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## A generalized picture of colour decoherence in dense QCD media

One of the most striking modifications induced by the QGP on a QCD parton shower is the breaking of angular-ordering. This was established in a series of pioneering papers almost 15 years ago by studying the radiation pattern off a QCD antenna in the presence of a medium [1,2]. These effects were captured by a single critical angle solely depending on the medium properties. Constraining the values of  $\theta_c$ , and more generally the physics of colour decoherence, is one of the targets of the heavy-ion experimental program at the LHC.

In this talk, we will demonstrate that the notion of a critical angle that exclusively depends on the medium properties no longer holds after accounting for medium effects during the formation of the antenna. This generalisation of the results of Refs. [1,2] shows that each splitting in an in-medium parton shower experiences colour decoherence in a different fashion. In addition, the total rate of emissions is enhanced with respect to previous calculations. This result has important implications for the experimental quest of determining medium modifications to parton evolution, as well as in the formulation of in-medium parton showers.

[1] Phys. Rev. Lett. 106 (2011) 122002

[2] JHEP 08 (2011) 015

### Category

Theory

### Collaboration (if applicable)

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