

Open high-level data formats and software for gamma-ray astronomy

Christoph Deil^{1,a)}, Jeremy Perkins¹², Catherine Boisson³, Johannes King¹, Peter Eger¹, Michael Mayer⁶, Matthew Wood¹³, Victor Zabalza¹⁵, Jürgen Knödlseider¹¹, Tarek Hassan¹⁰, Lars Mohrmann⁵, Alexander Ziegler⁵, Bruno Khelifi⁴, Daniela Dorner⁵, Gernot Maier⁷, Giovanna Pedaletti⁷, Jaime Rosado¹⁰, José Luis Contreras¹⁰, Julien Lefaucheur³, Kai Brügge⁵, Mathieu Servillat³, Régis Terrier⁴, Roland Walter⁸ and Saverio Lombardi¹⁴

^{a)}Corresponding author: Christoph.Deil@mpi-hd.mpg.de

¹*MPIK, Heidelberg, Germany*

²*NASA/GSFC, USA*

³*LUTH, Observatoire de Paris, Meudon, France*

⁴*APC, University of Paris 7, France*

⁵*FAU, Erlangen, Germany*

⁶*Humboldt University, Berlin, Germany*

⁷*DESY, Zeuthen, Germany*

⁸*Observatoire de Genève, 51 chemin des Maillettes, 1290 Sauverny, Switzerland*

⁹*Universidad Complutense de Madrid*

¹⁰*Institut de Física d'Altes Energies (IFAE), The Barcelona Institute of Science and Technology, Campus UAB, 08193 Bellaterra (Barcelona) Spain*

¹¹*IRAP, Toulouse, France*

¹²*NASA/GSFC*

¹³*SLAC National Accelerator Laboratory*

¹⁴*INAF, Osservatorio Astronomico di Roma, via Frascati 33, 00040 Monte Porzio Catone (Roma), Italy*

¹⁵*University of Leicester, UK*

Abstract. In gamma-ray astronomy, a variety of data formats and proprietary software exist, often developed for one specific mission or experiment. Especially for ground-based imaging atmospheric Cherenkov telescopes (IACTs), data and software have been so far mostly private to the collaborations operating the telescopes. However, there is a general movement in science towards open data and software and the next big IACT array, the Cherenkov Telescope Array (CTA), will be operated as an open observatory.

We have created a Github organisation at <https://github.com/open-gamma-ray-astro> where we are developing high-level data format specifications. A public mailing list was set up at <https://lists.nasa.gov/mailman/listinfo/open-gamma-ray-astro> and a first face-to-face meeting on the IACT high-level data model and formats took place in April 2016 in Meudon (France). The hope is that this open multi-mission effort will help to accelerate the development of open data formats and open-source software for gamma-ray astronomy, leading to synergies in the development of analysis codes and eventually better scientific results (reproducible, multi-mission). This poster will summarize what we have done so far, and has the goal to solicit comments and future contributions from the gamma-ray astronomy community.

Introduction

TODO: write introduction.

Example references: [1] and [2].

ACKNOWLEDGMENTS

The reference section will follow the “Acknowledgment” section. References should be numbered using Arabic numerals followed by a period (.) as shown below, and should follow the format in the below examples.

REFERENCES

- [1] A. Donath, C. Deil, M. P. Arribas, J. King, E. Owen, R. Terrier, I. Reichardt, J. Harris, R. Bühler, and S. Klepser, ArXiv e-prints September (2015), arXiv:1509.07408 [astro-ph.IM] .
- [2] J. Knödlseider, M. Mayer, C. Deil, J.-B. Cayrou, E. Owen, N. Kelley-Hoskins, C.-C. Lu, R. Buehler, F. Forest, T. Louge, H. Siejkowski, K. Kosack, L. Gerard, A. Schulz, P. Martin, D. Sanchez, S. Ohm, T. Hassan, and S. Brau-Nogué, ArXiv e-prints June (2016), arXiv:1606.00393 [astro-ph.IM] .



Data formats for gamma-ray astronomy

A place to propose and share data format descriptions for gamma-ray astronomy.

- Repository: <https://github.com/open-gamma-ray-astro/gamma-astro-data-formats>
- Docs: <https://gamma-astro-data-formats.readthedocs.io/>
- Mailing list: <https://lists.nasa.gov/mailman/listinfo/open-gamma-ray-astro>

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- [OGIP 1D spectrum data formats](#)
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FIGURE 1. Purpose; Gamma-ray data producers and consumers.



