# Position Details

## CSIRO Early Research Career (CERC) Engineering Fellowship– CSOF4

|  |  |
| --- | --- |
| The following information is for applicants | |
| Advertised Job Title | CSIRO Engineering Fellowship in Radio Astronomy Instrumentation:  Energy Efficient Signal Processing for All-Sky Radio Transient detection on Earth or on the Moon |
| Job Reference | 95593 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$92,624 to AU$101,459 pa (pro-rata for part-time)  plus up to 15.4% superannuation |
| Location(s) | Marsfield (Sydney). NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Mike Pilawa (he/him) via email at [Mike.Pilawa@csiro.au](mailto:Mike.Pilawa@csiro.au)  or phone +61 2 9372 4236 |
| 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](mailto: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](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

**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](https://www.csiro.au/en/about/policies/child-safe-policy).

### Role Overview

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate or masters and have less than three years relevant research experience. These Fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Fellows **are appointed for three years or full time equivalent.**

The CERC Fellow will help research and develop energy-efficient signal processing technologies intended for applications in transient radio signal detectors that could be deployed in remote locations on Earth, or even on the lunar far-side. Observing from extreme remote locations has many challenges, including, but not limited to, highly constrained power availability and limited communications bandwidth. However, observing from remote locations also has its advantages, such as a lack of entrenched human-caused radio interference (especially in the case of the lunar far-side!). In addition to working with senior research scientists and engineers, you will work closely with an astronomer postdoctoral fellow, who will be looking at developing the science cases for such remote radio observation instruments. The instrument(s) which you will be helping to research and develop will likely be initially deployed to existing ATNF sites such as the Murriyang (Parkes) telescope site, ATCA (Australia Telescope Compact Array) site, and/or Inyarrimanha Ilgari Bundara, our Murchison Radio-astronomy Observatory, home of our ASKAP (Australia Square Kilometre Array Pathfinder) telescope.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Research energy-efficient signal processing (analog and/or digital) solutions for all-sky radio transient monitoring instrumentation.
  + Develop the energy-efficient signal processing solutions in hardware and firmware/software.
  + Perform lab and field testing of developed equipment, and present results to senior staff and stakeholders.
  + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + Present results at major national and international conferences.
  + Carry out research investigations requiring originality, creativity and innovation.
  + Record, manage, and analyse data/information using relevant domain data science techniques.
  + Proactively undertake development to grow effective researcher capabilities to support career goals.
  + Adhere to the spirit and practice of CSIRO’s Values, Code of Conduct, Health, Safety and Environment procedures and policy and diversity initiatives.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD); OR

hold an engineering degree plus a Master of Science (MSc) or Master of Engineering (MEng) qualification (or will shortly satisfy the requirements of a masters) plus equivalent levels of original and significant contributions to research and development to that expected of someone of a new PhD graduate. The doctorate or masters must be in a relevant discipline area, such as Electronics Engineering, Signal Processing, or Computer Science.

Please note: To be eligible for this role you must have **no more than 3 years** (or full time equivalent) of relevant research experience.

1. Research and development (R&D) experience with signal processing systems and/or algorithms, with emphasis on energy efficiency.
2. High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
3. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
4. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable**

1. R&D experience with analogue and digital signals and systems for low-power applications, such as IoT, edge-computing, and/or remote instrumentation.
2. R&D experience in mobile communications systems, or similar, with emphasis on low-power designs and high-performance signal processing.
3. Keen interest in radio astronomy and/or space science.
4. Experience with PCB design tools such as Altium or KiCad.
5. Experience with FPGA designs & design tools such as AMD/Xilinx Vivado and Vitis.
6. Experience with working in Linux environments, including shell scripting.
7. Experience with programming in Python, and scientific/maths libraries like SciPy & NumPy, and plotting libraries like MatPlotLib.
8. Remain productive, positive, and resilient in complex, ambiguous and/or uncertain environments.
9. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

## **Required Competencies**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

To be appointed to this CERC Fellowship role within CSIRO, candidates will be expected to **commence employment by 30 June 2024**. Candidates are also required to have **submitted** their doctoral or master thesis at the time of commencement, as a minimum requirement, if PhD or masters conferment has not been obtained. If a candidate has submitted, but their PhD or masters has not yet been formally attained, the starting salary will be CSOF4-1 ($89,680). Upon CSIRO receiving written confirmation that the PhD or masters has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

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 undertake a pre-employment background check. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- https://ielts.com.au/

**Our value proposition**

We want CERC Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Fellow Experience Employee Value Proposition (EVP). Find out more [here](https://www.csiro.au/en/careers/career-opportunities/Postdoctoral-fellowships)!

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [CSIRO Space and Astronomy](https://www.csiro.au/en/research/technology-space/astronomy-space) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted