction together with the particle identification, allows the separation of the charm and the beauty components. Furthermore, the pp results are essential as a reference for the measurements in heavyion collisions. Nuclear modification factors were measured for D mesons, for electrons and for muons from heavy-flavour decays. Elliptic flow of D meson will be presented. The results provide information on the Quark-Gluon Plasma, via the energy loss of the heavy partons in the strongly interacting medium, and hints on the medium thermalization.

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