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Overview of the latest physics results of the LHCf experiment

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The LHC-forward (LHCf) experiment, situated at the LHC accelerator, has measured neutral particles production in a very forward region (pseudo-rapidity $\eta > 8.4$, including zero degree) in proton-proton and proton-lead collisions.
The main purpose of the LHCf experiment is to test the hadronic interaction models used in ground based cosmic rays experiments to simulate cosmic rays induced air-showers in the Earth atmosphere.

The experiment is composed of two independent detectors located at 140 metres from the ATLAS interaction point (IP1) on opposite sides along the beam axis; each detector is composed by two sampling and position sensitive calorimeters.

In this talk, the latest physics results compared with the predictions of DPMJET, EPOS, PYTHIA, QGSJET and SIBYLL event generators will be presented.
In particular, the transverse and longitudinal momentum spectra of neutral pions in different rapidity regions in p-p and p-Pb collisions (at $\sqrt{s}$ = 2.76, 7 TeV and $\sqrt{s_{NN}}$ = 5.02 TeV, respectively), and the photon and neutron inclusive energy spectra in p-p collisions at 13 TeV will be shown.

Relevant topics

cosmic ray

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