



SARAO

South African Radio
Astronomy Observatory

**SOUTH AFRICAN RADIO ASTRONOMY OBSERVATORY
APPLICATIONS FOR DOCTORAL SCHOLARSHIPS FOR 2020**

APPLICATION GUIDE

**READ CAREFULLY BEFORE COMPLETING AN APPLICATION
FORM**

CLOSING DATE FOR APPLICATIONS: 23 SEPTEMBER 2019

Application forms are available at <https://skagrants.nrf.ac.za>

1 SARAO DOCTORAL SCHOLARSHIP APPLICATIONS

- 1.1 SARAO will consider applications from eligible students (see Section 2) who wish to complete a Doctoral degree in one of relevant focus areas in science or engineering, listed in Section 6.
- 1.2 For 2020, SARAO will award up to 10 scholarships to Doctoral students.
- 1.3 Please note that successful applicants will be notified by 22 November 2019. If you have not heard from SARAO by 22 November 2019, please assume that your application was NOT successful.

2 ELIGIBILITY FOR DOCTORAL SCHOLARSHIPS

- 2.1 South African citizens and citizens of Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia, who wish to complete a relevant Doctoral degree at a South African university, or at a university in a SKA partner country in Africa.
- 2.2 Academically excellent students who have completed/are completing a Masters degree, which is relevant to the scientific or technical focus areas listed in Section 6.

3 RESEARCH FOR DOCTORAL SCHOLARSHIP STUDENTS

- 3.1 Students DO NOT need to submit a research project proposal with their scholarship application form. Students are only required to indicate their preferred research area/s on the application form.
- 3.2 A panel, duly appointed by SARAO, will evaluate all scholarship applications, and recommend to SARAO which applicants should be considered for a Doctoral scholarship in 2020.
- 3.3 Students recommended for a Doctoral scholarship will be notified by SARAO, and will be provided with the list of approved research projects for 2020. Students must select the project they wish to pursue for their Doctoral degree from the list of approved projects. **STUDENTS AWARDED A DOCTORAL SCHOLARSHIP MAY NOT PURSUE RESEARCH PROJECTS THAT ARE NOT ON THE LIST OF APPROVED PROJECTS FOR 2020.**
- 3.4 Each of the projects listed on the approved projects list will provide the information of the project supervisor. Students will be required to contact the relevant supervisor to discuss project details, and ascertain suitability to pursue the project. Note that a project supervisor is not obliged to accept a student if the supervisor feels the student is not suitably qualified to pursue a particular project.
- 3.5 Students awarded a Doctoral scholarship will have to register at the university where the supervisor of the research project is based, and the student will have to undertake his/her degree at that university.

4 DOCTORAL SCHOLARSHIP STRUCTURE AND FUNDING LEVELS FOR 2020

Note: The scholarship levels quoted in the table below are the current levels, and may be adjusted to consider changes in university fees and inflation.

Grant Item	Current Level	Comments
Scholarship	R 155,000 per year	For a Doctoral degree, scholarships are awarded for a maximum of three years.
Travel grant	R 34,000 per year	<ol style="list-style-type: none"> 1. Travel grants are awarded annually, for the duration of the scholarship, which is two years for a Doctoral degree. 2. The student must use the travel grant for travel related to his/her research. 3. It is compulsory for a student to travel at least once a year to a conference/workshop for research purposes. 4. Travel grants, or any funds remaining from a travel grant, for a particular year, will be carried over to the following year.
Equipment grant	R 38,000 once-off, for the duration of the degree	<ol style="list-style-type: none"> 1. The equipment grant is a total amount available for the full duration of the scholarship (i.e. this is not an annual amount). 2. The equipment grant is available to the student to support the purchase of equipment required for his/her research. 3. Equipment grants, or any funds remaining from an equipment grant will be carried over to the following year.
Home travel grant	Cost of one return ticket, with one change, per year	SARAO will organise and pay for one return ticket, per year, for students from Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia, to travel to South Africa.
Repatriation fee	Paid in full, if required	SARAO will pay the repatriation fee, if required, for students from Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia.
Emergency medical insurance	Paid in full	SARAO will pay the cost of emergency medical insurance for students from Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia.

5 CONDITIONS OF AWARD OF A DOCTORAL SCHOLARSHIP

- 5.1 The duration of a SARAO scholarship is three years for a Doctoral degree.
- 5.2 Students must be registered as full-time students at the university where their supervisor is based.
- 5.3 Students are required to submit proof of registration at their university, to SARAO. No funds for a scholarship will be released until SARAO has received the proof of registration.
- 5.4 Once SARAO has received proof of registration for a student's first year of their Doctoral degree, SARAO will pay 100% of the student's scholarship (excluding the travel and equipment grants) to the university. It is the responsibility of the student to manage his/her scholarship funds to ensure that he/she has sufficient funds for one full academic year (twelve months). Under NO circumstances will SARAO release additional scholarship funds to a student.
- 5.5 The second and third years of a student's Doctoral scholarship is renewable at the sole discretion of SARAO. Renewal is subject to satisfactory performance, which will be determined through Annual Progress Reports (APR), detailing progress on deliverables as per the original research proposal. In the report, deliverables should be demonstrated by showing evidence thereof e.g. peer-reviewed papers, conference proceedings, developed hardware, preliminary results of simulations or data analysis, etc. APRs must be drafted and submitted to SARAO by the student's supervisor.
- 5.6 Following approval of a student's APR, and on receipt of proof of a student's registration for his/her second or third year of a Doctoral degree, SARAO will pay 100% of the student's scholarship (excluding the travel and equipment grants) to the university. It is the responsibility of the student to manage his/her scholarship funds to ensure that he/she has sufficient funds for one full academic year (twelve months). Under NO circumstances will SARAO release additional scholarship funds to a student.
- 5.7 Students are required to submit APRs at the end of the third year of their Doctoral degree.
- 5.8 Students may not hold full-time salaried employment during this scholarship, but may undertake up to twelve hours of work per week. If a student is found to be working for any organisation for more than twelve hours per week, his/her scholarship will be cancelled and he/she will have to refund all payments of the scholarship already received by them (this includes funds paid out from a student's travel and equipment grants).
- 5.9 All research papers published by students must acknowledge the financial assistance of SARAO. "The financial assistance of the South African Radio Astronomy Observatory (SARAO) towards this research

