

Study of TileCal scintillators irradiation using the Minimum Bias integrators

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The Tile Calorimeter (TileCal) is the central hadronic calorimeter of the ATLAS experiment at the LHC. It provides precise measurements of hadrons, jets, taus and missing transverse energy. The monitoring and calibration of the calorimeter response at each stage of the signal development is allowed by a movable ^{137}Cs radioactive source, a laser calibration system and a charge injection system. Moreover, during the LHC data taking, an integrator based readout provides the signals coming from inelastic proton-proton collisions at low momentum transfer (minimum bias currents) and allows to monitor the instantaneous ATLAS luminosity as well as the response of calorimeter cells. Minimum bias currents have been used to detect and quantify the effect of TileCal scintillators irradiation using the data taken in 2012 and 2015, and that corresponds to about 21 fb^{-1} and 4 fb^{-1} of integrated luminosity. Finally, the response variation for an irradiated cells has been studied combining the information from three calibration systems (cesium, laser and minimum bias). The result of the irradiation on the Tile calorimeter response will be reported.

Summary

Submitted on behalf of the ATLAS Tile Calorimeter Speaker Committee. Final choice of the presenter will be communicated after the Abstract Acceptance Notification

Primary author: FISCHER, Cora (Universitat Autònoma de Barcelona (ES))

Co-authors: CALVET, David (Univ. Blaise Pascal Clermont-Fe. II (FR)); FIORINI, Luca (Istituto de Fisica Corpuscular (ES))

Presenter: FISCHER, Cora (Universitat Autònoma de Barcelona (ES))

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