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Beauty production and anisotropy with ALICE at the LHC

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In hadronic collisions, beauty quarks are produced in hard scattering processes with large momentum transfer. Their production provides a very important test of perturbative QCD calculations in pp collisions. Measurements in p-Pb collisions are crucial to investigate the effects of cold nuclear matter on their production. In heavy-ion collisions, the measurement of beauty hadron production is a unique tool to investigate the properties of the quark-gluon plasma. In particular, beauty quarks, being four times heavier than charm quarks, can be utilised to study the in-medium mass dependent energy loss. Interaction with the medium pushes the heavy quarks towards thermalization, causing them to move along with the flow of the surrounding medium constituents. Measurement of the production anisotropy of particles coming from beauty-hadron decays can help quantify the effect of the interaction without the need of a reference measurement.

With the ALICE detector, beauty quarks are studied by measuring electrons and non-prompt D mesons coming from beauty hadron decays at mid-rapidity. A more direct access to the initial parton kinematics is obtained by measuring beauty-tagged jets. They can provide further constraints for energy loss models adding information on how the radiated energy is dissipated.

In this contribution, the latest measurements of beauty production using beauty-decay electrons, non-prompt D-mesons and beauty-tagged jets in pp collisions at $\sqrt{s}$ = 5.02 TeV, and their comparison to pQCD calculations will be presented. New measurements of beauty-tagged jet production down to low p_{T} in p-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV will be discussed. The latest results on the centrality dependence of R_{AA} and elliptic flow of beauty-decay electrons and non-prompt D mesons in Pb-Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV compared to different theoretical models will be presented.

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Secondary track (number)

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