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## Probing bottom quark mass effects in jet substructure with CMS using a novel technique to cluster the b-hadron decays

The study of jet substructure has given rise to a new era of precision quantum-chromodynamics (QCD) measurements related to the evolution of the parton shower. In order to better understand the role of the quark mass, the decay kinematics of the heavy flavor hadrons need to be isolated from the QCD branchings. This talk presents new CMS results on the groomed jet radius  $R_g$  and momentum balance  $z_g$  of bottom quark jets (b jets) in proton-proton collisions by employing a novel technique that partially reconstructs the b hadron from its charged-particle decay daughters. This approach provides direct access to the dead cone of the b quark for the first time. The jet fragmentation function, defined as the fraction of the charged-particle component of the transverse momentum of the jet held by the partially reconstructed b hadron is also presented. The results are compared to predictions from two Monte-Carlo generators, which show varying degrees of agreement.

### Secondary track

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