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Contributions of diffraction on the forward particle production in \sqrt{s} = 13 TeV proton-proton collisions with ATLAS-LHCf detectors

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Collider experiment is an efficient way to verify and improve the hadronic interaction models. Abundant of energy flow in the forward region of the collisions are believed to have large influence to the development of air-shower. LHCf is the experiment dedicate to verify the hadronic interaction models by measuring the forward neutral particle production at the LHC. According to the LHCf results, no simulation model can predict the LHCf data perfectly. Thus, it is necessary to classify the LHCf observables into specific interaction types; diffraction and non-diffraction. Several Monte Carlo simulation samples in p-p collisions at \sqrt{s} = 13 TeV were analyzed for studying the presence of differences among specific interaction types on the LHCf observables. Combining the information of ATLAS, LHCf can identify these specific interaction types experimentally, especially, the low mass diffraction. LHCf and ATLAS have succeed the common data-taking in p-p collisions at \sqrt{s} = 13 TeV. If the we finish the necessary review progresses, the recent joint analysis result will be reported.

Relevant topics

Cosmic ray, Hadronic interactions, Diffraction

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