

Position Details

Research Projects – CSOF3

THE FOLLOWING INFORMATION IS FOR APPLICANTS

Advertised Job Title	Firmware Engineer – SKA-Low Telescope
Job Reference	102015
Tenure	Indefinite Full-Time, Part-time or Job-share
Salary Range	AU\$76,068 – AU\$96,813 per annum (pro-rata for part-time) plus up to 15.4% superannuation
Location(s)	Perth, Western Australia
Relocation Assistance	Will be provided to the successful candidate if required
Applications are open to	Australian/New Zealand Citizens and Australian Permanent Residents only
Client Focus – Internal	0%
Client Focus – External	100%
Position reports to the	This role will report to the SKA-Low Controls Manager
Number of Direct Reports	0
Enquire about this job	To enquire about this position, please reach out to the SKA-Low Controls Manager, Dr Drew Devereux, on drew.devereux@skao.int
How to apply	Apply online at https://jobs.csiro.au/ Internal applicants please apply via Jobs Central If you experience difficulties when applying, please email careers.online@csiro.au or call 1300 984 220.

Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](#).

The CSIRO Experience

As an employee of CSIRO, you will be eligible for the many benefits of working at Australia's National Science Agency. You can read more here:

1. [Life at CSIRO](#)
2. [Personal Development & Learning](#)
3. [Generous Leave & Conditions](#)
4. [Work / Life Balance](#)

Background

The SKA Observatory is a next-generation radio astronomy facility set to transform our understanding of the Universe and fundamental physics. By deploying cutting-edge technology, it will have a lasting impact on science and society. With investment totalling almost A\$3.5bn, the scale and reach of the facility will be unsurpassed.

The SKA Observatory is an Intergovernmental Organisation, supported on five continents and in both hemispheres under a unique partnership of sixteen nations. The SKA Observatory's facilities include its headquarters in the UK and radio-quiet sites in remote areas of South Africa and Australia, where the mid- and low-frequency telescopes are being built.

By constructing and operating these advanced telescopes, the SKA Observatory will become the world leader in radio astronomy, providing unparalleled research capabilities for decades.

In Australia, the SKA Observatory is collaborating with CSIRO, Australia's national science agency, to construct and operate the SKA-Low Telescope. SKA-Low teams are operating out of:

- Inyarrimanha Ilgari Bundara, the CSIRO Murchison Radio-astronomy Observatory on Wajarri Yamaji Country.
- Our Engineering Operations Centre on Nhanhangardi, Naaguja, Wilnyu and Amangu Country in Geraldton.
- Our Science Operations Centre on Whadjuk Noongar Country in Perth.

Further Reading: [Explore CSIRO and the SKA-Low Telescope project](#)

Role Overview

The Computing and Software team delivers novel computing and technology solutions to meet the requirements of the SKA Project. The SKA Observatory is driven by software and the systems include:

- An integrated control system that controls and monitors over 2 million process variables.
- Data processing systems that process the vast quantities of data produced by the SKA-Low, which will require a high-performance supercomputer capable of more than 100 petaflops and will result in hundreds of Petabytes of data archived per year.
- Science management systems to manage the interaction with scientists from around the world and ensure the huge amounts of data are made available to the appropriate people in a timely manner.
- Networks that move the data at rates exceeding Tbits/second across hundreds of km within the telescope and then shipping it to the scientific community using a world-wide 100 Gbit network.

Firmware plays a crucial role in SKA-Low's monitoring, control and signal processing. Due to the extremely large data rates, most data processing is performed on FPGAs and implemented using FPGA firmware written in languages such as VHDL. Monitoring and control of the telescope also requires low-level control of hardware, and this is implemented in firmware and embedded software targeting a range of processors.

The SKA-Low Firmware Engineer position will join a small but growing team responsible for the long-term development, maintenance, deployment and operations of the firmware of the SKA-Low telescope. In the current construction phase, the team works with other teams around the world to develop the firmware, and also provides maintenance, deployment and other operational support.

