

# Calibration System of the ATLAS Tile Calorimeter and its Upgrade for HL-LHC

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The Tile Calorimeter (TileCal) is a sampling hadronic calorimeter covering the central region of the ATLAS experiment, with steel as absorber and plastic scintillators as active medium. The scintillators are read-out by the wavelength shifting fibres coupled to the photomultiplier tubes (PMTs). The analogue signals from the PMTs are amplified, shaped, digitized by sampling the signal every 25 ns and stored on detector until a trigger decision is received. The TileCal front-end electronics reads out the signals produced by about 10000 channels measuring energies ranging from about 30 MeV to about 2 TeV. Each stage of the signal production from scintillation light to the signal reconstruction is monitored and calibrated. This contribution focuses on the TileCal calibration system, which includes Cesium radioactive source, laser, charge injection elements and an integrator-based readout system. It will also discuss the upgrade of the current laser system for the high luminosity (HL)-LHC. A summary of the latest calibration results during LHC Run-3 and a preliminary performance study of the new components of the laser system will be presented.

## Collaboration

TileCal (ATLAS)

## Role of Submitter

The presenter will be selected later by the Collaboration

**Autori principali:** FLORIS, Viola (Università di Pisa / INFN); FLORIS, Viola

**Relatore:** FLORIS, Viola (Università di Pisa / INFN)

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