Measuring medium-induced gluons via jet grooming

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The modifications of jets in heavy-ion collisions are manifest in many measurements. However, inclusive observables are generally susceptible to the quantum mechanical nature of interactions of the jet fragments with the medium. We argue that contemporary jet substructure techniques facilitate a more direct measurement of the radiative mechanism caused by medium interactions. As a concrete example, we focus on jet grooming using the "soft drop"procedure that singles out the two leading jet substructures with largest angular separation inside an energetic jet. The interplay between hard, quasi-collinear vacuum or medium-induced radiation within the reconstructed cone and soft, large-angle emissions that are responsible for out-of-cone energy flow is studied. We find an enhancement of the splitting function at small energy-fractions which is attributed to rare, relatively hard medium-induced gluon radiation affected by LPM interference with the quark-gluon plasma.

Preferred Track

Jets and High pT Hadrons

Collaboration

Not applicable

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