



SKA SOUTH AFRICA
SQUARE KILOMETRE ARRAY



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

FUNDING GUIDE

South African Research Chairs Initiative for the Square Kilometre Array Research Chairs Round 4

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National
Research
Foundation

ROUND 4

Of the

**South African Research Chairs
Initiative**

Five

**Square Kilometre Array
Research Chairs**

Towards the ultimate goal of

210 Chairs

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PART A: Strategic Background

A1. What is SARChI

The South African Research Chairs Initiative (SARChI) is a strategically focused knowledge and human resource intervention that has five interrelated objectives:

1. To increase the number of world class researchers in South Africa;
2. To retain and/or attract qualified research scientists to the Higher Education sector and thereby to:
 - a. help increase research outputs, focus and capacity at publicly funded Higher Education Institutions (HEIs), Science Councils and other research institutions, and
 - b. strengthen and improve the capacity of HEIs, Science Councils, Musea and other research institutions (e.g., University linked Teaching Hospitals) to generate and apply new knowledge;
3. To stimulate strategic research¹ across the knowledge spectrum and thereby increase the level of excellence in research areas of national and international importance;

¹ Strategic Research is defined as research that is directed in a very general way by broad national or economic objectives to which research can contribute. It can be applied or basic research, and is carried out with the expectation that it will produce a broad base of knowledge likely to form the background to the solution of recognised current or future practical problems. (Irvine and Martin, 1984 and Johnston 1990)

4. To create research career pathways for highly skilled, high quality young and mid-career researchers that effectively address historical racial, gender and age imbalances; and
5. To improve and accelerate the training of highly qualified personnel through research.

A2. Why do we have SARChI?

In order to make South Africa competitive in the international knowledge economy based on its existing and potential strengths.

A3 Square Kilometre Array (SKA) Research Chairs

The South African Square Kilometre Array (SKA) Project is a project of the Department of Science and Technology (DST) and is administered through the National Research Foundation (NRF). The project consists of two major components: a) South Africa's bid to host the Square Kilometre Array Radio Telescope and b) the design and construction of the Karoo Array Telescope (MeerKAT).

The SA SKA Project initiated a human capital development programme in 2005 in order to ensure that:

- there are sufficient highly-skilled PhD scientists and PhD and MSc engineers in South Africa and the SA SKA Partner States to be able to design, construct and operate the MeerKAT and the SKA, and
- and to utilise these instruments effectively when they start to do science.

To date the programme has provided support to 11 postdoctoral fellows, more than 80 PhD and MSc students and 43 undergraduate and honours students. The NRF and the DST have decided to focus on the recruitment of senior researchers and the retention of current research staff in radio astronomy and the relevant engineering disciplines and have initiated a SKA Research Chairs Programme, under SARChI, in order to be able to expand the bursary programme for students (and to create a dynamic and comprehensive research community around the MeerKAT and SKA). It is the intention of this Programme to increase the number of supervisors able to supervise postgraduate students, manage SKA and MeerKAT related research projects and contribute to

undergraduate course development in radio astronomy or engineering disciplines relevant to radio astronomy.

Up to five Research Chairs in SKA will be awarded to HEIs in South Africa that can demonstrate some capacity and interest in developing one (or more) of the following research fields that are key to the science and engineering of the MeerKAT and SKA:

1. Observational radio and multi wavelength astronomy; specializing in research fields relevant to the MeerKAT and/or SKA;
2. Radio astronomy instrumentation; specializing in one or more of the following:
 - Digital signal processing;
 - Distributed data processing;
 - RF broadband feeds, receivers and cryogenic packages; and/or
 - EMC and EMI.

A4. SKA Research Chairs Objectives

The objectives of SA SKA Research Chairs are to:

1. Advance the frontiers of knowledge through focused research by
 - undertaking and managing SKA and MeerKAT related research projects and/or research projects which utilise multi-wavelength data; and
2. Stimulate and coordinate the work of other researchers active in identified fields or problem areas and build up excellent research teams and thus
 - Develop one or more of the following research fields pertinent to SKA and/or MeerKAT:
 - Observational radio astronomy;
 - Observational multi-wavelength astronomy; and
 - Radio astronomy instrumentation, specializing in one or more of the following:
 - Digital signal processing;
 - Distributed data processing;
 - RF broadband feeds, receivers and cryogenic packages; and/or
 - EMC and EMI.
3. Teach/supervise/mentor postgraduate level students and postdoctoral researchers whose learning should be embedded in the field of the research focus;

4. Provide a critical locus for the development of excellence in ideas and capacity; and
5. Promote gender and racial equity in the scientific community.

