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Dynamical grooming meets LHC data

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In this work, we analyse the all-orders resummation structure of the momentum sharing fraction, z_g , opening angle, θ_g , and relative transverse momentum, $k_{t,g}$, of the splitting tagged by the dynamical grooming procedure in hadronic collisions. We demonstrate that their resummation does not exponentiate and it is free of clustering logarithms. Then, we analytically compute the probability distributions of $(z_g, \theta_g, k_{t,g})$ up to next-to-next-to-double logarithm accuracy (N²DL) in the narrow jet limit, including a matching to leading order in α_s . On the phenomenological side, we perform an analytic-to-parton level comparison with Pythia and Herwig. We find that differences between the analytic and the Monte-Carlo results are dominated by the infra-red regulator of the parton shower. Further, we present the first analytic comparison to preliminary ALICE data and highlight the role of non-perturbative corrections in such low-pt regime. Once the analytic result is corrected by a phenomenologically determined non-perturbative factor, we find very good agreement with the data.

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