Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

PhD in High-Energy Astrophysics
Data Analysis Software for the Compton Spectrometer and Imager (COSI)

Project & Team

Join the Julius-Maximilians-University Würzburg (Germany) to develop open-source data analysis software for NASA's Compton Spectrometer and Imager (COSI), a Small Explorer mission launching in 2027. COSI will survey the MeV sky (0.2–5 MeV) with high spectral resolution using 16 high-purity germanium strip detectors and a wide field of view (∼25% of the sky).

Your Role

As a PhD student you will **develop and apply software tools for the analysis of COSI data**, with a focus on *polarisation studies*. Your work will include:

- Extending `cosipy` (Python), the open-source analysis package for COSI
- Implementing and testing algorithms to extract and validate polarisation signals from simulated and (later) real COSI data
- Applying these methods to astrophysical sources such as gamma-ray bursts, active galactic nuclei, supernovae, pulsars, and X-ray binaries

You will work closely with the COSI core software developers and take part in weekly collaboration meetings and one of the COSI Science Teams.

About You (Required)

- Master's degree (or equivalent) in physics or astronomy by start date
- Background in high-energy astrophysics or particle physics
- Strong programming skills (Python); experience with statistics, data analysis or machine learning

Nice to have: Software development, open-source practices, C++, Bayesian inference, GPU computing.

If you are unsure whether you meet all criteria, we encourage you to apply. Applicants with non-astronomy backgrounds (e.g., particle physics, computer science, or machine learning applied to physics or astronomy problems) are especially welcome.

What We Offer

- 3-year contract (TV-L E13, 66%); social benefits per German public service
- Vibrant research environment in high-energy and multi-messenger astronomy
- Collaboration across the international COSI team; conference travel support
- Start date: from January 2026

How to Apply

Send a **single PDF (in English)** by **31 October 2025** to `thomas.siegert@uni-wuerzburg.de` including:

- 1-page motivation letter, including research interests
- CV; publications (if any)
- University transcripts/certificates
- Two reference letters sent to the same email address by the deadline

Please indicate your earliest possible start date. Review begins immediately and continues until the position is filled.

Contact & EDI

Questions? Contact Dr. Thomas Siegert (thomas.siegert@uni-wuerzburg.de).

Check out the group website: https://www.physik.uni-wuerzburg.de/astro/mitarbeiter/ag-siegert/

The University of Würzburg values equality and diversity in research and encourages women and members of under-represented groups to apply. Preference will be given to people with disabilities in case of equivalent qualification.