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Study of open heavy-flavour production and anisotropy in p-Pb collisions with ALICE

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Heavy quarks (charm and beauty) are primarily produced in hard-scattering processes with large momentum transfer due to their large masses. They are effective probes to study cold-nuclear-matter (CNM) effects such as gluon saturation, shadowing, k_T broadening and energy loss in CNM in p-Pb collisions. In recent years, effects ascribed to the collective expansion of the deconfined nuclear matter, the quark-gluon plasma (QGP) produced in Pb-Pb collisions, such as long-range flow-like correlations and the enhancement of baryon production, have also been observed at high multiplicity in small system (pp and p-Pb) collisions. The study of open heavy flavours in high-multiplicity p-Pb collisions provides important information to understand how the possible presence of collective effects could modify the production of heavy flavours.

In this contribution, the nuclear modification factors (R_{pPb} and Q_{pPb}) of D mesons measured with the ALICE detector via their hadronic decays at midrapidity in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be presented. The results provide a significant constraint on the nuclear-modified parton distribution function at small Bjorken- x . The elliptic flow of open heavy-flavour particle at mid and forward-rapidity in p-Pb collisions at $\sqrt{s_{NN}} = 8.16$ and 5.02 TeV will be discussed. Such studies are important to explore the origin of the collective-like effects observed in small systems. At final, the self-normalized yield of open heavy-flavour particle as a function of multiplicity in p-Pb collisions at $\sqrt{s_{NN}} = 8.16$ TeV, which provides a natural link between soft and hard processes that occur in the collision and allows one to study their interplay, will be discussed as well.

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