

**SKA ORGANISATION**  
**Job Particulars**  
**Specialist Engineer: RF/Dish**  
**Application deadline: 31<sup>st</sup> January 2016**

**Competitive Salary and Flexible Benefits**

**Job Title:** Specialist Engineer: RF/Dish

**Reference:** SERFD/01

**Reports To:** SKA Project Engineer

**Closing Date for applications:** Closing date for receipt of completed applications is 31<sup>st</sup> January 2016. For details of how to apply please see below.

**Submission of applications:** Email to [jobs@skatelescope.org](mailto:jobs@skatelescope.org)

**Organisation Background**

The Square Kilometre Array (SKA) is a global project to build a multi-purpose radio telescope that will play a major role in answering key questions in modern astrophysics and cosmology. It will be one of a small number of cornerstone observatories around the world that will provide astrophysicists and cosmologists with a transformational view of the Universe. The SKA will be constructed in two distinct phases. Among major science goals for the first phase, SKA1, will be to study the history and role of neutral Hydrogen in the Universe from the dark ages to the present-day, and to employ pulsars as probes of fundamental physics.

Since 2008, the global radio astronomy community has been engaged in the development of the SKA as a major part of the 'Preparatory' phase of the project. The Preparatory phase ended in December 2011 and, following a number of major changes, the international SKA project is now part way through the 'Pre-Construction' phase. Ten governments are now participating in the project, with others engaged in discussions concerning possible membership. The SKA Organisation is permanently headquartered in a purpose-built building at Jodrell Bank Observatory in Cheshire, UK.

**General Description**

The Office of the SKA Organisation ("SKA Office") leads the SKA system design and oversees the detailed design being undertaken by globally distributed SKA Consortia. To accomplish this goal the SKA Office employs highly qualified scientists and specialised engineers, project managers and system engineers. Design work packages for the major SKA subsystems have been contracted to a small number of work package consortia who are responsible for the management, execution and delivery of the work packages.

The SKA-mid telescope will consist of an 2-dimentional array of about 130 "dishes", spread over an area about 150 km in diameter. Each dish will consist of a large steerable reflector antenna, multiple front-end and digital receiver packages, and monitor/control components. These are sophisticated designs, optimised for good price to telescope-system performance. The performance of dishes over frequencies from 350 MHz to more than 20 GHz will dominate the performance of the entire telescope. The overall design of the antennas has been defined: 15-m equivalent diameter, offset Gregorian reflectors with room for at least 4 cyro-cooled front-ends and one uncooled front-end at low frequencies.

**The Role**

Specialist Engineers have extensive experience in a particular field of interest to the SKA, providing specialist support where-ever it is needed.

## Key Duties, Accountabilities and Responsibilities

Under the direction of the SKA Project Engineer, the following:

- Provide leadership in RF and antenna systems for the SKA1-mid telescope,
- Assist in the generation of the top level requirements,
- Critically track telescope-system performance impacts of the developing dish design,
- Evaluation in the context of relevant design reviews,
- Support in the development of cost estimates,
- Development of verification and testing procedures for dish prototypes, and acceptance criteria for related production items,
- Assist with the development of system integration plans,
- Provide critical technical advice and feedback to the dish and related Consortia.

In addition the postholder will:

- Provide updates and reports as necessary.
- Work with Work Package Consortia (WPC) or equivalent, as appropriate to provide guidance, advice and technical assistance in their domain area of expertise.
- As required, engage in WPC and other reviews in their areas of expertise, or if required, in other areas.
- Participate in team projects, and to provide specialist assistance to working groups, colleagues and WPCs.
- Assist in the development of teams, in collaboration with Project Managers and System Engineers. This may entail participation in cross-disciplinary approaches in the SKA Office to system-wide problems.
- Undertake training in the financial, occupational health and safety, and human resource management procedures applicable to the SKA or its partners.
- Travel, as required, to any of the SKA countries.
- Undertake any other reasonable duties as directed by the post holder's line manager or a member of SKA Organisation Senior Management Team.

Mandatory Qualifications, Experience and Knowledge:

- Recognised university degree-level education/training in engineering or physical sciences.
- Analytical skills. Experience with analysis/simulation, design tools and programming languages.
- Knowledge and experience as specified below:
  - Demonstrated experience with large reflector antennas and feeds,
  - Demonstrated experience with performance testing of large reflector antennas,
  - Expert knowledge of Low Noise Amplifiers and cryogenically cooled receivers,
  - Working knowledge of the theory of antennas and electromagnetics, and applicable simulation techniques,
  - Working knowledge of analogue-to-digital converter systems,
  - Working knowledge of antenna mechanics, especially dynamical performance,
  - Working knowledge of antenna optics,
  - Familiarity with radio frequency circuits, receivers and related equipment,
  - Familiarity with digital signal processing.
- Good English oral and written communication skills.
- Experience in presenting work orally at meetings and other forums.
- Ability to work effectively with SKA engineers and scientists from a variety of cultures, and
- Willingness to travel, nationally and internationally, and work outside normal business hours, including evenings and weekends;

**Desirable Qualifications, Experience and Knowledge:**

- Familiarity with radio astronomy or a closely allied field,
- Familiarity with the formalism for, and requirements of, quality control environments such as ISO9000,
- Familiarity with the principles of system engineering,
- Industry experience, and/or a track record in successful collaborative links with industry.

For more information on the SKA project visit <http://www.skatelescope.org>. The SKA Organisation offers a competitive salary, a generous company pension scheme and a flexible benefits package. The successful applicant's workplace will be the SKA Office's headquarters at Jodrell Bank Observatory, UK

**How to apply:**

Please send a CV and covering letter to [jobs@skatelescope.org](mailto:jobs@skatelescope.org), quoting reference SERFD/01. Applications should include a summary of engineering accomplishments, project experience, a resume, details of your current remuneration and the names of at least three professional references. Closing date for receipt of applications is 31<sup>st</sup> January 2016.

**Equal Opportunities Statement:**

*SKA Organisation is committed to being an equal opportunities employer. Our aim is to recruit and retain the most talented individuals, regardless of gender, race, disability, age, sexual orientation, religion or nationality.*

*At all stages of the recruitment process and beyond, we strive to treat applicants and employees with a high standard of care, honesty and politeness.*

*Women have traditionally been under-represented in the fields of science and engineering; SKA Organisation welcomes and encourages female applicants.*

*Where applicants with a disability need facilities or adjustments to enable them to participate in the recruitment process, these will be provided. If you need equipment or adjustments to enable you to complete your application and/or attend an interview then please let us know.*