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Irradiation effect on the response of the scintillators in the ATLAS Tile Calorimeter

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The Tile Calorimeter (TileCal) is the central hadronic calorimeter of the ATLAS experiment at the LHC. Together with other calorimeters, it provides precise measurements of hadrons, jets, taus and missing transverse energy. The monitoring and equalisation 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 during 2012 that corresponds to about 21 fb^{-1} of integrated luminosity. Moreover, the response variation for an irradiated cell has been studied combining the information from three calibration systems (cesium, laser and minimum bias).

The result of the irradiation on the calorimeter response will be reported.

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