A5. Where will the SKA Chairs be located?

The SKA Research Chairs will be awarded to publicly funded HEIs who can hold such Chairs in their own right or jointly in collaboration with Science Councils, Musea or other institutions that conduct research and develop research capacity as part of their usual functioning.

6. Eligibility

Institution

The Call for pre-proposals is open to all publicly funded HEIs that can demonstrate capacity and interest to:

- Undertake and manage SKA and MeerKAT related research projects and/or research projects which utilise multi-wavelength data; and
- Develop one or more of the following research fields pertinent to SKA and/or MeerKAT:

Observational radio astronomy;

- Observational multi-wavelength astronomy; and
- Radio astronomy instrumentation, specializing in one or more of the following:
 - Digital signal processing;
 - Distributed data processing;
 - RF broadband feeds, receivers and cryogenic packages; and/or
 - EMC and EMI.

There will be no restriction to the number of Research Chairs that may be awarded to a single institution.

Research Chair Candidate

The candidate's credentials are very important to the selection process. The successful institutions will be responsible for nominating and recruiting the Research Chair candidates, with the assistance of the SA SKA Project.

The candidate(s) must:

- Have a research doctorate;

- Have at least a four-year track record of research that is excellent and sustained and/or clearly on an upward trajectory. Ideally such candidates should be NRF rated; and if they are not NRF rated on appointment they may be requested to become rated researchers to be eligible for the renewal of the Chair;
 - Have a track record in supervising postgraduate students that is clearly on an upward trajectory;
 - Have a record of being able to obtain external funding;
 - Be appointed at the Associate Professor or Professor Level – benchmarked nationally; and
 - Reside full time in South Africa for the duration of the Research Chair award.
- The Chairs will be awarded to suitably qualified candidates irrespective of their nationality, race or gender. Where such candidates are of age nearing retirement, the host institutions must develop a succession plan with incumbents to ensure that within two cycles of a Research Chair award a range of possible candidates with competitive capacity exists.
 - The candidates may be incumbents or new recruits to the successful host institution. Where Research Chairs are taken up by existing faculty, the HEI must replace them with suitably qualified candidates in the faculty². Where such replacements are of age nearing to retirement, black or female, the institution must develop a succession plan designed to develop a range of possible candidates with competitive capacity within two cycles of a Research Chair award.

² This Initiative must add to the number of faculty

PART B: Submission and Assessment Process

This part of the Guide describes the process of submitting a pre-proposal and proposal to the SARChI and focuses on the assessment mechanics and their timing.

Call	Submission Deadline	Decision Date	Public Announcement	Awarde d Chairs
Phase 1: Application for SKA Chairs				
	30 September 2009	30 October 2009		5
Phase 2: Selection and Nomination of Candidates				
	27 February 2010	19 March 2010	April 2010	
			Total	5
Phase 3: Submission of Full Proposals				
	30 May 2010			

Table 1: Call dates & expected number of awards in Round 4

B1. Assessment Process

The submission and assessment process, as illustrated in **Figure 1**, consists of two phases:

Phase 1: Application by the institution

The purpose of this Phase is to select institutions that are best positioned to host and support the Chairs. It begins with the submission of a short (maximum 10 pages) pre-proposal during the Call period (see **Table1**).

- Assessment of the pre-proposals will be undertaken by a panel comprising of representatives from NRF, SKA, DST as well as experts in SKA related research.
- This assessment will not focus on scientific merit, but rather on the alignment of the proposed Chair with the strengths, capabilities, strategic environment and competencies of the host institution.

The pre-proposal is best authored by a member of the Research Directorate of the host institution. It must therefore consider the following matters:

- The Institution's research objectives;
- The Institution's research strengths;

- The relevance of the research areas that they wish to target for growth and development through the Research Chairs.
- The support the host institution can give to the Chair in terms of:
 - Academic support (related research groups, facilities, information, etc.);
 - Financial support (direct and indirect);and
 - The management of the Chair.

