MAX PLANCK INSTITUTE
FOR RADIO ASTRONOMY

The Max Planck Institute for Radio Astronomy (MPIfR) is a world-leading institute in radio astronomical research. It conducts basic astronomical research with projects and collaborations with observatories all over the world and also in space. The institute carries out state-of-the-art research and development activities in its high-tech laboratories. It operates the 100-m telescope in Bad Münstereifel-Effelsberg as well as the APEX sub-millimeter telescope at an altitude of 5100m in the Atacama desert in Chile.

MPIfR invites applications for a postdoctoral position (m/f/d) to work in the European Research Council (ERC) funded project COMPACT: Understanding gravity using a COMprehensive search for fast-spinning Pulsars And CompacT binaries, hosted at the Fundamental Physics in Radio Astronomy (FUNDI) group. The project performs tailored searches for fast-spinning pulsars and compact binaries using the MeerKAT and Effelsberg radio telescopes.

Postdoctoral position (m/f/d) in pulsar astronomy as part of the ERC funded project COMPACT

COMPACT aims to find the most exotic pulsar systems that will further our understanding of gravity and neutron star interiors. Even a single discovery in this parameter space is ground breaking, and will help spearhead pulsar astronomy for the coming decade. The big data acquisition, distributed processing using heterogeneous computing and high profile science with follow-up of discoveries provide some of the best combination of technical and scientific skills that will help your future career both in and outside academia.

Your tasks

The successful candidate will work on managing our pulsar search pipelines and implement novel algorithms for better or faster detection of highly accelerated and/or fast spinning pulsars. They will also have the opportunity to follow up discoveries with a variety of radio telescopes, and supervise students across all the above mentioned topics.

As part of this position, the candidate will be able to spend 25% of their time on their own personal research, or use that time to be involved in one of several ongoing projects at the MPIfR. MPIfR owns and operates the 100-m Effelsberg telescope that is used for this project. MPIfR also operates the FBFUSE cluster attached to the MeerKAT telescope, from which baseband data will be acquired for post-processing in this project. The FUNDI group at MPIFR is a world leader in the areas of radio pulsar and fast radio burst research. More information on research@FUNDI can be found here:

https://www.mpifr-bonn.mpg.de/research/fundamental

We expect

Necessary criteria

- A Ph.D. in physics, astronomy, computer science or a related field by the appointment date.
- A strong expertise and experience in programming with high level programming languages like (but not limited to) C++ & Python, with a good understanding of object oriented and/or functional programming paradigms. This can be supported with the addition of code samples to the application or links to publicly available code repositories that they have significantly contributed.

- A strong interest in programmatic problem solving, developing/using data analysis pipelines.
- A good proficiency in scientific writing supported by previously written research articles/thesis etc.
- A good understanding of linux and networking fundamentals.
- Willingness to travel to South Africa for data acquisition.
- Experience working with an international, diverse group of collaborators.

Desirable criteria (one or more of):

- Experience with or a good understanding of multi-threaded / multi-processing / GPU programming with any high level programming language.
- Experience with pulsar searching and/or globular cluster studies.
- Experience with radio interferometric imaging.
- Experience working with machine learning / deep learning techniques.
- Experience working with large datasets and/or on large supercomputing systems.
- Willingness to and/or experience with supervising Masters/PhD students.

We offer

Appointments will initially be for two years, with the possibility of further extension of one more year based on mutual agreement and funding availability. Part-time work is generally possible. The preferred starting time of the candidate is between November 2024 and February 2025, but this is open for negotiation. We have dedicated funds for the postdoc to present their work in national and international conferences. Remuneration is based on the German wage agreement for the public service (TVöD-Bund), level 13, which includes comprehensive healthcare coverage and other social benefits.

Application process

Interested and qualified individuals should submit the following:

- curriculum vitae
- list of publications
- research statement
- at least two letters of recommendation

After submission, shortlisted applicants will go through an online interview process before selecting the most suitable candidate. We expect this process to be done before November 15.

The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals. Furthermore, the Max Planck Society seeks to increase the number of women in areas where they are underrepresented and therefore explicitly encourages women to apply.

Please submit your application and arrange for reference letters by October 15, 2024 at

https://jobs.b-ite.com/en/jobposting/b50e63772ad01b1df60dc962f4f560a0901c33a40/apply

Contact information

Prospective applicants can contact Dr. Vivek Venkatraman Krishnan vkrishnan@mpifr-bonn.mpg.de for more details.