POSITION DESCRIPTION

THE UNIVERSITY OF MELBOURNE

School of Physics
Faculty of Science

Postdoctoral Research Fellow in Gravitational Wave Discovery (up to 2 positions available)

POSITION NO	0042024
CLASSIFICATION	Level A
SALARY	$69,148 to $93,830 pa (*PhD entry level - $87,415 p.a.)
SUPERANNUATION	Employer contribution of 9.5%
WORKING HOURS	Full-time
BASIS OF EMPLOYMENT	Fixed-term position for 3 years
OTHER BENEFITS	http://about.unimelb.edu.au/careers/working/benefits
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers, select the relevant option ('Current Staff' or 'Prospective Staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Professor Andrew Melatos Tel +61 3 8344 5436 Email amelatos@unimelb.edu.au *Please do not send your application to this contact*

For information about working for the University of Melbourne, visit our website:
about.unimelb.edu.au/careers

Position Summary

The Australian Research Council (ARC) recently announced $31.3M of funding for a major new Centre of Excellence for Gravitational Wave Discovery, to be known as OzGrav, which started operations in 2017. OzGrav conducts research in instrumentation, data and astrophysics across the gravitational wave spectrum utilizing major international facilities including the Laser Interferometer Gravitational Wave Observatory (LIGO) and the Square Kilometer Array (SKA).

OzGrav's mission is to capitalise on the historic first detections of gravitational waves to understand the extreme physics of black holes and warped space-time and inspire the next generation of scientists and engineers through this new window on the Universe. As well as fundamental research, OzGrav pursues a vigorous outreach agenda, which includes working with students from low socio-economic areas and encouraging the participation of minorities in science at all levels.

The Postdoctoral Research Fellow position is in any area of gravitational wave science relevant to OzGrav's discovery mission, with an emphasis on data analysis, source astrophysics, detector characterization, and computing. The incumbent will conduct their own independent research and collaborate with other members of OzGrav on joint projects. For further details relating to the research context in OzGrav and examples of specific opportunities for collaborative research, please refer to Section 6.1.

1. Key Responsibilities

For Minimum Standards for Academic Staff Level A view
http://www.policy.unimelb.edu.au/schedules/MPF1157-ScheduleB.pdf

1.1 RESEARCH

- Undertake original research in gravitational wave discovery, with an emphasis on detecting and interpreting gravitational wave sources
- Collaborate on this research with members of OzGrav and, where appropriate, members of the LIGO Scientific Collaboration
- Write and publish papers in high-impact international peer-reviewed journals
- Deliver conference talks and posters and institutional seminars
- Take the lead in expanding and formalizing the future directions of OzGrav's and the University of Melbourne's research programs
- Develop existing and new links with researchers from the disciplines of mathematics and statistics, electrical and electronic engineering, and computing and information systems to further the goals of OzGrav's gravitational wave discovery program
- Assist in writing research proposals for grant funding
- Assist in mentoring postgraduate students

1.2 LEADERSHIP AND SERVICE

- Participate as an active member of OzGrav and the host groups at the University of Melbourne, including taking leadership positions
- Fulfil a range of administrative functions, the majority of which are connected with the research activities of the Research Fellow

- Participate in Centre and School meetings
- Contribute to developing links with the profession and other universities, both nationally and internationally, to support best practice research within the discipline
- Participate in the University Professional Development Framework

1.3 ENGAGEMENT

- Present research to the public to elevate public awareness of research activities
- Effectively use media outlets to promote and communicate research to the broader public
- Collaborate with government and industry partners to commercialize aspects of OzGrav's research where appropriate

1.4 OTHER DUTIES

- Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in Section 5

2. *Selection Criteria*

2.1 ESSENTIAL

- PhD or equivalent in physics, mathematics, electrical engineering, or a related discipline
- A demonstrated aptitude for research, with a strong publication record in relevant research areas, commensurate with experience and opportunities
- Demonstrated ability to work collaboratively in a multi-disciplinary research environment and liaise with postgraduate students and associates inside and outside academia
- Demonstrated ability to initiate and complete independent, self-motivated research with limited supervision
- Excellent communication skills, both verbal and written
- High levels of motivation and leadership potential

2.2 DESIRABLE

- Experience in gravitational wave data analysis, astrophysics, or instrumentation
- Experience in mentoring postgraduate students
- Existing international collaborative links

3. Special Requirements

- Undertake occasional interstate and/or international travel to meet with key stakeholders from industry and other nodes

4. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University's People Strategy 2015-2020 and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Growing Esteem.

5. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

http://safety.unimelb.edu.au/topics/responsibilities/

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

6. Other Information

6.1 RESEARCH CONTEXT - OZGRAV

OzGrav's postdoctoral and technical positions are funded by the Centre and hosted by the six partner nodes: the University of Melbourne (led by Melatos and Evans), Swinburne University of Technology (led by OzGrav Director Bailes), the Australian National University (led by OzGrav Deputy Director McClelland), Monash University (led by Thrane), the University of Adelaide (led by Veitch) and the University of Western Australia (led by Blair).

The Postdoctoral Research Fellow will be encouraged to spend time visiting other nodes as members of a dynamic and flexible team, which works across the gravitational wave spectrum from nanohertz to kilohertz frequencies. The Postdoctoral Research Fellow will have a generous travel budget and access to state-of-the-art videoconferencing to facilitate OzGrav-wide, large-scale projects. Many OzGrav members are active participants in the LIGO Scientific Collaboration. OzGrav is also home to a new $3.5M supercomputer custom-designed to support gravitational-wave science.

