



# RESEARCH FELLOW (THEORETICAL ASTROPHYSICS)

DEPARTMENT/UNIT	School of Physics and Astronomy
FACULTY/DIVISION	Faculty of Science
CLASSIFICATION	Level B
WORK LOCATION	Clayton campus

## ORGANISATIONAL CONTEXT

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Everyone needs a platform to launch a satisfying career. At Monash, we give you the space and support to take your career in all kinds of exciting new directions. You'll have access to quality research, infrastructure and learning facilities, opportunities to collaborate internationally, as well as the grants you'll need to publish your work. We're a university full of energetic and enthusiastic minds, driven to challenge what's expected, expand what we know, and learn from other inspiring, empowering thinkers. Discover more at [www.monash.edu](http://www.monash.edu).

The **School of Physics and Astronomy** is a School located within the **Faculty of Science**. It aims to position itself as one of the top physics and astronomy research and teaching departments in Australia. The School is committed to teaching and research of the highest quality in astronomy, astrophysics, experimental physics, and theoretical physics. We are strongly committed to improving the diversity of our staff and students, and promoting a culture of equality, fairness, respect and openness. In 2015, the School received a Bronze Pleiades Award - Recognising Commitment to Advancing Women in Astronomy. This is an important first step in affirming women within the School, one that we can build upon.

### 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, the European Southern Observatory (ESO) 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 particle astrophysics 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

The incumbent will be encouraged to develop strong collaborations with existing researchers in physics, astronomy and astrophysics.

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

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A Level B research-only academic is expected to carry out independent and/or team research within the field in which they are appointed and to carry out activities to develop their research expertise relevant to the particular field of research.

The primary role of this position is to work with an ARC Future Fellow and collaborators on 3D hydrodynamics simulations of convective-reactive events in stars. This is an Australian Research Council funded research project that combines heavy-element nucleosynthesis, 1D simulations, and 3D hydrodynamics. For this role expertise in 3D stellar hydrodynamics, including code development, is the primary criterion. Expertise in neutron-capture nucleosynthesis and 1D stellar modelling would also be beneficial.

The postdoctoral research fellow will join the Stellar group in the Monash Centre for Astrophysics and will also have the opportunity to collaborate with other members of the Monash Center for Astrophysics, whose research covers a wide range of astrophysics.

The Research Fellow will publish papers in high-impact journals, present results at major conferences and collaboration meetings, and assist in the supervision of students. Some funding for the postdoc's travel is included in the project budget.

**Reporting Line:** The position reports to a Senior Research Fellow and ARC Future Fellow within the School of Physics and Astronomy

**Supervisory Responsibilities:** Not applicable

**Financial Delegation:** Not applicable

**Budgetary Responsibilities:** Not applicable

## KEY RESPONSIBILITIES

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Specific duties required of a Level B research-only academic may include:

1. The conduct of research either as a member of a team or independently and the production of conference and seminar papers and publications from that research
2. Supervision of research-support staff involved in the staff member's research
3. Guidance in the research effort of junior members of research-only Academic staff in their research area
4. Contribution to the preparation or, where appropriate, individual preparation of research proposal submissions to external funding bodies
5. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise
6. Administrative functions primarily connected with their area of research
7. Occasional contributions to the teaching program within the field of the staff member's research
8. Co-supervision or, where appropriate, supervision of major honours or postgraduate research projects within the field of the staff member's area of research

9. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership of a limited number of committees

## **KEY SELECTION CRITERIA**

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### **Education/Qualifications**

1. The appointee will have:
  - A doctoral qualification in the relevant discipline area or equivalent qualifications or research experience

### **Knowledge and Skills**

2. Demonstrated statistical analysis and manuscript and research proposal preparation skills; including a solid track record of refereed research publications
3. Experience in successfully supervising, mentoring and coaching to support the development of research staff and/or a demonstrated trajectory of leadership capability
4. Experience in supervising and working with major honours or postgraduate students within the discipline
5. The ability to work both independently in a research environment and as part of an inter-disciplinary research team
6. High level organisational skills, with demonstrated capacity to establish and achieve goals
7. Excellent written and oral communication skills
8. Demonstrated capability in positively contributing to laboratory meetings, seminars and journal club meetings
9. A demonstrated capacity to work in a collegiate manner with other staff in the workplace

## **OTHER JOB RELATED INFORMATION**

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- Travel to other campuses of the University may be required
- There may be a requirement to work additional hours from time to time
- There may be peak periods of work during which taking of leave may be restricted

## **LEGAL COMPLIANCE**

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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.