

Contribution ID: 1250

Type: Poster

Unlocking the potential of gamma-ray astronomy with Gammapy: current status and roadmap

The Gammapy library is an open-source framework designed for gamma-ray astronomy data analysis. Built on the scientific Python ecosystem and leveraging open data formats, Gammapy offers a uniform platform for reducing and modeling data from different high-energy instruments. It greatly facilitates interoperability between observatories, enabling comprehensive joint analyses. Initiated in 2014 as a toolbox for TeV analysis, Gammapy has evolved over the past decade into a robust and versatile tool with a growing community of users and is now the basis of the CTAO science analysis tools. In addition it is also an official tool being used in the H.E.S.S and MAGIC collaborations.

In this contribution, we present the main concepts and features of the library and expose the variety of scientific use cases it supports. We will then highlight recent milestones and achievements, such as enhanced support for all-sky instruments like Fermi-LAT, HAWC, and SWGO, improved support for timing analysis and the introduction of Bayesian analysis frameworks (e.g. nested sampling). Finally, we discuss future perspectives and the roadmap towards version 2.0.

Collaboration(s)

Gammapy team

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Session Classification: PO-2

Track Classification: Gamma-Ray Astrophysics