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Substructures of heavy flavor jets in pp and Pb+Pb collisions at $\sqrt{s}$ = 5.02 TeV

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Groomed jet substructure measurements, the momentum splitting fraction z_g and the groomed jet radius R_g, for inclusive, D^0-tagged and B^0-tagged jets in pp and central Pb+Pb collisions at $\sqrt{s} = 5.02$ TeV are investigated. Theoretical results for light-quark initiated and gluon initiated jets are provided as references. Charged jets are constrained in a relative low transverse momentum interval $15 \leq p_{\mathrm{T}}^{\mathrm{jet\ ch}} < 30$ GeV/c where the QCD emissions are sensitive to mass effects. The mass hierarchy manifests in z_g distributions in both parton showering and jet quenching indicating steeper splitting functions of heavier partons. The competition between flavor effects and mass effects to emission-angle distributions is directly observed for the first time. In both pp and Pb+Pb collisions, the mass hierarchy in R_g of inclusive, D^0-tagged and B^0-tagged jets is broken due to contributions from gluon-initiated jets.

Theory / experiment

Theory

Group or collaboration name

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