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FIGURE 2. Webpage

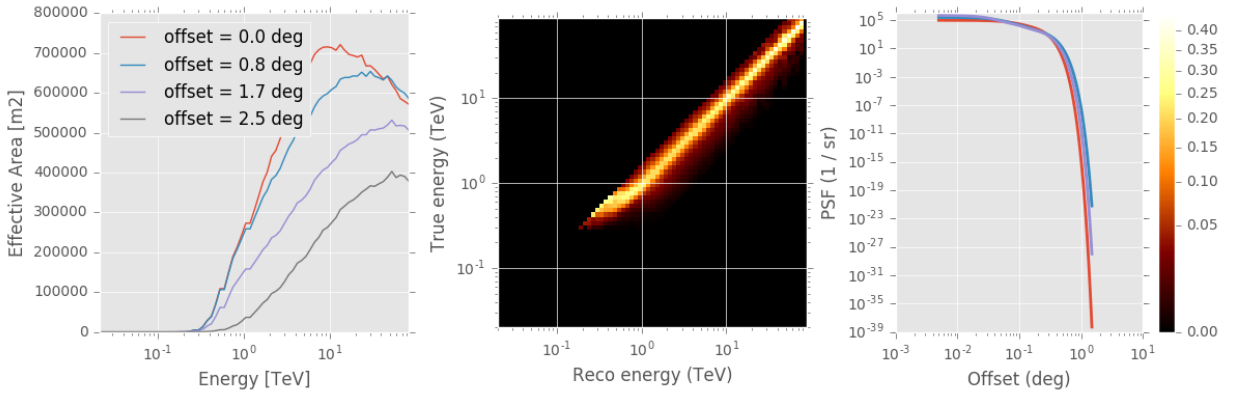


FIGURE 3. Low-level example: IACT DL3

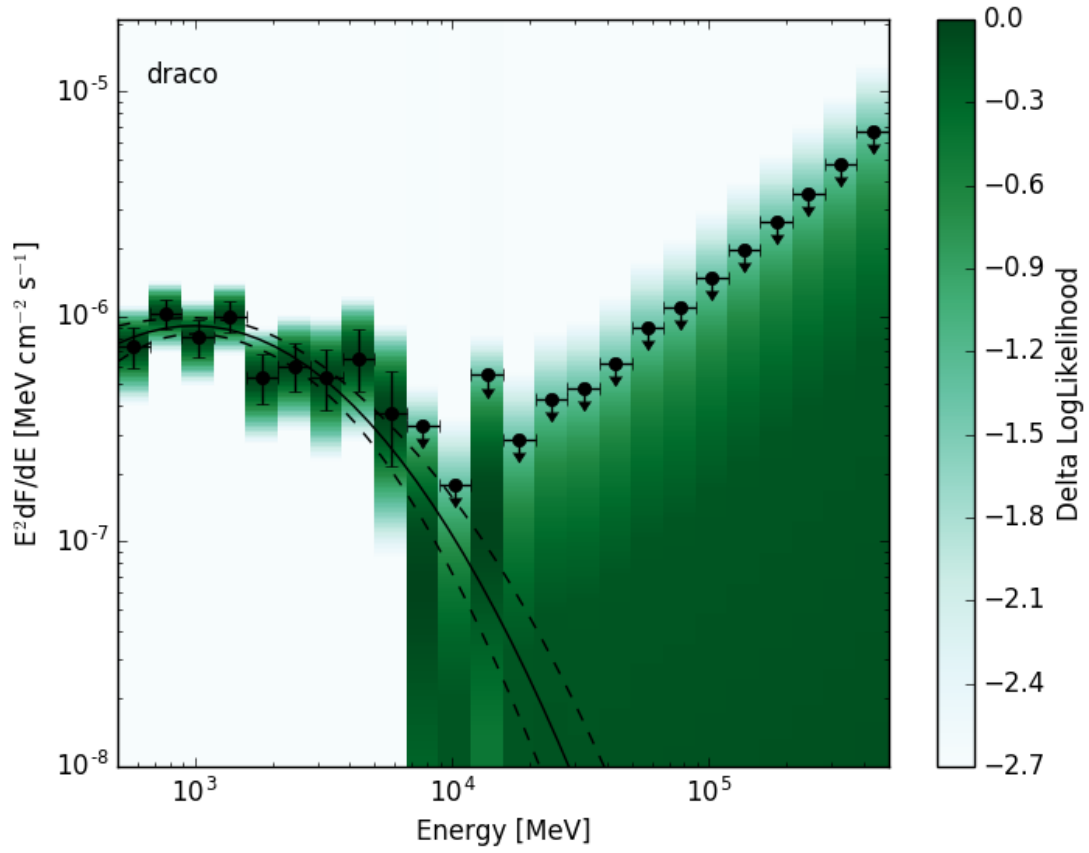


FIGURE 4. High-level example: SED likelihood profiles