

Charm and beauty production and hadronization with the ALICE experiment

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Heavy-flavor quarks (charm and beauty) are produced in early partonic processes of high-energy collisions, thus they provide a unique opportunity to probe the entire evolution of the strongly interacting system. Heavy-flavor production in proton-proton collisions serves as fundamental benchmark for QCD calculations and flavor-dependent fragmentation in the mesonic and baryonic sector. Conversely, in heavy-ion collisions it allows for the detailed mapping of transport properties, collective motion and the thermalization of the hot nuclear matter. This contribution will summarize some of the most interesting recent results from the ALICE experiment. Among those we will show the cross-section of heavy-flavor (beauty and D^0 -tagged) jets, in pp collisions down to unprecedentedly low momenta, as well as the nuclear modification of b-jets in p-Pb, and D0-jets in Pb-Pb collisions at $\sqrt{s_{NN}}=5.02$ TeV. D-h correlations, addressing charm meson fragmentation at $\sqrt{s}=13$ TeV will also be shown. Comparison of the nuclear modification of non-prompt D^0 to that of prompt D^0 in Pb-Pb collisions at $\sqrt{s_{NN}}=5.02$ TeV, and the the first measurement of non-prompt D-mesons elliptic flow in Pb-Pb collisions will be presented. Heavy-flavor fragmentation into baryons challenges existing theoretical approaches. We present recent results of D^0 , D^+ and D_s^+ mesons as well as new final measurements of Λ_c^+ , $\Sigma_c^{0,+}$, $\Sigma_c^{0,++}$ and the first measurement of Ω_c^0 baryons, performed with the ALICE detector at midrapidity in pp collisions at $\sqrt{s}=5.02$ and $\sqrt{s}=13$ TeV. Furthermore, we also show new results on the charm fragmentation fractions at $\sqrt{s}=13$ TeV.

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