



# RESEARCH FELLOW (THEORETICAL ASTROPHYSICS)

DEPARTMENT/UNIT	School of Physics and Astronomy
FACULTY/DIVISION	Faculty of Science
CLASSIFICATION	Level A
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 A research-only academic is expected to contribute towards the research effort of the university and to develop their research expertise through the pursuit of defined projects 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 collaborate with other members of the Monash Center for Astrophysics, whose research covers a wide range of astrophysics.

**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 A research-only academic may include:

1. The conduct of research under limited supervision either as a member of a team or, where appropriate, independently and the production or contribution to the production of conference and seminar papers and publications from that research
2. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise
3. Limited administrative functions primarily connected with the area of research of the academic
4. Development of a limited amount of research-related material for teaching or other purposes with appropriate guidance from other staff
5. Occasional contributions to teaching in relation to their research project(s)
6. Experimental design and operation of advanced laboratory and technical equipment or conduct of advanced research procedures
7. 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
8. Advice within the field of the staff member's research to postgraduate students

## **KEY SELECTION CRITERIA**

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### **Education/Qualifications**

1. The appointee will have:
  - An honours degree in the relevant discipline or have equivalent qualifications or research experience; or
  - an honours degree or higher qualifications in the relevant discipline and/or progress towards a doctorate in the relevant discipline; or
  - a doctoral qualifications in the relevant discipline or a closely related field

### **Knowledge and Skills**

2. Demonstrated analytical and manuscript preparation skills; including a track record of refereed research publications
3. Ability to solve complex problems by using discretion, innovation and the exercise diagnostic skills and/or expertise
4. Well-developed planning and organisational skills, with the ability to prioritise multiple tasks and set and meet deadlines
5. Excellent written communication and verbal communication skills with proven ability to produce clear, succinct reports and documents
6. A demonstrated awareness of the principles of confidentiality, privacy and information handling
7. 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.