

Effective transverse momentum in multijet production at hadron colliders

Friday 29 April 2022 11:00 (30 minutes)

We consider the class of inclusive hadron collider processes in which one or more hard jets are produced, possibly accompanied by colourless particles (such as Higgs boson(s), vector boson(s) with their leptonic decays, and so forth). We propose a new variable that smoothly captures the $N+1$ to N jet transition. This variable, that we dub k_{Tness} , represents an effective transverse momentum controlling the singularities of the cross section when the additional jet is unresolved. The k_{Tness} variable offers novel opportunities to perform higher-order QCD calculations by using non-local subtraction schemes. We study the singular behavior of the $N+1$ -jet cross section when $k_{\text{Tness}} \rightarrow 0$ and, as a phenomenological application, we use the ensuing results to evaluate next-to-leading order corrections to H +jet and Z +2 jet production at the LHC. We show that k_{Tness} performs extremely well as a resolution variable and appears to be very stable with respect to hadronization and multiple-parton interactions.

Primary authors: SAVOINI, Chiara; GRAZZINI, Massimiliano (University of Zurich); BUONOCORE, Luca (University of Zurich); ROTTOLI, Luca; HAAG, Jürg (UZH)

Presenter: SAVOINI, Chiara

Session Classification: Parallel 7