Postdoctoral Position in Theoretical/Computational Astrophysics

Applications are invited for a postdoctoral research position at the Astronomisches Rechen-Institut (ARI), part of the Zentrum für Astronomie Heidelberg (ZAH), to work in the group of Dr. Max Gronke on the ERC Starting Grant ReMMU – Resolving the Multiscale, Multiphase Universe.

Responsibilities: The successful candidate will carry out independent and collaborative research on topics related to ReMMU, which aims to overcome the long-standing lack of convergence in cosmological simulations by developing and applying novel multi-fluid models of unresolved gas physics. This position focuses on connecting these models to observations through radiative transfer (RT) in multiphase media. Topics include ionizing (Lyman continuum) RT and escape fractions, epoch of reionization, line transfer, and X-ray line emission, as well as the construction of synthetic observables and their comparison with observations. The position includes participation in the group's research activities, supervision of students, dissemination of results through publications and conferences, and collaboration within international projects.

Profile: We invite applicants with – a completed university degree and PhD (or equivalent) in astrophysics, physics, or a closely related field, – demonstrated experience in radiative transfer, emission line modeling, or related areas of computational astrophysics, – strong programming and analytical skills, and – the ability to work independently and as part of a team in an international research environment. Experience with hydrodynamical simulations or with observations of the circumgalactic medium is a plus but not required.

We offer: A vibrant, collaborative group environment within the ASGARD group ("Astrophysical Gas and Radiation Dynamics") and close ties across Heidelberg's strong astrophysics community (ZAH, MPIA, ITA, IWR etc.). The position includes access to major HPC resources and generous travel and equipment funds. Remuneration is based on salary grade 13 under the TV-L collective agreement.

The initial appointment is for two years, with a likely third-year extension. The preferred starting date is 1 July 2027, but it is negotiable.

How to apply:

Full consideration will be given to applications received by 10 January 2027. Applicants should send a single PDF (cover letter, CV, publication list, and a 2–3 page research statement) to max.gronke@uni-heidelberg.de with the subject line containing "ReMMU RT postdoc application". Referees should send 2–3 letters to the same address with the subject line containing "ReMMU RT postdoc letter". We are committed to equal opportunity and strongly encourage applications from individuals of under-represented backgrounds.

Heidelberg University stands for equal opportunities and diversity. Qualified female candidates are especially invited to apply. Persons with severe disabilities will be given preference if they are equally qualified. Information on job advertisements and the collection of personal data is available at www.uni-heidelberg.de/en/job-market