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Response of the ATLAS Tile Calorimeter to single isolated charged hadrons

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The response of the ATLAS hadronic Tile Calorimeter to single isolated charged hadrons is probed analysing of LHC proton-proton collisions data at $\sqrt{s} = 13$ TeV collected in 2017 and corresponding to an integrated luminosity of 144.9 pb⁻¹. The calorimeter response is determined as the ratio of the energy deposited in the calorimeter (E) divided by the momentum measured in the ATLAS Inner Detector (p). The average of E/p measured in data is 0.5896 ± 0.0001 (stat), compared to an expected value of 0.593 ± 0.001 (stat) obtained using Pythia8 simulated multijet events. A good agreement between experimental and simulated results is observed confirming the goodness of the calorimeter energy calibration at the EM scale.

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