

An automatic pipeline for very high-energy gamma-ray data analysis: Application to ASTRI simulations.

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Abstract

With the evolution of very high-energy (VHE) gamma-ray astronomy, new tools for data analysis are being developed. One of these new tools is Gammapy, a python-package for gamma-ray analysis. In this contribution we will present the preliminary status of an automatic Gammapy-based pipeline able to handle complex regions including multiple point-like and extended gamma-ray sources. This pipeline is being developed with the aim of becoming a public tool for VHE analysis. So far, it has been applied and tested for the ASTRI Mini-Array, a Cherenkov telescope array currently under construction at the Teide Observatory that will consist of nine Cherenkov telescopes, each of them with a diameter of 4.3 metres. In this contribution, the results of the first tests performed using a dedicated set of ASTRI Mini-Array simulations will be presented. A $19^\circ \times 7^\circ$ area around the Cygnus constellation was chosen in order to optimise the pipeline, since this is one of the most crowded and complex Galactic regions at energies above 1 TeV. The simulated region includes 8 point-like and 6 extended sources, in addition to the diffuse emission in the field of view.

My poster in zenodo.org can be found at <https://zenodo.org/records/13907319>