MONASH University

# Position description

# Associate Professor of Gravitational Wave Astrophysics

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| **Department/Unit** | School of Physics and Astronomy |
| **Faculty** | Faculty of Science |
| **Classification** | Level D |
| **Work location** | Clayton campus |
| **Date document created or updated** | 24 August 2017 |

## Organisational context

Monash is a university of transformation, progress and optimism. Our people are our most valued asset, with our academics among the best in the world and our professional staff revolutionising the way we operate as an organisation. For more information about our University and our exciting future, please visit www.monash.edu

The **Faculty of Science** Science works at the frontiers of research and scholarship, and is committed to high quality teaching and learning; we have numerous partnerships with research institutions, industry, government and individual supporters. Our five Schools offer a large and diverse range of disciplines in undergraduate and postgraduate courses. Ten Schools from other Monash faculties contribute to science teaching at all levels, allowing students to choose their studies from physical, biological, biomedical, behavioural, environmental, mathematical and computer sciences. Our researchers are at the forefront of their fields - conducting research that spans the theoretical to the applied, contributing to new knowledge and technologies, and challenging how we understand and interact with the world. To learn more about the Faculty of Science, please visit our website: www.monash.edu/science/

The **School of Physics and Astronomy** aims to position itself as one of the top physics and astronomy research and teaching departments in Australia. In the past five years the School has gone through an exciting period of renewal – investing significantly in people and facilities. The School of Physics and Astronomy is committed to teaching and research of the highest quality in astronomy, astrophysics, experimental physics, and theoretical physics. It aims to produce graduates with a solid foundation in physics and astrophysics. We are recognised internationally for research in several fields of physics and astrophysics; however, we are focused on significantly strengthening our research base to achieve the status of a top ranked international department.

In the most recent national audit of research excellence (ERA 2015), the School achieved the maximum overall rating of 5 for Physical Sciences, including the maximum rating of 5 in each of our assessed fields of research (spanning astronomy and astrophysics, atomic and molecular physics, nuclear physics, particle physics, condensed matter physics and optics).

The School has research strengths in astronomy & astrophysics, ultracold atomic gases, X-ray optics and biomedical imaging, gravitational-wave astronomy, electron microscopy and diffraction, condensed matter physics and high-energy particle physics. Currently the School has 26 academic staff, 28 research-only staff and 17 adjunct staff, supported by 12 professional staff. In 2016, the School's total recurrent income was approximately $20M, with research income in the past four years totaling >$40M.

It is actively involved in six research centres:

- The Monash Centre for Astrophysics (MoCA) - http://moca.monash.edu
- The ARC Centre of Excellence for Particle Physics at the Terascale (CoEPP) - http://www.coepp.org.au/
- The ARC Centre of Excellence for Future Low Energy Electronics Technologies (FLEET) - https://www.fleet.org.au/
- The ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) - http://www.ozgrav.org/
- The Monash Centre for Electron Microscopy (MCEM) - https://platforms.monash.edu/mcem/
- The Monash Centre for Atomically Thin Materials (MCATM) - https://www.monash.edu/atomically-thin-materials).

In addition, the School has over a dozen Australian Research Council funded programmes and is an active user of the Australian Synchrotron and the Melbourne Centre for Nanofabrication, which are located adjacent to the Clayton Campus of Monash University.

Modern laboratory facilities are a high priority in the School's Strategic Plan. In 2013 the School's research laboratories relocated to a new building, the $175M New Horizons Centre (NHC).

