

ATLAS QCD jet measurements

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This talk discusses recent QCD jet measurements from the ATLAS experiment at the LHC collider using proton–proton collisions at 13 TeV. The first measurement deals with the cross-section ratios between several inclusive jet multiplicity configurations (2,3,4,5 jets configurations). The ratio for three to two jet production, R_{32} , provides sensitivity to strong coupling parameters. The higher ratios (R_{43} , R_{42} and R_{54}) are measured for the first time experimentally to serve as a reference for future theoretical developments of high-precision QCD predictions with high jet multiplicities. Second, the Lund subjet multiplicities measurement is discussed to probe and test the current and future parton shower MC algorithms. The third measurement deals with the transverse energy-energy correlation TEEC and its azimuthal asymmetry ATEEC. This measurement is used for the strong coupling parameter extraction to probe QCD prediction at the TeV scale. The extraction profits from new state-of-the-art NNLO pQCD calculations significantly reduce theoretical uncertainty. The final measurement focuses on event isotropies in multijet events as new and generalized event-shape observables, allowing new possibilities for investigating QCD radiation and new opportunities for MC tuning.

Author: ZAPLATILEK, Ota

Presenter: ZAPLATILEK, Ota