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Probing the dynamics of color coherence with energy correlators

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We present a novel approach to jet substructure in heavy-ion collisions formulated in terms of correlation functions of flux operators (energy correlators). This approach is based on the insight that the time scales in the jet's evolution are imprinted into the angular scales of the correlator spectra. We study the two-point correlator of an in-medium massless quark jet, showing its sensitivity to the resolution scale of the QGP: the energy scale at which in-medium emissions start to be resolved by the medium (color coherence). Our calculation incorporates vacuum radiation resummed at next-to-leading log accuracy together with the leading order contribution in medium-induced splittings evaluated through either the BDMPS-Z multiple scattering or the GLV single scattering framework.

Category

Theory

Collaboration (if applicable)

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