**Astronomy and Astrophysics**

The School hosts the Monash Centre for Astrophysics, which is one of the most diverse astrophysics research groups in Australia. Major areas of research include: active galaxies, astrophysical fluid dynamics and magnetohydrodynamics, galaxy evolution, first stars, the formation of stars, stellar evolution, stellar nucleosynthesis, nuclear astrophysics, chemical evolution, galactic archaeology, supernovae, supernova remnants, neutron stars, stellar transients, supermassive black holes, high-energy astrophysics, gravitational-wave astronomy, stellar and planetary dynamics, and exoplanets. The Australian astrophysics community is heavily involved in major observational and computational facilities, including the Australian Square Kilometre Array Pathfinder (ASKAP), the Giant Magellan Telescope, the Australian Astronomical Observatory, Skymapper, HERMES, NCI, and the Green II and gSTAR supercomputers. The School is a major node of the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) - http://www.ozgrav.org/ In addition, the School conducts research into particle physics and cosmology through the ARC Centre of Excellence for Particle Physics at the Terascale (CoEPP). It is also member of the Joint Institute for Nuclear Astrophysics and has close collaborations with the Center for Nuclear Astrophysics at Shanghai Jiao Tong University

Further information about the position and the School of Physics and Astronomy is available at:

http://www.physics.monash.edu.au/employment.html#academic

http://www.physics.monash.edu.au/

## Position purpose

This role requires a commitment to leadership, excellence, innovation and creativity in research. The incumbent will also be expected to become a Chief Investigator in the ARC Centre for Excellence for Gravitational Wave Discovery (OzGrav). The incumbent will also contribute to innovative teaching and learning in the School's undergraduate astronomy and astrophysics programmes.

**Reporting Line:** The position reports to the Head of School, School of Physics and Astronomy

**Supervisory responsibilities:** Staff and honour and/or postgraduate students

**Financial delegation and/or budget responsibilities:** Not applicable

## Key responsibilities

1. Engage in a specialist research area in line with the faculty's research strategy, by maintaining a substantial active publications record (highest quality refereed journals) and supervising and mentoring early career researchers and research students
2. Foster research excellence through winning competitive research grants, lead research projects and working collaboratively with other staff to develop national and international research links
3. Participate in teaching, curriculum development and research training by participating in the faculty's curriculum planning and development processes, academic committees, and relevant examination processes, in addition to monitoring the quality of individual teaching in the relevant discipline

4. Development of teaching and learning material for active learning – including contributing to the School's model of studio astronomy (Physics and Astronomy Collaborative-learning Environment - PACE)
5. Contribute to academic and administrative leadership within the school/faculty/university by participating in the development of policy and strategy
6. Maintain and broaden collaborative partnerships with relevant faculties and departments/schools within the University, the national and international community of astrophysicists
7. Maintain and broaden collaborative partnerships with external agencies, both nationally and internationally, in order to make a contribution to the field of gravitational astrophysics
8. Actively contribute to partnering with appropriate industries and diversifying funding avenues

## Key selection criteria

**Education/Qualifications**

1. PhD in astronomy/ astrophysics, or related field

**Knowledge and Skills**

2. Evidence of outstanding scholarly activity at an international standard in Astronomy/Astrophysics, particularly in gravitational wave astrophysics. This must include a strong record of publications and citations in the highest impact factor journals, and a demonstrated ongoing commitment to one or more programs of research
3. Demonstrated ability to generate research income from both traditional sources (i.e., National Competitive Grants, competitive time at research facilities, including supercomputers, LIGP), and alternative research funding from non-traditional sources (e.g., industry)
4. Record of successful supervision of postgraduate research students and the ability to make a contribution to postgraduate training programs in Astronomy/Astrophysics, including the new coursework MSc in Astrophysics
5. Demonstrated excellence in teaching (at both undergraduate and postgraduate levels), including the development of the PACE model of studio astronomy
6. Development and revision of teaching materials, including e-education resources and implementation of innovative tutorial/active learning-based teaching programmes
7. Demonstrated leadership in committees and other administrative work and portfolios
8. Evidence of sustained relationships with Universities, research institutes coupled with a vision for the future needs and development of astronomy/astrophysics (particularly Gravitational Wave Astronomy) within Australia and internationally

## Other job related information

- Travel (e.g. to other campuses of the University) may be required

## Legal compliance

Ensure you are aware of and adhere to legislation and University policy relevant to the duties undertaken, including: Equal Employment Opportunity, supporting equity and fairness; Occupational Health and Safety, supporting a safe workplace; Conflict of Interest (including Conflict of Interest in Research); Paid Outside Work; Privacy; Research Conduct; and Staff/Student Relationships