NB! It is not necessary to have identified a candidate for the Chair during this stage of the selection process.

Phase 2: Selection and Nomination of Candidates

The institutions that have been awarded the Research Chairs will submit extensive CVs and credentials of potential candidates together with motivations for nominations.

Assessment will be undertaken by the panel that will make funding recommendations. Final approval will be made by the NRF, DST and SKA Principals.

Phase 3: Post Award - Submission of full proposals

The nominated candidate will submit the full proposal within two months of accepting the award according to a pre-described format. The full proposal should expand on the pre-proposal by indicating, in greater detail, exactly:

- What research and related activities will be undertaken by the Chair;
- How these will fit with the strategic framework presented in the pre-proposal;
- How the Chair's work will synergize with the competencies of the host Institution and national facilities; and
- How the candidate's qualifications and experience will help deliver on the strategic promise. (See **A6. Eligibility** for more details on the selection criteria for the candidate.)

The full proposal will also need to give specific details of the:

- Proposed teaching³ to research time ratio;
- Expected knowledge⁴ outputs in the first five-year period;
- Expected human capacity⁵ outputs in the first five-year period; and
- Expected development trajectory of the candidate.⁶

³ Teaching of postgraduate students only.

⁴ Peer reviewed journal articles, conference organised and presentations, book and chapters, patents, etc.

⁵ Numbers of Masters & Doctoral graduates and completed post-doctoral fellowships.

The full proposal will also contain a five-year research (activity) plan. This plan should indicate significant milestones and expected outputs (papers, graduates, etc.) and should include detailed and reasonable budget (see section **C3.Funding Levels**). The proposal must be written by the nominated candidate, together with a member of the Research Directorate of the host institution.

A Panel of experts in SKA related fields will assess the proposal for its merit and feasibility of implementation plan. Outcomes of the review will be communicated to the Chair holder.

⁶ Progress of impact on local and international research community indicated by NRF Rating and other appropriate means

