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Collinear functions for QCD resummations

Tuesday 13 December 2022 11:45 (15 minutes)

Singular factors originating from the QCD factorisation of scattering amplitudes in soft and collinear limits play a prominent role in both organising and computing high-order perturbative contributions to hard-scattering cross sections. In this talk, I will report on recent work with eprint number 2208.05840. We start from the factorisation structure of scattering amplitudes in the collinear limit, and we introduce collinear functions that have a process-independent structure. These collinear functions, which are defined at the fully-differential level, can then be integrated over the appropriate observable-dependent phase space to compute logarithmically-enhanced contributions to the corresponding observable. For transverse-momentum dependent observables, we show how the collinear functions can be defined without introducing what is known as rapidity divergences in the literature. We present the results of explicit computations of the collinear functions up to next-to-next-to-leading order in perturbation theory.

Session

Heavy Ions and QCD

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