# Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| Advertised Job Title**:** | CSIRO Postdoctoral Fellowship in low-frequency radio astronomy and cosmology |
| Reference Number**:** | 57113 |
| Classification**:** | CSOF4 |
| Salary Range: | AU $83K to AU $91K plus up to 15.4% superannuation |
| Location**:** | Marsfield (Sydney) NSW, or Kensington (Perth) WA, Australia |
| Tenure: | Specified Term of 3 years (or part-time equivalent) |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | Australian Citizens Only  Australian/New Zealand Citizens and Australian Permanent Residents Only   * All Candidates |
| Functional Area**:** | Research Scientist / Engineer - Postdoc |
| % Client Focus - Internal: | 60% |
| % Client Focus - External: | 40% |
| Reports to the: | Team Leader |
| Number of Direct Reports: | 0 |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO.  Postdoctoral Fellows are appointed for up to three years or part time equivalent and will work closely with a leading Research Scientist or Engineer in their respective field. They carry out innovative, impactful research of strategic importance to CSIRO with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at conferences.  CSIRO Astronomy & Space Science (CASS) is looking for an enthusiastic Postdoctoral Fellow to conduct research to better understand how measurements of the Epoch of Reionisation (EoR) with low-frequency radio arrays are impacted by the Earth’s ionosphere. The fellow will improve Murchison Widefield Array (MWA) EoR measurements by developing techniques to limit or reverse ionospheric contamination, and investigate how these techniques can be extended for the low-frequency component of the Square Kilometre Array (SKA), Australia’s largest science project and a priority for radio astronomy globally.  The fellow will join the software and computing group at CASS and the MWA EoR collaboration, and be supported by leading researchers in ionospheric calibration and senior members of the MWA and SKA EoR communities. They will also join the vibrant community at the Australia Telescope National Facility, which operates facilities such as ASKAP, the Compact Array, and the Parkes Radio Telescope. |

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| **Duties and Key Result Areas:** |
| * Under the direction of senior research scientists, carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes. * Conduct low-frequency radio astronomy research into ionospheric contamination of Murchison Widefield Array data. * Develop algorithms to reduce ionospheric contamination in Murchison Widefield Array Epoch of Reionisation measurements. * Investigate ionospheric calibration strategies for the Square Kilometre Array. * Undertake regular reviews of relevant literature and patents. * Produce high quality scientific and/or engineering papers suitable for publication in quality journals, for client reports and granting of patents. * Prepare appropriate conference papers and present those at conferences as agreed with your supervisor. * Contribute to the development of innovative concepts and ideas for further research. * Make a contribution to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans. * Work collaboratively with colleagues within your team, the business unit and across CSIRO. * Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation. * Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals. * Undertake an appropriate training and development program developed by CSIRO. * Other duties as directed.   **CSIRO’s postdoctoral training program**is developed between the Postdoctoral Fellow and a CSIRO scientist or engineer. The program will focus on enhancing the Fellows’ 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   <http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed*  ***Pre-Requisites:***   1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as physics, radio astronomy, or related area.   ***Please note:*** *To be eligible for this role you must have* ***no more than 3 years (or part time equivalent)*** *of relevant postdoctoral experience.*   1. **Communication: High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.** 2. **Publications: A record of publications in quality, peer reviewed journals.** 3. **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment.   ***Essential Criteria:***   1. Demonstrated expertise in radio interferometry. 2. Proven understanding of calibration in radio astronomy. 3. Experience with algorithm and software development in C++, Python, Java, or other modern languages (including at the university level). 4. **The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.** 5. A record of science innovation and creativity, plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.   **Desirable Criteria:**   1. Experience with direction-dependent calibration in radio astronomy. 2. Experience with EoR/CMB detection or ionospheric modelling. 3. Experience in high performance computing. 4. Experience working in a scientific or research software development team.   **As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to**:   * Excellent science * Inclusion, trust & respect * Health, safety & environment * Delivery on commitments.   **In your application and at interview you will need to demonstrate alignment with these behaviours.**  To be appointed as a Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 (AU$80,833).Upon CSIRO receiving written confirmation that the PhD 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 may be subject to conditions including security/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearance processes; which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- <http://www.ielts.org/default.aspx> |

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| **Other Information:** |
| **How to Apply**  Please apply for this position online at <https://jobs.csiro.au/>.  Please upload **ONE DOCUMENT ONLY** containing your **Cover Letter**, response to the **selection criteria**, and your **resume/CV**. You may also be asked to respond to some on-line questions prior to submitting your application.  If you experience difficulties applying online call 1300 984 220 for assistance. Outside Australian business hours please email: [csiro-careers@csiro.au](mailto:csiro-careers@csiro.au).  **Referees**: Please provide contact details of two previous supervisor or academic/professional referees in your resume/CV. We will ask your permission before making contact.  **Contact:** If after reading the position details above you require more information please contact:  **Dr Daniel Mitchell**via email: [Daniel.Mitchell@csiro.au](mailto:Daniel.Mitchell@csiro.au) or phone: **+61 2 9372 4617**  Please do not email your application directly to Dr Mitchell. Applications received via this method may not be considered by the selection panel.  **About CSIRO**  Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.  Find out more! [www.csiro.au](http://www.csiro.au).  We work flexibly at CSIRO, offering a range of options for how, when and where you work. Talk to us about how this role could be flexible for you.  Find out more! [CSIRO Balance](https://www.csiro.au/en/Careers/A-great-place-to-work/Work-life-balance)  **CSIRO Astronomy and Space Science (CASS)** is our provider of technology and services for radio astronomy, spacecraft tracking and space sciences. It includes the Australian Square Kilometre Array Pathfinder telescope and contributing to the international development of the Square Kilometre Array telescope. The Business comprises the Australia Telescope National Facility (ATNF), NASA operations at the Canberra Deep Space Communication Complex (CDSCC) Tidbinbilla, and radio astronomy and space related research activities. Key capability areas include radio astronomy, astrophysics, space science coordination, and national/international facilities management. The ATNF comprises a number of world-class radio astronomy observatories. Visit: [www.atnf.csiro.au](http://www.atnf.csiro.au) |