# Position Details

## Research Scientist/Engineer- CSOF5

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| The following information is for applicants | |
| Advertised Job Title | Research Scientist in High Performance Computing (HPC) |
| Job Reference | 78662 |
| Tenure | Specified Term of 3 years  Full-time or Part-time options available |
| Salary Range | AU$100k - AU$108k per annum (pro-rata for part-time)  plus up to 15.4% superannuation |
| Location(s) | Perth, WA (Preferred), other CSIRO locations may be negotiated |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * All candidates |
| Position reports to the | ATNF Software and Computing Group Leader |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Juan Guzman via email at juan.guzman@csiro.au or phone +61 8 6436 8569 |
| 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. |

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### Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the area 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).

### Role Overview

The role of Research Scientist in High-Performance Computing (HPC) will be part of the Science Data Processing Team at CSIRO Space and Astronomy and co-funded by the Pawsey Supercomputer Centre. The aim of this role as a research scientist is to bring diversity of thought, ideas, and lived experiences to support the delivery of innovative research from the Australian Square Kilometre Array Pathfinder telescope (ASKAP). ASKAP, CSIRO’s new-technology radio telescope and a precursor for the Square Kilometre Array (SKA), started operations in 2019 and is now preparing for full survey operations. This role will collaboratively engage in research and development to leverage the latest HPC technology capabilities to optimise the ASKAP software pipelines to run on the new Pawsey Supercomputing System, named *Setonix*. Setonix, an HPE/Cray EX Supercomputer, will deliver up to 50 Petaflops of compute power and will be capable to scale up to exascale (1000+ petaflops) computing systems. Preparing the ASKAP software pipelines for exascale will greatly benefit the radio astronomy science community and pave the way to support the big data challenges that will come from building and operating the SKA – the most exciting large-scale international radio telescope project in the world that will revolutionise our understanding of the universe.

We are looking for someone to engage in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. You will be encouraged to collaborate with a wide range of stakeholders to build and maintain networks, secure project funds, provide scientific leadership, support, and guidance. Our team will empower and support you to pursue new ideas and approaches that create innovative solutions to challenges in big data and communicate your results to the broader community through publications and at conferences. The Science Data Processing Team aims to be a truly diverse team and believes that to achieve these strategic scientific achievements we need to recruit and support world-class talent that represents the diversity across our society.

### Duties and Key Result Areas:

* Liaise with project stakeholders, including ASKAP Scientists, Software Engineers, and Pawsey Technical staff to determine their requirements and priorities.
* Assist in the design, implementation and testing of scientific software, and carry out research investigations, requiring originality, creativity and innovation.
* Contribute to the ASKAP and Pawsey software development teams in the areas of: HPC I/O optimisation, parallel programming techniques and use of accelerator technologies (GPU) for Radio Astronomy.
* Present results in a meaningful format, prepare reports for project stakeholders and/or write scientific papers for publication.
* Draw on professional expertise, knowledge of other disciplines and recognise opportunities for innovation and formulate software solutions by pursuing new ideas/approaches and networking with scientific and engineering colleagues across a range of disciplines.
* Develop, refactor and optimise existing Radio Astronomy imaging algorithms running on the new Pawsey Supercomputing Systems to support the ongoing demands of ASKAP.
* Address problems promptly and in a constructive manner,
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Be part of an inclusive multi-disciplinary, regionally dispersed research team, that supports CSIRO’s scientific objectives.
* Follow the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity and Inclusion initiatives, and Making Safety Personal goals.
* Other activities as requested.

## **Selection Criteria**

Please explain how you meet the following criteria and why you would be a good fit for the duties of this position in your Cover Letter.

#### Essential

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

1. A PhD in a relevant field such as Computational Chemistry/Physics/Bioinformatics, Computer Science, Computer Engineering or equivalent, with 2+ years of relevant experience in research and development
2. A demonstrated publication history of authorship on scientific papers in peer reviewed journals, reports, grant applications or inventorship on patent applications.
3. Advanced programming experience with focus on developing scientific computing applications running on HPC platforms
4. Experience in parallel programming (OpenMP, MPI)
5. Experience in programming using accelerator (GPU) technologies (OpenACC, CUDA)

## **Desirable:**

1. Experience with scientific workflow systems (e.g., Dask, Nextflow or CWL)
2. Experience with agile software development methodologies
3. Programming experience in C++ and Python
4. Knowledge or interest in Astronomy

## **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:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **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.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Clearance or equivalent. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [CSIRO Astronomy and Space Science](https://www.csiro.au/en/Research/Astronomy) 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:

1. People First
2. Further Together
3. Making it Real
4. Trusted