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Heavy-flavour production as a function of the event activity with ALICE

Thursday, 7 April 2022 16:00 (20 minutes)

Differential studies of heavy-flavour production as a function of the event charged-particle multiplicity provide insights into the role of multi-parton interactions on heavy-quark production, the relevance of color-reconnection mechanisms in heavy-quark hadronization, and the interplay of hard and soft processes in pp, p-Pb, and Pb-Pb collisions. A complementary approach on the above phenomena can be obtained by comparing the production of heavy-flavour particles in jet-like and isotropic events, as well as measuring their production as a function of the underlying event activity, which allows us to reduce possible auto-correlation effects. In addition, measurements of charm baryon-to-meson and strange to non-strange meson yield ratios provide a unique tool to investigate charm hadronization mechanisms and to explore if these mechanisms get modified as a function of the event multiplicity.

A comprehensive collection of new measurements on heavy-flavour particle production versus event activity and their comparison to model predictions will be presented. In particular, self-normalised yields of heavy-flavour particles in pp and p-Pb collisions will be presented. A systematic comparison of the results for the different particle species, and the separation of charm and beauty origins, allow us to shed further light on this topic. New measurements on D-meson production as a function of the event sphericity, as well as of the underlying-event activity, will also be discussed. The most recent developments and the final measurements about the Λ_c/D^0 and D_s^+/D^0 as a function of multiplicity in pp, p-Pb and Pb-Pb collisions will be presented. Final results of heavy-flavour decay muon elliptic-flow coefficient in high-multiplicity p-Pb collisions, and its comparison with models including initial-state effects, will also be discussed.

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