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LHCf experiment: physics results

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LHCf is an experiment designed to study the very-forward emission of neutral particles produced in proton-proton and proton-nucleus collisions at the LHC. The detectors consists of a pair of electromagnetic sampling calorimeters installed on both sides of the ATLAS interaction point IP1 at a distance of 140 m, covering the pseudorapidity range from 8.6 to infinity. The experiment has successfully measured the energy spectra of gamma rays, neutral pions and neutrons in p-p collisions at 0.9 TeV and 7 TeV, and of neutral pions in p-Pb collisions at 5.02 TeV and in p-p collisions at 2.76 TeV. The most recent data set has been acquired during a special physics run of p-p collisions at 13 TeV in June 2015 after the restart of the LHC. This set of measurements represent an useful contribution to the calibration and tuning of the hadronic interaction models used for the simulation of atmospheric showers induced by very-high energy cosmic rays, as the measured energy interval corresponds to the range 10^{14} - 10^{17} eV in the laboratory frame.

Primary author: BONGI, Massimo (FI)

Presenter: BONGI, Massimo (FI)

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