

Measurement of jet substructure observables using the ATLAS detector

Monday, 15 July 2019 14:00 (20 minutes)

Theoretical calculations for jet substructure observables with accuracy beyond leading-logarithm have recently become available. Such observables are significant not only for probing a new regime of QCD at a hadron collider, but also for improving the understanding of jet substructure properties that are used in many searches for physics beyond the Standard Model. In this talk, we discuss a first measurement of such jet substructure quantities. The soft drop mass is measured in dijet events with the ATLAS detector at $\sqrt{s}=13$ TeV, unfolded to particle-level and compared to Monte Carlo simulations. We also present a measurement of substructure variables in $t\bar{t}$ and inclusive jet events, using data collected by the ATLAS experiment at $\sqrt{s} = 13$ TeV. The measurements are performed with large-radius jets. They are corrected for detector effects, represented as particle-level distributions and are compared to the predictions of various Monte Carlo event generators. If available, a measurement of jet substructure observables performed using charged particles, at $\sqrt{s} = 13$ TeV, is also presented. New event generator configurations for the modelling of jet production, derived using ATLAS data will also be presented.

Primary author: BERTRAM, Iain (Lancaster University)

Presenter: Prof. BERTRAM, Iain (Lancaster University)

Session Classification: Jets/Sub/Res

Track Classification: Jets/Substructure/Resummation