Leibniz-Institut für Astrophysik Potsdam

The Leibniz Institute for Astrophysics Potsdam (AIP) is dedicated to astrophysical questions ranging from the study of our sun to the development of the cosmos. Research focuses on cosmic magnetic fields and extragalactic astrophysics as well as the development of research technologies in the fields of spectroscopy, robotic telescopes and e-science. The AIP carries out its research mission within the framework of numerous national, European and international collaborations. The institute is the successor to the Berlin Observatory, founded in 1700, and the Astrophysical Observatory Potsdam, founded in 1874, which was the first institute in the world to dedicate itself explicitly to astrophysics. The AIP has been a member of the Leibniz Association since 1992. Around 200 employees work at our location in the middle of a beautiful park landscape in Potsdam, not far from Berlin.

The Cosmology and High-energy Astrophysics Section at the AIP invites applications for a

Doctoral student position (m/f/d) in Computational Galaxy Formation

for a project on cosmic ray and radiation feedback in galaxy formation.

Overview

Funding for these positions is provided by the European Research Council (ERC) through the PICOGGAL project *Mind the Gap: from Plasma Kinetics to Cosmological Galaxy Formation*. The project aims at studying a diverse set of problems ranging from the plasma physics of cosmic-ray transport, to exploring the impact of cosmic rays and magnetic fields on the formation and evolution of galaxies, to verifying the resulting non-thermal signatures. The PhD project will develop code and conduct high-resolution magneto-hydrodynamical simulations of galaxy formation with a multi-phase interstellar medium.

Your tasks

- Participation in code development of the innovative, multiphase CRISP model (Cosmic Rays and InterStellar Physics) towards 1 solar mass resolution
- Run magneto-hydrodynamics (MHD) simulations of isolated galaxies with CRISP and the simulation code AREPO, an advanced moving-mesh code
- Carry out state-of-the-art cosmological simulations of galaxy formation with CRISP and cosmic ray transport
- Adapt a mock simulator for multi-frequency non-thermal radiation processes (from radio to gamma-ray wavelengths)
- Analyse simulations and develop conceptually transparent models to extract a physical understanding of the underlying astrophysical processes

Your profile

- Master degree in Physics or Astrophysics
- Thorough background in Astrophysics, Physics and Computational Methods
- Very good to excellent programming skills (e.g. C/C++ or Python)
- Very good analytical and mathematical skills are an advantage
- Hands-on experience in developing code and running MHD simulations is desired
- Self-motivation, creativity, flexibility and the ability to work alone and in a team are highly appreciated

Conditions
Salary and benefits are attractive and commensurate with those of public service organizations in Germany at 66% of the TV-L level E13. We also provide social benefits of the collective agreement for the public service (TV-L) incl. the company pension VBL with pension for reduced earning capacity and surviving dependents as well as a subsidy for the job ticket. The appointment will be for an initial period of two years (with a possible extension of up to a maximum of 4 years and 1 month in total). The position is anticipated to start by January 1, 2026, but this is subject to individual arrangements.

Application
To apply, please register at the AIP recruitment portal

https://jobs.aip.de/rec034

and follow the instructions to upload the following documents, all in PDF: cover letter (including a list of at least 2 references), Curriculum Vitae (including a list of publications), University transcripts, and a statement on education and skills (e.g. previous coding expertise). For questions on the offered position please contact Prof. Dr. Pfrommer at cpfrommer@aip.de. Applications received before August 31, 2025 will receive full consideration.

Equal opportunities are an integral part of personnel and organisational development at the AIP, therefore applications from men and women are equally welcome. People with disabilities will be given preferential consideration if they are equally qualified and skilled. The AIP values and promotes a respectful and tolerant working atmosphere. It has therefore adopted a Code of Conduct.

Your application documents will be kept for at least three months after completion of the appointment process. As a rule, your documents will be made available to a selection committee and to the committees and officers to be involved.

Leibniz-Gemeinschaft

TOTAL E-QUALITY