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Heavy-flavour production at central rapidity in pp collisions at the LHC with ALICE

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Heavy quarks (charm and beauty) are formed through hard partonic scatterings in hadronic collisions and, thus, serve as unique probes in particle and nuclear physics at high energy. Measurements of heavy-flavour production in proton-proton collisions at the LHC allow a precise test of perturbative quantum chromo dynamics (pQCD) in a previously unreached energy domain. They also serve as a reference for measuring the modifications to heavy quark momentum distributions induced by the interaction with the medium formed in heavy-ion collisions.
Heavy-flavour production at central rapidity is studied in ALICE via the reconstruction of D mesons through hadronic decay channels and by measuring electrons from semileptonic decays of charm and beauty hadrons. We present here the momentum differential production cross-sections of D mesons and electrons from charm and beauty hadrons measured in pp collisions at 2.76 and 7 TeV, and we compare them to pQCD calculations. Azimuthal correlations of D mesons with hadrons and of electrons with hadrons can provide a more detailed understanding of the topology of pQCD heavy quark production mechanisms. The correlation of electrons with hadrons can in addition be used to measure the relative contribution of charm and beauty decays to the measured yield of electrons from decays of heavy-flavour hadrons. The status of the mentioned correlation analyses will also be shown.

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