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Beauty production in pp and Pb–Pb collisions with ALICE

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Nuclear collisions provide an excellent opportunity to understand the properties of a strongly coupled deconfined medium *i.e.* the quark-gluon plasma (QGP), along with the production mechanism of heavy quarks (beauty or charm quarks). Beauty quarks are produced by hard parton scatterings in hadronic collisions and their production can be measured by the decay products of the B meson. In pp collisions, beauty production is an effective tool to test perturbative QCD (pQCD) calculations. In addition, pp collisions offer a baseline to study the Pb-Pb collisions which are important to investigate the energy loss dependence on the quark mass in a hot QCD medium as well as studying the sensitivity of bulk properties on quark diffusion constants.

In this talk, the beauty production will be discussed via the measurements of electrons and D mesons from beauty-hadron decays. In particular, their production cross sections and the extrapolated $b\bar{b}$ cross section per unit of rapidity at midrapidity, in pp collisions at $\sqrt{s}$ = 5.02 TeV, will be presented and compared with pQCD calculations. In addition, the non-prompt D^0 nuclear modification factor (R_{AA}) and elliptic flow of electrons from beauty-hadron decays in Pb-Pb collisions at $\sqrt{s_{NN}}$ = 5.02 will be discussed and compared with different theoretical models. Furthermore, future prospects will be presented for the J/ψ measurement from beauty hadron decays in contrast with the measurements from LHC Run 1 datasets.

Collaboration

ALICE

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