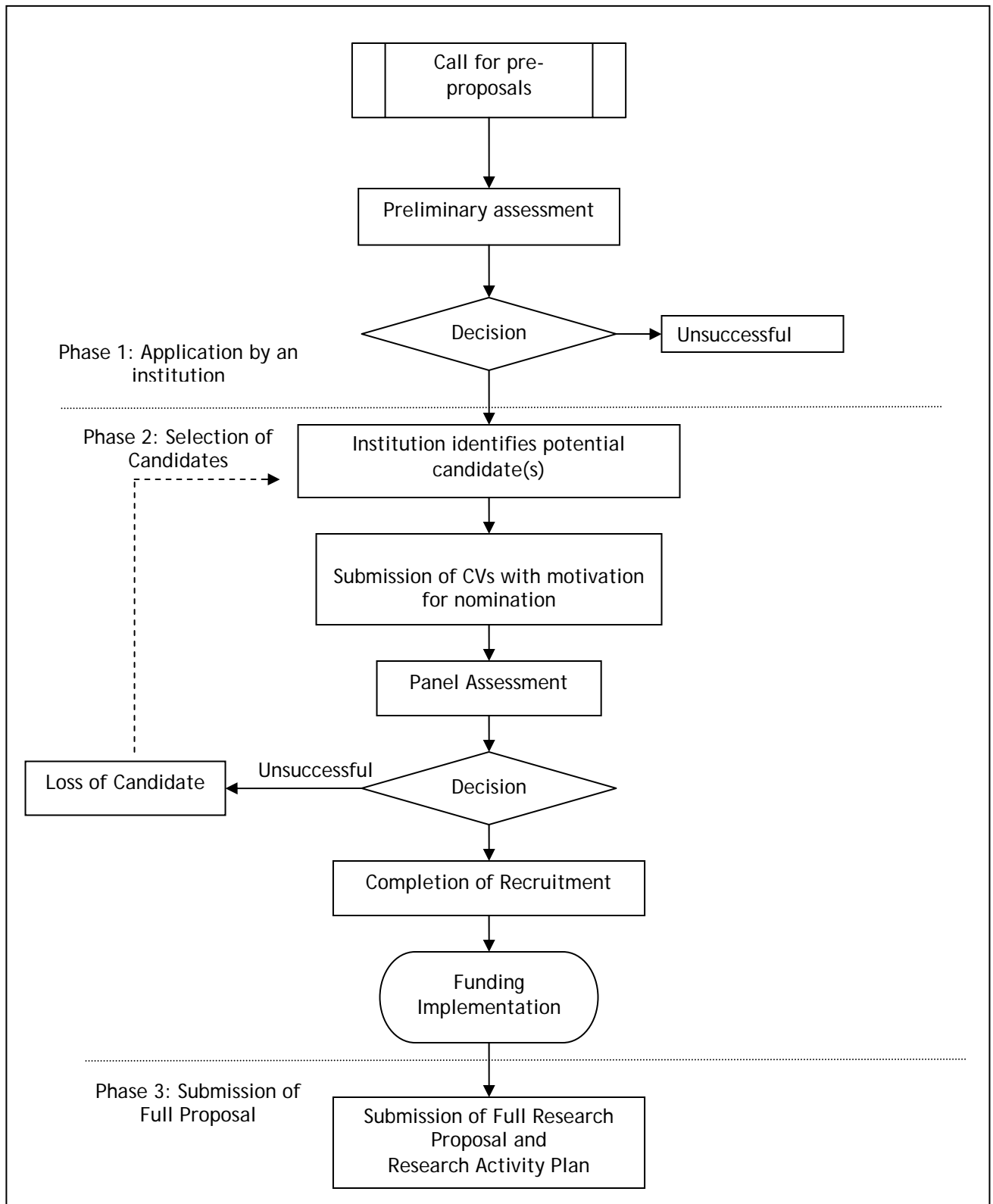


Figure 1: Submission & Assessment Process

B2. Submission of Proposals

Both duly signed pre- and full proposals should be submitted in both an electronic format (preferably PDF) and a hard copy, using the templates provided as a guideline.

NB! The successful Chair candidates must use the NRF Online system to register and/or update their CVs.
(<http://nrfonline.nrf.ac.za>)

PART C: Management of the Research Chairs

This part of the Guide describes the post-award (Phase II) process.

C1. Duration of the Research Chair Grant

Research Chairs will be tenable for five years, renewable for two further five-year periods, giving a total life-span of 15 years. The decision to renew will be informed by the outcomes of a review at the end of each cycle as mentioned below.

NB: Eligibility for renewal will be entirely performance-linked.

C2. Management of the Research Chair Grant

The management of Research Chair grants is illustrated in **Figure 2** and described below.

On accepting the award (signing the Conditions of Grant (CoG)), the newly appointed incumbent of the Research Chair will be required to deliver on the annual research plan that formed part of the accepted full proposal. At the end of each calendar year, the incumbent will be required to prepare and submit to the NRF an Annual Progress Report (APR) addressing the milestones and expected outcomes presented in the research plan.

During the fifth year of existence, the Research Chair will be subjected to an in-depth evaluation undertaken by peers within a framework set by the NRF's Monitoring and Evaluation Unit. This evaluation will critically review progress against the:

- Strategic framework provided in the full proposal;
- Progress made against the research plan presented by the incumbent; and
- Impact of the Research Chair on the host institution, graduated students and the relevant knowledge base.

