

# Performance and optics robustness of the ATLAS Tile hadronic calorimeter

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The Tile Calorimeter (TileCal) is the central hadronic calorimeter of the ATLAS detector at the Large Hadron Collider (LHC) at CERN. It plays an important role in the reconstruction of jets, hadronically decaying tau leptons and missing transverse energy, and also provides information to the dedicated calorimeter trigger. This sampling calorimeter is composed by the plastic scintillating tiles and steel absorbers. The scintillating light from the tiles defining around 5000 cells is read-out by the wavelength shifting fibres coupled to 9852 photomultiplier tubes (PMTs).

The dedicated calibration systems are used to monitor and calibrate each stage of the signal production from scintillation light to the signal reconstruction. A Cesium radioactive source assesses the response of the whole detector, a laser system provides controlled light pulses to monitor the PMTs and the front-end electronics is calibrated through charge injection. Besides, the integrated cells's signals from minimum bias events provide auxiliary information on the response stability from the whole detector during proton-proton collisions.

In this presentation, the calibration and performance of TileCal using the LHC Run 3 will be presented, and the plastic scintillators' light output loss due to integrated dose will be discussed.

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