As the telescope moves into the operations phase, the team will increasingly assume ownership of the firmware, bearing ongoing responsibility for its development.

Due to the distributed nature of the SKA project, this role requires occasional work outside normal hours. It may involve domestic travel to Geraldton, and to *Inyarrimanha Ilgari Bundara*, the CSIRO Murchison Radio astronomy Observatory, and occasional international travel. CSIRO offers a range of flexible options for how, when and where you work, including a blend of work from home and from the office, noting this role is based in Perth, Western Australia.

Duties and Key Result Areas

- Build, test, integrate, document, deploy and maintain firmware, in accordance with the SKA quality framework and continuous integration processes.
- Contribute to the maintenance and operations of the SKA-Low telescope, as part of a local firmware team.
- Communicate openly, effectively, and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of SKAO and CSIRO's reputation.
- Perform some non-routine analyses or technology development activities using a range of techniques, often working on a number of parallel and competing tasks.
- Work with discretion to decide on the timing of operations within the work team's plan and plan ahead to meet project demands.
- Independently test possible solutions to resolve identified problems.
- Work collaboratively as part of a multi-disciplinary, regionally dispersed research team to carry out tasks in support of CSIRO's scientific objectives.
- Adhere to the spirit and practice of both SKAO and CSIRO's Values as well as the Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Zero Harm goals.
- Other relevant duties as directed.

Selection Criteria

CSIRO is an Equal Opportunity employer working hard to recruit world-class talent that represents the diversity across our society. As part of our commitment to equitable employment outcomes for under-represented groups, preference will be given to Aboriginal and/or Torres Strait Islander people, women and people with a disability who meet the role criteria.

Essential

Under CSIRO policy only those who are able to demonstrate how they can meet the essential criteria may be appointed.

- A bachelor's degree or higher in Computer Science/Engineering, Mechatronics Engineering, and/or equivalent demonstrated work experience in a related field.
- Experience in and knowledge of development of firmware and/or low-level C/C++ software for embedded systems.
- Experience in and knowledge of modern development practices, including version control, CI/CD, testing, documentation, and code quality aspects.

Desirable

- Experience developing firmware and/or software in a control systems context.
- Experience in python programming.
- Familiarity with working on GNU/Linux platforms.

Required Competencies

- **Teamwork and Collaboration:** Proactively seeks and considers the ideas and opinions of others from within and outside the team to help form decisions, plans or actions.
- **Influence and Communication:** Puts forward ideas by presenting factual information supported by data, definitions, examples, illustrations or other aids, which will assist in conveying meaning.
- **Resource Management/Leadership:** Provides instruction and assists other staff to complete allocated tasks and activities.
- **Judgement and Problem Solving:** Identifies and considers the implications of a range of available alternatives in order to select the most appropriate response to problems of a familiar or recurring nature.
- **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
- **Adaptability:** Willingness to change ideas or perceptions based on new information, contrary evidence or other people's points of view. Prepared to try out different approaches.

Special Requirements

Appointment to this role is subject to provision of a pre-employment background check and may be subject to other security/medical/character clearance requirements.

- The successful candidate will be required to gain a National Police Clearance or equivalent prior to commencement. This will be conducted by CSIRO Talent Services, through our provider, HireRight. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.

Child Safety

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](#).

CSIRO and SKAO Values

Visit [CSIRO Online](#) and [Space and Astronomy](#) and [SKAO online](#) and [SKAO Location](#) for more information.

In your application and at interview you will need to demonstrate behaviours aligned to our values of:

CSIRO

SKA Observatory

<ul style="list-style-type: none">• People First• Further Together• Making it Real• Trusted	<ul style="list-style-type: none">• Diversity and Inclusion• Excellence• Collaboration• Creativity and Innovation• Sustainability and Safety
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