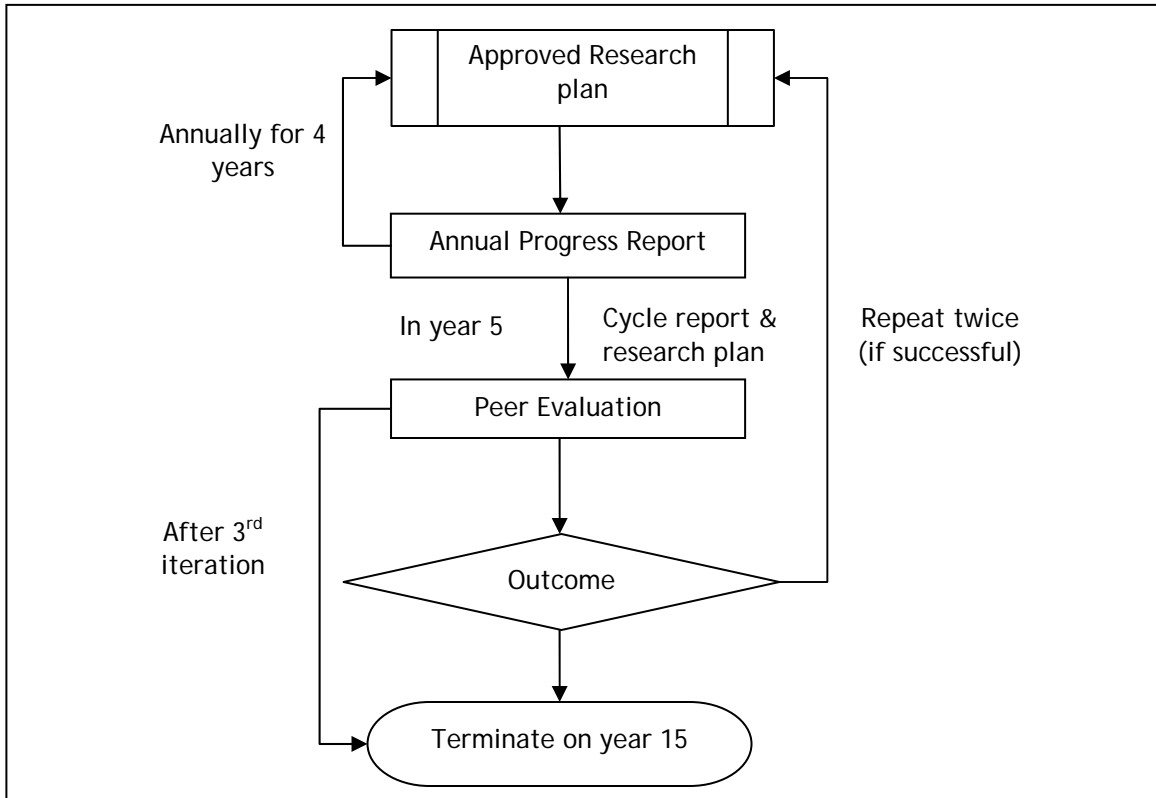


Figure 2: Management of Research Chair grants

C3. Funding Levels

SARChI proposes to make an award of up to R3 million per SKA Research Chair. The funding award will cover salaries⁷, postdoctoral fellowships and postgraduate student bursaries, research operating costs and equipment for the well founded laboratory relevant to the Chair. The guidelines for the split between various categories are shown in **Table 2**. It is emphasized that this budget template is a guide to applicants and deviations are allowed. On the other hand, the assessment process will consider the proposed budget and will consider the ratios of cost, risk and reward.

Guidelines		
Item	Sub-item	Recommendation (Rands)
Salaries	Chair	
	Admin support	
	Research assistants	
Fellowships	Postdoctoral researchers	
Bursaries	Doctoral (full time)	
	Masters (full time)	
	Honours	
Equipment	Items < R500 000	
Running	All other	
Overhead	To Institution	Maximum 10%
Total		3 000 000

Table 2: Annual budget guidelines

A Research Chair would not be eligible for additional NRF parliamentary vote core grant funding, except in respect of large equipment. Large equipment is expected to be addressed through the National Research Equipment and Infrastructure Strategy funding.

Research Chairs are also encouraged to expand their funding through innovation, government, industrial, business, donor and community funding.

⁷ Salaries of the incumbent of the Chair and limited administrative/research support

C4. Payment of Grants

Recruitment of the candidate can be finalized after the award letter has been presented to the successful HEIs. The candidate and the host Institution will jointly sign the Conditions of Grant (CoG) that will be based on the objectives of the SARChI.

Upon receipt of the duly signed CoG, the NRF will start its standard method of grant payment.

C5. Monitoring

A baseline study of Research Chairs and their institutional and intellectual environments will be conducted with each round of new awards. These studies, together with the institutional Strategic Research Plans and the Research Chair's Business Plan, will serve as the benchmark to assess performance.

Assistance

Should you require clarification on any of the processes, criteria or plans presented in this Guide please do not hesitate to contact the Grants Director, Mr Sibongile Sowazi (sibongile@nrf.ac.za) or the Programme Director, Dr Linda Mtwisha (linda.mtwisha@nrf.ac.za).

A briefing meeting for institutional representatives will be hosted at the SKA offices in Johannesburg on 19 August 2009, where the NRF and the SKA Project team will be discussing the strategic objectives and application process for the SARChI-SKA Chairs.