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**Non-global structure of the  $\mathcal{O}(\alpha_s^2)$  dijet soft function.** (English) Zbl 1298.81390

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Summary: High energy scattering processes involving jets generically involve matrix elements of light-like Wilson lines, known as soft functions. These describe the structure of soft contributions to observables and encode color and kinematic correlations between jets. We compute the dijet soft function to  $\mathcal{O}(\alpha_s^2)$  as a function of the two jet invariant masses, focusing on terms that have a non-separable dependence on these masses and are not determined by the renormalization group evolution of the soft function. Our results include non-global single and double logarithms, and analytic results for the full set of non-logarithmic contributions as well. Using a recent result for the thrust constant, we present the complete  $\mathcal{O}(\alpha_s^2)$  soft function for dijet production in both position and momentum space.

**MSC:**

- 81V05 Strong interaction, including quantum chromodynamics
- 81U05 2-body potential quantum scattering theory
- 81T17 Renormalization group methods applied to problems in quantum field theory
- 81T80 Simulation and numerical modelling (quantum field theory) (MSC2010)

Cited in **1** Review  
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**Keywords:**

[jets](#); [NLO computations](#); [QCD](#)

**Software:**

[Hypexp](#)

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