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Hadronic Reconstruction with the ATLAS Detector at the LHC

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Jet and Missing transverse momentum (MET), used to infer the presence of high transverse momentum neutrinos or other weakly interacting neutral particles, are two of the most important quantities to reconstruct at a hadron collider. They are both used by many searches and measurements in ATLAS. New techniques combining calorimeter and tracker measurements, called Particle Flow and Unified Flow, have significantly improved the reconstruction of both transverse momentum and jet substructure observables. The procedure of reconstructing and calibrating ATLAS Anti-kt $R=0.4$ and $R=1.0$ jets using in situ techniques is presented. The reconstruction and performance in data and simulation of the MET obtained with different class of jets and different pile-up suppression schemes, including novel machine learning techniques, are also presented.

In-person participation

Yes

Primary author: ATLAS COLLABORATION**Presenter:** DELSART, Pierre-Antoine (LPSC (CNRS/IN2P3))**Session Classification:** Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors**Track Classification:** Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors