



SOUTH AFRICAN RADIO ASTRONOMY OBSERVATORY

POSTDOCTORAL FELLOWSHIPS FOR 2022

APPLICATION GUIDE

**READ THIS GUIDE CAREFULLY BEFORE COMPLETING AN
APPLICATION FORM**

CLOSING DATE FOR APPLICATIONS: 31 AUGUST 2021

**APPLY ONLINE AT [HTTPS://NRFSUBMIS-
SION.NRF.AC.ZA/NRFMKII/](https://nrfsubmission.nrf.ac.za/nrfmkii/)**

The South African Radio Astronomy Observatory (SARAO) invites applications from suitably qualified candidates for five postdoctoral fellowships, commencing in 2022. Please note that successful applicants will be notified by SARAO, by 15 December 2021. If you have not heard from SARAO by 15 December 2021, please assume that your application was NOT successful.

1 ELIGIBILITY FOR SARAO POSTDOCTORAL FELLOWSHIPS FOR 2022

- 1.1 Applicants for SARAO Postdoctoral Fellowships must have been active in research since obtaining their Doctoral degree. In the case of a break in research, an applicant must have obtained his/her Doctoral degree on, or after, 30 September 2017.
- 1.2 Successful applicants must be able to commence with their postdoctoral fellowships in South Africa on, or before, 1 October 2022.

2 STRUCTURE AND FUNDING LEVELS OF SARAO POSTDOCTORAL FELLOWSHIPS FOR 2022

- 2.1 Postdoctoral fellowships are only tenable at South African universities.
- 2.2 Postdoctoral fellowships are awarded for a period of three years. Renewal of a postdoctoral fellowship for the second and third year is at the sole discretion of SARAO, and is subject to satisfactory performance, which will be determined from Annual Progress Reports, detailing progress on deliverables as per the original research proposal. In the report, deliverables should be demonstrated by showing evidence thereof e.g. senior authorship peer-reviewed papers, developed hardware, preliminary results of simulations or data analysis, etc.
- 2.3 The current value of a SARAO postdoctoral fellowship is ZAR 410,000 per annum (non-taxable). (Please note that the current value of the postdoctoral fellowship may be adjusted in 2022, to account for annual inflation changes.) The fellowship is supplemented by travel and equipment grants.
- 2.4 There is NO relocation grant for SARAO post-doctoral fellows, and successful applicants may NOT use their postdoctoral fellowship travel grants to cover the costs of their relocation to South Africa.

3 RESEARCH PROPOSALS AND HOSTS/SUPERVISORS FOR_SARAO POSTDOCTORAL FELLOWSHIPS FOR 2022

- 3.1 All postdoctoral fellowship applications must be endorsed by a host/supervisor, at the university in South Africa where the fellowship will be undertaken. **A list of supervisors who have indicated that they are willing to host SARAO postdoctoral fellows in 2022, is provided in the table below.**
- 3.2 Applicants are required to investigate the research specialisations of the individual hosts and institutions to inform their choices, and match their own strengths and interests. Applicants must contact the respective hosts to discuss the willingness of a host to endorse the application, and to discuss and draft a research project and implementation plan, for submission as part of the application.
- 3.3 **For 2022, SARAO will consider postdoctoral applications that focus on observational research programmes, which utilise key existing radio astronomy instruments located in South Africa. These include MeerKAT, HERA, C-BASS, early versions of HIRAX, and HartRAO facilities (including astrometry and geodesy applications). Amongst these, MeerKAT is the highest priority area. Other relevant research will also be considered.**

