

Measurements of inclusive, boson-tagged, and heavy quark flavor jet energy loss in PbPb collisions at $\sqrt{s_{\text{NN}}} = 5.02$ TeV with the CMS detector

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To quantify parton-medium interactions in the presence of a hot-and-dense medium, jets are studied as a function of parton flavor. In particular, gluon initiated jets are expected to lose more energy than corresponding quark jets. Inclusive jets are produced with a high gluon fraction at LHC energies, while boson-tagged jets have a strong enhancement of light-quark initiated jets. Additionally, heavy flavor quark jets can be identified with b-tagging techniques, providing unique information on the impact of the quark mass in energy loss processes. In this talk, we present measurements of jet energy loss in jets back-to-back with a Z or photon tag. With a clean tag of initial parton momentum quantifying the magnitude of energy loss, we then study the angular redistribution of energy with inclusive jet shapes, heavy-flavor tagged jet shapes, and radial scan of nuclear inclusive jet modification factor. The implications of these measurements are discussed through comparisons of jet energy loss, redistribution, and the medium response as a function of the parton flavor.

Summary

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