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# Event-activity dependence of heavy-flavor production at the ALICE experiment

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Heavy-flavor production at the LHC offers valuable tests of quantum chromodynamics calculations, owing to the large masses of heavy quarks. Measurements of charm production as a function of event activity reveal new features of charm production and fragmentation, providing insights to the interplay between soft and hard processes. In addition, charm production in heavy-ion collisions addresses flavor-dependent quark transport properties in both hot and cold nuclear matter, helping to clarify the roles of coalescence and fragmentation in heavy-flavor hadron formation.

In this contribution, we present recent measurements from the ALICE experiment on charm production as a function of charged-particle multiplicity in pp collisions at various energies, including measurements of the charm baryon-to-meson production yield ratios in pp, p–Pb and Pb–Pb collisions. New results of D0 production in pp collisions as a function of the transverse spherocity of the event, as well as of the transverse event-activity classifier RT, are also presented.

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