4 CONDITIONS OF AWARD OF A SARAO POSTDOCTORAL FELLOWSHIP

- 4.1 Postdoctoral fellows are required to submit proof of employment at the relevant South African university, to SARAO. No funds for a postdoctoral fellowship will be released until SARAO has received the proof of employment.
- 4.2 On receipt of proof of employment, SARAO will pay 100% of the postdoctoral fellowship to the university.
- 4.3 Postdoctoral fellows may not hold additional full-time salaried employment during this fellowship, but they are allowed to undertake a maximum of twelve hours of teaching, tutorials, assistance or demonstration duties per week, and they may be remunerated for their services, provided that they are reimbursed at the normal university rate for services rendered.
- 4.4 All research papers published by SARAO-funded postdoctoral fellows must acknowledge the financial assistance of SARAO as follows. ***“The financial assistance of the South African Radio Astronomy Observatory (SARAO) towards this research is hereby acknowledged (www.sarao.ac.za)”***
- 4.5 Copies of papers and conference proceedings, published by SARAO-funded postdoctoral fellows, must be provided to SARAO.
- 4.6 Postdoctoral fellows are encouraged to attend the annual SARAO Postgraduate Scholarship Conference, and to present their research at the conference.
- 4.7 If a postdoctoral fellow wishes to change their research project, or the university, for which the fellowship was awarded, they must provide a motivation to SARAO for approval, prior to any changes. SARAO is

under no obligation to continue support if the changes do not comply with the criteria on which the fellowship offer was based.

- 4.8 If a postdoctoral fellow completes their research before the end of the period for which the fellowship was awarded, the fellowship will be decreased on a pro rata basis depending on the month in which the fellowship-holder completes their research.
- 4.9 If a postdoctoral fellow resigns before the end of the period for which the fellowship was awarded, the postdoctoral fellow should fill in the exit form which should be signed by the host supervisor and the institution. The unused Fellowship funding should be return or paid back to SARAO by the institution.
- 4.10 An annual travel grant is available to support travel related to a postdoctoral fellow's research.
- An application for travel must be submitted to SARAO, via the university research office, at least two months before any trip is to be undertaken. Travel grant applications must be endorsed by the relevant supervisor / host.
 - The approval of a travel grant application is at the sole discretion of SARAO.
 - Unspent funds from travel grants will automatically be carried over from one year to the next, for the duration of the postdoctoral fellowship.
- 4.11 An equipment grant is available to support the purchase of equipment required to enable a postdoctoral fellow to do their research, and is a total amount for the three years of the fellowship.
- An application to purchase any item of equipment using this grant must be submitted to SARAO, via the university research office. The approval of an equipment grant application is at the sole discretion of SARAO.
 - Unless circumstances are motivated as exceptional, SARAO will NOT approve funding to purchase books, cellular phones, media players, E-readers, printers, digital projectors, iPads or other tablets.
 - Unspent funds from equipment grants will automatically be carried over from one year to the next, for the duration of the postdoctoral fellowship.

5 SARAO CONTACT INFORMATION

Queries with regards to the application requirements or the application procedure, may be directed to:

Dr Mthuthuzeli Zamxaka

Email: mzamxaka@ska.ac.za

Telephone: +27 11 268 3424

**Applications must be submitted electronically on the NRF Online Submission System at
<https://nrfs submission.nrf.ac.za/nrfmkii/>**

