

# Precision measurements of multijet production with the ATLAS experiment

*Thursday 18 July 2024 15:00 (15 minutes)*

The production of jets at hadron colliders provides stringent tests of perturbative QCD. The latest measurements by the ATLAS experiment are presented in this talk, using multijet events produced in the proton-proton collision data at  $\sqrt{s} = 13$  TeV delivered by the LHC. Jet cross-section ratios between inclusive bins of jet multiplicity are measured differentially in variables that are sensitive to either the energy-scale or angular distribution of hadronic energy flow in the final state. Several improvements to the jet energy scale uncertainties are described, which result in significant improvements of the overall ATLAS jet energy scale uncertainty. The measurements are compared to state-of-the-art NLO and NNLO predictions, and used to determine the strong-coupling constant. A measurement of new event-shape jet observables defined in terms of reference geometries with cylindrical and circular symmetries using the energy mover's distance is highlighted.

## Alternate track

### I read the instructions above

Yes

**Primary authors:** DELIOT, Frederic (Université Paris-Saclay (FR)); POLACEK, Stanislav (Charles University (CZ))

**Presenter:** POLACEK, Stanislav (Charles University (CZ))

**Session Classification:** Strong interactions and Hadron Physics

**Track Classification:** 06. Strong Interactions and Hadron Physics