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Flavor dynamics and partonic energy loss studies with b-jet shapes measurements in pp and PbPb collision data from CMS

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Measurements of jet constituent distributions for light- and heavy flavor jets are used successfully for experimental QCD studies with high energy pp collisions at the LHC. These studies are now extended to explore the flavor dependence of the jet quenching phenomenon. The jet quenching, one of the signatures of the quark-gluon plasma, is well established through experimental measurements at RHIC and LHC. However, the details of the expected dependence of jet-medium interactions on the flavor of the parton initiating the shower are not yet settled. This talk presents the first b jet shapes measurements from 5 TeV PbPb and pp collisions collected by the CMS. Comparisons made with jet shapes of inclusive jets, produced predominantly by light quarks and gluons, allow experimental observations of a “dead cone” effect in suppressing in-jet transverse momenta of constituents at small radial distance R from the jet axis. A similar comparison for large distances provides insights on the role of parton mass in the energy loss and possible mass-dependence of medium response.

In-person participation

Yes

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