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Laser calibration of the ATLAS Tile Calorimeter for LHC run-2

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We present in this contribution the new system for laser calibration of the ATLAS hadronic calorimeter TileCal. The laser system is a part of the three stage calibration apparatus designed to compute the calibration constants of the individual cells of TileCal. The laser system is mainly used to correct for short term (one month) drifts of the readout of the individual cells. A sub-percent accuracy in the control of the calibration constants is required to keep the systematics effects introduced by relative cell miscalibration below the irreducible systematics in determining the parameters of the reconstructed hadronic jets. To achieve this goal in the LHC run II conditions, a new laser system was designed. The architecture of the system is described with details on the new optical line used to distribute laser pulses in each individual detector module and on the new electronics used to drive the laser, to readout the system optical monitors and to interface the system with the Atlas readout, trigger, and slow control. The LaserII system has been fully integrated into the framework used for measuring calibration constants and for monitoring data quality. The Tile Unified Calibration Software (TUCS) was made ready to handle the new data format output from LaserII. First results on the laser system performances studied during its commissioning period are also presented.

Collaboration

ATLAS Tile Calorimeter System

Primary author: Mr VAN WOERDEN, Marius Cornelis (CERN)

Presenter: Mr VAN WOERDEN, Marius Cornelis (CERN)

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