SCET 2023



Contribution ID: 20

Type: not specified

Pure quark and gluon observables

Tuesday, 28 March 2023 10:00 (20 minutes)

One application of jet substructure techniques is to disentangle quark- and gluon-initiated jets. Previous studies mainly relied on the difference in the quark and gluon quadratic Casimirs that appear in Sudakov factors. In this talk, I construct a set of pure quark and gluon observables with the collinear drop grooming techniques, utilizing factorization formulas constructed using Soft-Collinear Effective Theory (SCET) which crucially include both perturbative and non-perturbative effects. For example, a gluon observable is constructed so as to give a vanishing distribution for any sample that has only quark jets, and a non-vanishing result for any process which can produce gluon jets. I will also show Monte Carlo simulation results for these observables and discuss how to remove the soft contamination from the underlying events.

Primary author: YAO, Xiaojun (University of Washington)
Co-author: STEWART, Iain (MIT)
Presenter: YAO, Xiaojun (University of Washington)
Session Classification: Session 5