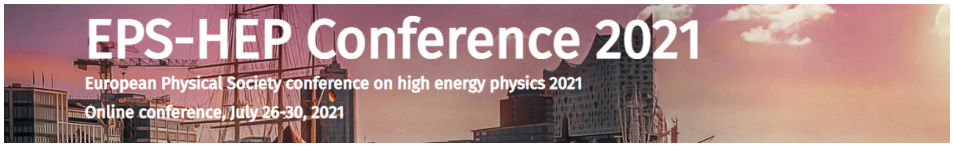

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Results from the LHCf Run II in proton-proton collisions at $\sqrt{s}$ = 13 TeV

Thursday 29 July 2021 10:45 (15 minutes)

The LHCf experiment, at the Large Hadron Collider (LHC), consists of two small independent calorimeters placed 140 metres away, on opposite sides of the ATLAS interaction point (IP1). LHCf has the capability to measure zero-degree neutral particles, covering the pseudorapidity region above 8.4. By measuring the very-forward particle production rates at the highest energy possible at an accelerator, LHCf aims to improve our understanding of hadronic interactions in air-showers induced by ultra-high-energy cosmic rays in the atmosphere.
This contribution will highlight recent results from Run II measurements with p-p collisions at 13 TeV. First, I will show our neutron energy spectrum measurements, for several pseudorapidity regions, and compare them to the predictions of various hadronic interaction models. From these measurements, we have also extracted the average inelasticity of the collisions, which strongly affects the development of an air-shower. I will then present our ^{0} Feynman-x and transverse momentum spectra, which affect the development of the electromagnetic component of an air-shower, and also compare them to model predictions. Finally, I will discuss the advantages of an ATLAS-LHCf combined analysis, and show a preliminary energy spectrum of very-forward photons produced in diffractive collisions as tagged by ATLAS.

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Collaboration / Activity

LHCf

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