Table 1: Postdoctoral Fellowship Supervisors/hosts for 2022

Name	University	Host/Supervisor Email Address	Research Specialisation
Prof. Andrew Chen	University of the Witwatersrand	Andrew.Chen@wits.ac.za	MeerKAT Observations of Circumnuclear Outflows in Spiral Galaxies
Prof Oleg Smirnov	Rhodes University	o.smirnov@ru.ac.za	Algorithms, Calibration and Imaging, Direction-Dependent Effects
Prof Amanda Weltman	University of Cape Town	amanda.weltman@uct.ac.za	Cosmology, Astrophysics, HIRAX
Prof Kavilan Moodley	University of KwaZulu-Natal	moodleyk41@ukzn.ac.za	Observational Cosmology (HIRAX, MeerKAT)
Prof Yin-Zhe Ma	University of KwaZulu-Natal	ma@ukzn.ac.za	Epoch of Reionization, Fast Radio Bursts, and HI Intensity Mapping
Prof Mattia Vaccari	University of Western Cape	mattia.vaccari@gmail.com	Observational Galaxy & AGN Evolution, Cosmic Star Formation History, Multi-Wavelength Extragalactic Astronomy, Machine Learning in Astronomy
Prof. Petrie Meyer	Stellenbosch University	pmeyer@sun.ac.za	Statistically Optimized Antenna Arrays.
Prof. Micheal Backes	North-West University	mbackes@unam.na	Precipitable water vapour measurements for the Africa Millimetre Telescope, a prospective telescope for the AVN.
Dr Gyula I. G. Józsa	Rhodes University	jozsa@ska.ac.za	Galaxy Evolution, Radio Astronomy, Analysis Techniques
Prof Bruce Bassett	University of Cape Town	bruce.a.bassett@gmail.com	Machine Learning, Observational Cosmology
Prof Jaco Versfeld	Stellenbosch University	djjversfeld@sun.ac.za	Signal Processing and Big Data
Prof Renée C Kraan-Korteweg	University of Cape Town	kraan@ast.uct.ac.za	Extragalactic Large-Scale Structure, Systematic HI Surveys, MeerKAT HI Surveys, Cosmic Flow Fields, Tull-Fisher Relation
Prof. Tim Gibbon	Nelson Mandela University	Tim.Gibbon@mandela.ac.za	Coherent Frequency Reference and Data Signals over Optical Fibre Networks for the SKA.
Dr Michelle Lochner	University of Western Cape	dr.michelle.lochner@gmail.com	MeerKAT/ LSST Multiwavelength Research, Machine Learning, Statistics
Dr. Jacki Gilmore	Stellenbosch University	jackivdm@sun.ac.za	Radio astronomy receiver system with integrated, adaptable RFI mitigation.
Dr. Lanche Linden Grootboom	Stellenbosch University	llgrootboom@sun.ac.za	Investigating and Characterising the Performance Metrics of an Active Integrated Antenna to be Used on a Mid-Frequency Aperture Array Antenna Receiver System.
Prof Roger Deane	University of Pretoria	roger.deane@up.ac.za	Radio Astronomy
Dr. Trienko Grobler	Stellenbosch University	trienkog@gmail.com	A comparison framework for RFI detection algorithms.
Dr Johan Schoeman	University of Pretoria	j.schoeman@up.ac.za	Calibration of wideband interleaved ADC structures.
Prof Matt Hilton	University of KwaZulu-Natal	hiltonm@ukzn.ac.za	Galaxy Clusters, Galaxy Evolution, Observational Cosmology

Name	University	Host/Supervisor Email Address	Research Specialisation
Prof. Gianni Bernardi	Rhodes University	giannibernardi75@gmail.com	21cm Cosmology, Galaxy Clusters
Prof Mario Santos	University of Western Cape	mgrsantos@uwc.ac.za	Cosmology with MeerKAT/SKA, HI Intensity Mapping, Reionization and HERA
Prof. Tinus Stander	University of Pretoria	tinus.stander@up.ac.za	Multi-band and dispersive time delay circuits. Self-calibrating time delay circuits. A compact integrated water vapour radiometer.
Prof. Matthys Botha	Stellenbosch University	mmbbotha@sun.ac.za	Solver integration for large-scale radio astronomy antenna array analysis.
Prof Dirk de Villiers	Stellenbosch University	ddv@sun.ac.za	Antenna Systems for Radio Astronomy
Prof Patrick Woudt	University of Cape Town	pwoudt@ast.uct.ac.za	Radio Transients, Cataclysmic Variables, Optical Synoptic Surveys
Dr Sarah Blyth	University of Cape Town	sarblyth@ast.uct.ac.za	Galaxy Evolution and Large Scale Structure - Particularly interested in Evolution of Cold Gas Component of Galaxies over Cosmic Time (co-PI LADUMA HI survey)
Prof. Russ Taylor	University of Cape Town	russ@idia.ac.za	The HI Mass and Velocity Functions for MIGHTEE-HI.
Prof Lerothodi Leeuw	University of South Africa	Lerothodi@alum.mit.edu	Extragalactic Observational Astronomy