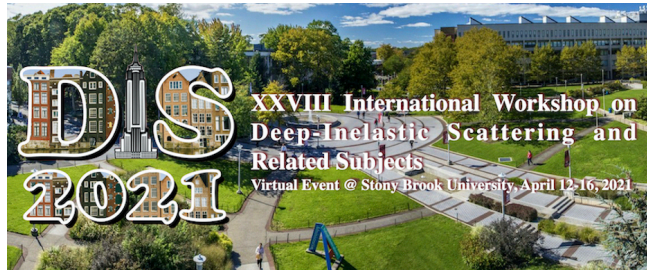


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Measurements of beauty-hadron production in pp and Pb–Pb collisions with ALICE

Wednesday, 14 April 2021 08:00 (18 minutes)

In hadronic collisions, beauty quarks are produced in hard-scattering processes with large momentum transfer. The production of hadrons containing beauty quarks provides a very important test of perturbative QCD calculations in pp collisions. The measurement of the production of beauty-strange mesons relative to that of beauty hadrons without strange-quark content is useful to study the fragmentation of beauty quarks into beauty mesons. Moreover, the measurement of beauty-hadron production in heavy-ion collisions is a unique tool to investigate the properties of the colour-deconfined medium created, the quark–gluon plasma (QGP). In particular, beauty quarks, being four times heavier than charm quarks, can be exploited to study the mass dependence of the in-medium energy loss.

In this contribution, the latest results about beauty-hadron production via non-prompt D^0 , D^+ , D_s^+ and J/ψ mesons, as well as beauty-decay electrons and dielectrons in pp collisions at a centre-of-mass energy of $\sqrt{s} = 5.02$ TeV, and their comparison to pQCD calculations will be presented. The ratio of the beauty-quark fragmentation fraction to strange beauty mesons and that to non-strange beauty mesons will be compared to the same quantity for the charm sector and to previous measurements in e^+e^- , $e^\pm p$, and $p\bar{p}$ collisions. The extrapolated $b\bar{b}$ cross section per unit of rapidity at midrapidity obtained from these measurements will be compared to pQCD calculations with next-to-leading order accuracy with all-order resummation of next-to-leading logarithms (FONLL) and with next-to-next leading order (NNLO) accuracy. Finally, the production of non-prompt D^0 mesons in Pb–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV will be compared to the one of prompt D^0 mesons and to different theoretical models.

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