

Finite formation time effects for in-medium parton splittings

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We present a novel setup of an antenna splitting inside the medium taking into account the finite formation time of the dipole, which turns out to be an important scale. In particular, we consider the splitting of a color-singlet dipole, studying in detail its formation and subsequent propagation through the medium. We discuss the role of coherence and the relevant time scales which control this scenario, while also providing theoretical support for vacuum-like emissions early in the medium. We also discuss the generalization to arbitrary dipole color charge. Finally, by mapping the spectrum of in-medium splittings through the corresponding kinematical Lund diagram, we elicit regimes of a close correspondence to a semi-classical description and regimes where this description breaks down.

Summary

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