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74 - IN SITU MEASUREMENTS OF THE ATLAS JET ENERGY RESOLUTION USING 13 TeV PP DATA

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The quarks and gluons produced in proton-proton collisions form collimated sprays of particles, known as jets. They are produced at a very high rate at the Large Hadron Collider (LHC, at CERN in Geneva, Switzerland) and thus are part of almost all interesting pp collision analyses. Due to the complex structure of jets, only a part of their energy can be measured directly in the ATLAS detector. A sophisticated calibration chain is used to correct the energy scale of a jet to that of the initial quark or gluon. An important part of this calibration is to understand the typical range of energy values a given jet can deposit in the detector. This quantifies the Jet Energy Resolution (JER) and is studied in situ by two analyses which are then inputs to a statistical combination. The first analysis measures the JER of anti-k_t R = 0.4 jets with transverse momenta up to 1.5 TeV by using well-balanced dijet systems, the second measures the effect of overlapping scattering events - known as pile-up - and detector noise on the JER. This poster focuses on the latter effects, which dominate the JER at low transverse momenta. The expected contribution to the JER from pile-up is extracted from zero-bias data by using the random cones method; the detector noise is estimated in a dedicated Monte Carlo sample with no underlying pile-up activity.

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