Contribution ID: **20** Type: **not specified**

Measurement of Jet Track Functions and their Renormalization Group Flows in ATLAS Run 2 Data

Friday 25 October 2024 13:10 (5 minutes)

Measurements of jet substructure are key to probing the energy frontier at colliders, and many of them use track-based observables which take advantage of the angular precision of tracking detectors. Theoretical calculations of track-based observables require "track functions", which characterize the transverse momentum fraction r_q carried by charged hadrons from a fragmenting quark or gluon. This work presents a direct measurement of r_q distributions in dijet events from the 140 fb^{-1} of $\sqrt{s} = 13$ TeV proton-proton collisions collected by the ATLAS detector. The data are corrected for detector effects using a machine learning-based method. The scale evolution of the moments of the r_q distribution provides direct access to non-linear renormalization group evolution equations of QCD, and is compared with analytic predictions. When incorporated into future theoretical calculations, these results will enable a precision program of theory-data comparison for track-based jet substructure observables.

Author: PAN, Jingjing (Yale University (US))

Presenter: PAN, Jingjing (Yale University (US))

Session Classification: Poster Session