

# 10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



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Type: Oral Presentation

## The problem of overlapping formation times: A complete result for QCD

*Wednesday, 3 June 2020 12:45 (20 minutes)*

The splitting processes of bremsstrahlung and pair-production in a medium are coherent over large distances in the high energy limit leading to a suppression known as the Landau-Pomeranchuk-Migdal (LPM) effect. Avoiding soft-emission approximations and working in the large- $N_c$  limit, we consider corrections to the LPM effect from cases where the coherence lengths of two consecutive splittings overlap. In this work, we present (i) complete results for the case of two overlapping gluon splittings (e.g.  $g \rightarrow gg \rightarrow ggg$  and virtual corrections to single splitting  $g \rightarrow gg^* \rightarrow ggg^* \rightarrow gg$ ) and (ii) confirm that earlier leading-log results for these effects are reproduced by our more-complete results in the appropriate soft limit. We also discuss how to combine the effects of overlapping real double splitting with the corresponding virtual corrections to single splitting in order to calculate IR-safe quantities such as in-medium energy loss.

### Collaboration (if applicable)

### Track

New Theoretical Developments

### Contribution type

Contributed Talk

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