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Groomed jet mass as a direct probe of collinear parton dynamics

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We study the link between parton dynamics in the collinear limit and the logarithmically enhanced terms of the groomed jet mass distribution, for jets groomed with the modified mass-drop tagger (mMDT). While the leading logarithmic structure is linked to collinear evolution with leading-order splitting kernels, here we derive the NLL structure directly from triple-collinear splitting functions. The calculation we present is a fixed-order calculation in the triple-collinear limit, independent of resummation ingredients and methods. It therefore constitutes a powerful cross-check of the NLL results derived using the SCET formalism and provides much of the insight needed for resummation within the traditional QCD approach.

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