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Identifying the onset of early-vacuum showers and medium-modified showers with the Lund jet plane in high- p_T jets with CMS

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Jets are powerful probes used to improve our understanding of the strong force at short distances. The radiation pattern of jets can be visualized via the Lund jet plane, a two-dimensional representation of the phase space of intrajet emissions using the splitting angle ΔR and the relative transverse momentum of the emission relative to the emitter k_T . The Lund jet plane allows for the separation of nonperturbative and perturbative effects in a modular fashion, allowing for strong constraints in MC event generators and for robust comparisons with first-principles QCD calculations. In heavy ion collisions, the Lund jet plane in addition can be used to obtain a spacetime picture of the evolution of the jet shower as it traverses the quark-gluon plasma created in the collision. In this talk, we discuss new CMS jet substructure measurements in pp and PbPb collisions based on the Lund jet plane representation in inclusive jets with a $p_{T,jet} > 200$ GeV.

Category

Experiment

Collaboration

CMS

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