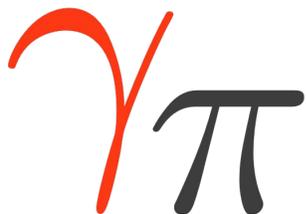# OSCARS
Open Science Clusters' Action for Research & Society

Funded Project

FAIRGamma

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Implemented by

A **Python** package for
gamma-ray astronomy

What problem(s) did you plan to solve?

- [Gammapy](#) aims to analyse Very-High-Energy gamma-ray data and to be used for multi-wavelength and multi-messenger data analysis
- Gammapy is an open research library built by a community and beyond
- It is mature library already used for many scientific publications

But: our products lack proper FAIR information
One must respect the FAIR4RS principles

- Management of input data respecting more or less the FAIR principles
- Production of (FA)IR astrophysics products
- Introduction of the concept of Provenance into final products

What have you done to solve the problem?

- Within Gammapy
  - Creation of a roadmap about the FAIRisation of Gammapy ([Project #13](#))
  - Design of a scheme for the metadata handling ([PIG #25](#))
    - Clear development plan
- In the community-driven projects about data formatting
  - Strong implication into the Data Model group of CTAO
  - Leading the Archive group of H.E.S.S.
  - Leading the VODF project ([Very-high-energy Open Data Format](#))
    - Towards the creation of FAIR data, that Gammapy will process

What are the key results achieved to date and how have you made them available to the broader community?

- Addition of the context and fixity metadata (PR 4837, 4993, 5076, 5081, 5457, 5875)
- About to finalize the separation of the internal data model and the one of the input data ([project #7](#))
- Creation of internal metadata classes
- Design of the concept of "metadata reduction"
- Metadata format under finalization for the `[Datasets](#)`, including some minimal Provenance information

- Finalised new features are available in Gammapy v2.0.1
  - DOI [10.5281/zenodo.17814297](#), SWHID swh:1:dir:9122cfdf666f9a25514fcccd823bcb604782aa02
  - The next release, v2.1, planned for end of March

How will make your results sustainable over time - How will the scientific community/-ies further exploit them?

- Sustainability
  - Design with format-specific serialiser registry to allow easy addition of new formats
  - Unitary testing and validation to guarantee long term support
  - Constant training of new developers allowing a long-term maintainability

- Exploitation
  - Gammapy users able to search and access data stored into the Virtual Observatory
  - Gammapy products generated by physicists (and students) will be (FA)IR, permitting a direct publication with only minor data curation (user's credential, licence, DOI)
    - The data Findability and Accessibility is always up to the users
  - Publishable Gammapy products will contain Provenance
    - High reusability and trustability of the astrophysical products

Who has been doing it?

- Bruno Khélifi, Gammapy Project Manager
- Rrégis Terrier, Gammapy Lead Developer
- Marie-Sophie Carrasco,
  OSCARS post-doctoral position (since Feb.)
- Kirsty Feijen,
  CNRS post-doctoral position
- With the support of the whole Gammapy team

Gammapy 2025 Coding Sprint,La Laguna (Tenerife)