Postdoctoral Fellows For 2023/2024

Astrophysics Research Group, Stellenbosch University

DEADLINE: 15th August 2023

The Astrophysics Research Group in the Physics Department of **Stellenbosch University** offers several Postdoctoral Fellowships starting September 2023 or soon after. The Research Group is established in 2023 and is carrying out leading research in astrophysics and cosmology, including cosmic microwave background radiation, galaxy survey and large-scale structure, neutron stars and black holes, neutrino cosmology, and indirect detection of dark matter. The Research Group is heavily involved in South Africa's **MeerKAT telescope, MeerKAT Extended Array, Hydrogen Epoch Reionization Array (HERA)**, and has extensive formal collaborations with **LSST project (Vera C. Rubin Observatory), SKA Science Working Groups, FAST** and **Tianlai telescopes (China), and CMB Stage-4 survey (US)**. In addition, the Research Group is closely collaborating with Stellenbosch University's Engineering faculty and Data science school which has strong expertise in radio antenna and big data analysis respectively.

Our faculty members work on a broad range of themes, from searching for dark matter with radio arrays to large-scale structure of the Universe and black hole astrophysics. We also emphasize the combination of cutting-edge radio and optical data analysis, with theoretical developments on astronomy and cosmology. The selected postdoctoral fellow is expected to collaborate closely with the faculty members in the Research Group.

The Research Group, led by Professor Yin-Zhe Ma, was established in 2023 and is carrying out leading research in astrophysics and cosmology,

Links:
https://scholar.google.com/citations?user=2wG1kxwAAAAJ&hl=en
https://orcid.org/0000-0001-8108-0986

For the 2024-cycle, we are looking to fill a few positions in the following areas:

1. One position [Ref. SU-HERA-2023] will heavily involve in Hydrogen Epoch Reionization Array (HERA), and work on low-frequency interferometer calibration, high-redshift EoR power spectrum analysis, and cross-correlation technique.

2. Two positions [Ref. SU-LSST/SKA-2023] will work on preparing science for Vera C. Rubin Observatory (LSST) and Square Kilometre Array, with emphasis on multi-wavelength studies of the large-scale structure and galaxy formation. The research involves developing an analysis method and pipeline for large-scale structure cross-correlation and 21-cm cosmology. The positions are funded by Stellenbosch University and last for two years, starting in 2024.

MINIMUM REQUIREMENTS: Ph.D. in astronomy, physics, or a related field (graduated within the last 5 years). Significant computational skills and data analysis skills are preferred.

APPLICATIONS: Please send a single PDF document to Professor Yin-Zhe Ma (mayinzhe.pi@gmail.com) by the closing date containing the:

- Your CV and Publication List.
- Degree Certificates
- The position you want to be considered.
- A 3-page statement describing the previous/current research and future plan
- Names and Email addresses for 2-3 referees.

  Applicants should also arrange for the 2 or 3 reference letters to be sent directly to Prof. Ma by the same closing date. An incomplete application will not be accepted.

BURSARY VALUES and DURATION:

1. Position [SU-HERA-2023] is funded by SA Radio Astronomy Observatory (SARAO) for three years, starting in 2023. The annual fellowship is ZAR 422k (tax-free), with annual traveling and once-off equipment grants.

2. Position [Ref. SU-LSST/SKA-2023] is funded by Stellenbosch University and will last for two years, starting in January 2024. The annual fellowship is ZAR 300k (tax-free), supplemented with a once-off equipment grant and a limited travel allowance.

For both positions, bursaries are granted year by year – i.e., continuing into the next year depending on satisfactory progress.

Postdoctoral fellows are not appointed as employees and as their fellowships are awarded tax-free, they are not eligible for employee benefits. The University reserves the right NOT to make an appointment if suitable candidates do not apply.

INQUIRIES: Please contact Professor Yin-Zhe Ma (mayinzhe.pi@gmail.com)