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The ATLAS Tile Calorimeter: Commissioning and Preparation for Collisions

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Summary

The ATLAS tile calorimeter is designed to measure the energy of hadron showers in the region of pseudo-rapidity up to $\eta=1.7$ and is in charge of providing excellent hermiticity in this region, to allow for detection of missing energy due to escaping massive weakly interacting particles. The ATLAS tile calorimeter is made of steel absorbers, alternated with scintillating tiles, read out by wave length shifting fibers and photo-multiplier tubes. The ATLAS tile calorimeter incorporates three different calibration systems, that allow to separately calibrate the response of i) the scintillating tiles, ii) the photo-tubes and iii) the front end electronics. The calibration systems also allow a precise timing of the data acquisition in preparation for collisions.

The ATLAS tile calorimeter assembly in the underground ATLAS cavern was completed in 2006. Since then all calorimeter services have been installed, and all front end electronics have been tested and commissioned on site. The tile calorimeter is now completely operated from the ATLAS surface control room and has been used to acquire large data sets of cosmic rays used to test the stability of operation and to validate the data acquisition system, remote detector control systems, data quality monitoring and offline data processing. Results of the nearly completely commissioned tile calorimeter are shown as well as the outcome of the first operations with cosmic rays. The status of the calibration systems and first calibration results are also shown.

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