is hereby acknowledged (www.ska.ac.za)” A copy of research papers published by students must be provided to SARAO.

- 5.10 Students are required to attend the annual SARAO Postgraduate Scholarship Conference, and to present their research at the conference.
- 5.11 Following the National Research Foundation’s policy, students are allowed to hold supplementary grants or emoluments, during this scholarship, to a maximum of 50% of the SARAO award, but the student must inform SARAO via his/her university of such awards or emoluments.
- 5.12 If a student wishes to change his/her research project, field of study, or the university, for which the scholarship was offered, he/she must provide a motivation to SARAO for approval, prior to any changes.

SARAO is under no obligation to continue to support a student if the changes do not align with the original criteria on which the scholarship offer was made.

- 5.13 Students who do not obtain the degree for which the scholarship was awarded will have to refund all payments of the scholarship already received by them (this includes funds paid out from a student's travel and equipment grants).
- 5.14 On completion of a degree, funded by a SARAO scholarship, students are required to submit a copy of their degree certificate to SARAO.
- 5.15 The annual travel grant is available to support travel related to a student's research.
- 5.16 An application for travel must be submitted to SARAO, via the university research office.
- 5.17 To allow for the time taken to process the payment of grants from SARAO to the university, travel grant applications for international travel should be submitted at least two months before any trip is to be undertaken, and for local travel, at least one month before any trip is to be undertaken.
- 5.18 Travel grant applications must be endorsed by a student's supervisor.
- 5.19 The approval of a travel grant application is at the sole discretion of SARAO.
- 5.20 The grant includes subsistence and accommodation.
- 5.21 Unspent travel grant funds will automatically be carried over from one year to the next, for the duration of the scholarship award.
- 5.22 The equipment grant is available to support the purchase of equipment required to enable a student to do his/her research, and is a total amount for the duration of the scholarship.
- 5.23 An application to purchase equipment using this grant must be submitted to SARAO, via the university research office.
- 5.24 The approval of an equipment grant application is at the sole discretion of SARAO.
- 5.25 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.
- 5.26 Unspent equipment grant funds will automatically be carried forward from one year to the next, for the duration of the scholarship award.

6 FOCUS AREAS FOR DOCTORAL RESEARCH IN 2020

6.1 Science

Topics exploiting data projected to be available by 2020-21 from 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. Multi-wavelength projects with direct links to the above will be considered.

6.2 Engineering

Engineering topics should be directly related to the needs of building and operating radio telescopes that are supported or hosted by SARAO. Proposed projects must provide the student with skills that are critical to radio astronomy and geodesy, and proposals should explicitly list these skills. Priority will be given to topics that fall within the areas listed here:

- 6.2.1 Radio astronomy antennas and receiver systems (including digitisation) associated with supported and hosted instruments.
- 6.2.2 Real-time digital signal processing instrumentation for radio astronomy, specifically using FPGA and GPU platforms.
- 6.2.3 Hardware and data analysis systems for detecting, monitoring and identifying Radio Frequency Interference (RFI), including the use of telescope data (e.g. using MeerKAT visibilities to locate RFI sources).
- 6.2.4 Hardware, software and data analytic systems associated with the control and monitoring of radio telescopes.
- 6.2.5 Instrumentation and data analysis systems to support geodesy undertaken by SARAO.

7 HOW TO APPLY FOR A SARAO DOCTORAL SCHOLARSHIP

- 7.1 Application forms can be found online at <https://skagrants.nrf.ac.za>.
- 7.2 Students must submit their application forms via the research office at the university where they are currently registered (**NB: Students not currently registered at a South African university may**

submit their application forms directly to SARAO c/o Ms. Annah Mashemola at amashemola@ska.ac.za).

- 7.3 Only one application per student may be submitted.
- 7.4 In completing an application form for a Doctoral scholarship from SARAO, you accept the Conditions of a SARAO Doctoral Scholarship, listed in Section 5.
- 7.5 No late or incomplete applications will be accepted.
- 7.6 Successful applicants will be notified by 22 November 2019. If you have not heard from SARAO by 22 November 2019, please assume that your application was NOT successful.
- 7.7 SARAO reserves the right not to accept any application in part or in whole. The decision of SARAO will be final and no correspondence will be entered into after the decision.

8 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 11 442 2434