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From Underlying Event Sensitive To Insensitive: Factorization and Resummation

Friday, 21 December 2018 14:00 (15 minutes)

We study the transverse energy spectrum for the Drell-Yan process. The transverse energy is measured within the central region defined by a (pseudo-) rapidity cutoff. Soft-collinear effective theory (SCET) is used to factorize the cross section and resum large logarithms of the rapidity cutoff and ratios of widely separated scales that appear in the fixed order result. We develop a framework which can smoothly interpolate between various regions of the spectrum and eventually match onto the fixed order result. This way a reliable calculation is obtained for the contribution of the initial state radiation to the measurement. By comparing our result for Drell-Yan against Pythia we obtain a simple model that describes the contribution from multiparton interactions (MPI). A model with little or no dependence on the primary process gives results in agreement with the simulation. Based on this observation we propose MPI insensitive measurements. These observables are insensitive to the MPI contributions as implemented in Pythia and we compare against the purely perturbative result obtained with the standard collinear factorization.

Type

Parallel talk

Sessions (parallel only)

QCD

Primary author: KANG, Daekyoung (Fudan University)

Co-authors: MEHEN, Thomas (Duke University); MAKRIS, Yiannis (Los Alamos National Lab)

Presenter: KANG, Daekyoung (Fudan University)

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