

Calibration and Performance of the ATLAS Tile Calorimeter during the run 2 of the LHC

Thursday, May 25, 2017 2:18 PM (18 minutes)

The Tile Calorimeter (TileCal) is a hadronic calorimeter covering the central region of the ATLAS experiment at the LHC.

It is a non-compensating sampling calorimeter comprised of steel and scintillating plastic tiles which are read-out by photomultiplier tubes (PMTs).

The TileCal is regularly monitored and calibrated by several different calibration systems:

a Cs radioactive source that illuminates the scintillating tiles directly, a laser light system to directly test the PMT response, and a charge injection system (CIS) for the front-end electronics.

These calibrations systems, in conjunction with data collected during proton-proton collisions, provide extensive monitoring of the instrument and a means for equalizing the calorimeter response at each stage of the signal propagation.

The performance of the calorimeter and its calibration has been established with cosmic ray muons and the large sample of the proton-proton collisions to study the energy response at the electromagnetic scale, probe of the hadronic response and verify the calorimeter time resolution.

This contribution presents a description of the different TileCal calibration systems with the latest results on their performance and the results on the calorimeter operation and performance during the LHC Run 2.

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Session Classification: R1-Calorimeters(5)

Track Classification: Calorimeters