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Recent progress on the understanding of the medium-induced jet evolution and energy loss in pQCD

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Motivated by the striking modifications of jets observed both at RHIC and the LHC, significant progress towards the understanding of jet dynamics within QGP has occurred over the last few years. In this talk, I review the recent theoretical developments in the study of medium-induced jet evolution and energy loss within a perturbative framework. The main mechanisms of energy loss and broadening will be firstly addressed with focus on leading particle calculations beyond the eikonal approximation. Then, I will provide an overview of the modifications of the interference pattern between the different parton emitters that build up the parton shower when propagating through an extended coloured medium. I will show that the interplay between color coherence/decoherence that arises from such effects is the main mechanism for the modification of the jet core angular structure. Finally, I discuss the possibility of a probabilistic picture of the parton shower evolution in the limit of a very dense or infinite medium.

Summary

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