

Performance of the ATLAS Tile Calorimeter

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The ATLAS Tile hadronic calorimeter (TileCal) provides highly-segmented energy measurements of incoming particles. It is a key detector for the measurement of hadrons, jets, tau leptons and missing transverse energy. It is also useful for identification and reconstruction of muons due to good signal to noise ratio. The calorimeter consists of thin steel plates and 460,000 scintillating tiles configured into 5000 cells, each viewed by two photomultipliers. The calorimeter response and its readout electronics is monitored to better than 1% using radioactive source, laser and charge injection systems. The calibration and performance of the calorimeter have been established through test beam measurements, cosmic ray muons and the large sample of proton-proton collisions acquired in 2011 and 2012. Results on the calorimeter performance are presented, including the absolute energy scale, timing, noise and associated stabilities. The results demonstrate that the Tile Calorimeter has performed well within the design requirements and it has given essential contribution to reconstructed objects and physics results. In addition, the data quality procedures used during the LHC data-taking are shown and the outcome from the detector consolidation in the maintenance period is also presented.

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