OzGrav is dedicated to creating a balanced workforce, by providing family-friendly policies and work practices, and working to solve “two-body” problems where possible. It will run dedicated Career Development, Gender Equity, Outreach and Research Translation programmes.

This postdoctoral fellowship (is part of up to four) at the University of Melbourne in the areas of LIGO data analysis, gravitational wave astrophysics, advanced signal processing, and high-performance computing. As well as conducting their own independent research, the Postdoctoral Research Fellow will have the opportunity to participate in a range of collaborative projects including LIGO continuous-wave and burst searches, multi-messenger astrophysical studies of black hole binaries and neutron stars, cross-disciplinary studies at the interface of detector characterization, signal processing, and computing, and industry translation opportunities in e.g. telecommunications and remote sensing. The position offers the opportunity to work with some of Australia’s top physics postgraduate students.

The University of Melbourne is a full member of the Laser Interferometer Gravitational Wave Observatory (LIGO) Scientific Collaboration.

6.2 SCHOOL OF PHYSICS

www.physics.unimelb.edu.au/

The University of Melbourne's School of Physics is one of Australia's leading Physics Schools. It has achieved this status through the high quality of its research and teaching programs. The School offers a wide range of physics subjects to undergraduate and postgraduate students, and performs research in the following areas: Astrophysics, Atomic, Molecular and Optical Physics, Experimental Condensed Matter Physics, Experimental Particle Physics, Material Science, Physical Biosciences, Theoretical Condensed Matter Physics and Theoretical Particle Physics.

The School of Physics hosts the ARC Centre of Excellence in Particle Physics at the Terascale and the Melbourne nodes of the ARC Centre of Excellence for Quantum Computation and Communication Technology, the ARC Centre of Excellence for Advanced Molecular Imaging and the ARC Centre of Excellence for All-Sky Astrophysics. The School also plays a major role in the Australian Synchrotron research program.

Currently some 25 academics, 51 research-only staff, more than 95 postgraduate students and 72 associates supported by 23 professional staff make up the School of Physics. The School additionally hosts an Australian Laureate Fellow, 4 ARC Future Fellows, and 4 ARC Discovery Early Career Researcher. Skilled technical staff operate, maintain and develop complex instrumentation and equipment to support the teaching and research activities of the School. The School is located in the David Caro building on the Swanston Street boundary of the University campus. The Head of School and the majority of the Professional staff are housed on the ground floor of the building to act as the first point of contact for students, staff and visitors.

6.3 FACULTY OF SCIENCE

http://www.science.unimelb.edu.au

Science at the University of Melbourne is the most highly ranked Faculty of Science in Australia.* Science is defined by its research excellence in the physical and life sciences and is at the forefront of research addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

We have over 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research, which empowers our STEM students and graduates to understand and address complexities that impact real world issues and the challenges of tomorrow.

We aspire to engage the broader community with the impact that Science has on our everyday lives. Through the strength of our internships and research project offerings, our students are provided opportunities to engage with industry partners to solve real-world issues.

The Faculty of Science has over 50,000 alumni and is one of the largest faculties in the University comprising seven schools: BioSciences, Chemistry, Earth Sciences, Ecosystem and Forest Sciences, Geography, Mathematics and Statistics, and Physics.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, Office for Environmental Programs and home to numerous Centres.

Science manages more than $290 million of income per annum, with a staff base in the order of 270 professional staff, and more than 580 academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 8,600 undergraduate and 2,440 graduate students. The Faculty of Science is the custodial Faculty for the BSc (Bachelor of Science). The Faculty of Science is a leader in research, contributing approximately $70 million in HERDC income per annum. The Faculty of Science is highly research focused, performing strongly in the ARC competitive grants schemes, often out-performing the national average. The Faculty of Science is currently growing its competitiveness and standing in the NHMRC space.

The Faculty of Science provides community services and industry partnerships based on a solid foundation of research in the pure and applied sciences. The Faculty has an endowment of approximately $56 million. The annual income from the endowment supports more than 120 prizes, scholarships and research awards.

* Figures from the latest available data for 2015, including published international rankings data.

6.4 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers.

6.5 GROWING ESTEEM, THE MELBOURNE CURRICULUM AND RESEARCH AT MELBOURNE: ENSURING EXCELLENCE AND IMPACT TO 2025

Growing Esteem describes Melbourne's strategy to achieve its aspiration to be a public-spirited and internationally-engaged institution, highly regarded for making distinctive contributions to society in research and research training, learning and teaching, and engagement. http://about.unimelb.edu.au/strategy-and-leadership

The University is at the forefront of Australia's changing higher education system and offers a distinctive model of education known collectively as the Melbourne Curriculum. The new educational model, designed for an outstanding experience for all students, is based on six broad undergraduate programs followed by a graduate professional degree, research higher degree or entry directly into employment. The emphasis on academic breadth as well as disciplinary depth in the new degrees ensures that graduates will have the capacity to succeed in a world where knowledge boundaries are shifting and reforming to create new frontiers and challenges. In moving to the new model, the University is also aligning itself with the best of emerging European and Asian practice and well-established North American traditions.

The University's global aspirations seek to make significant contributions to major social, economic and environmental challenges. Accordingly, the University's research strategy *Research at Melbourne: Ensuring Excellence and Impact to 2025* aspires to a significant advancement in the excellence and impact of its research outputs. http://research.unimelb.edu.au/our-research/research-at-melbourne

The strategy recognises that as a public-spirited, research-intensive institution of the future, the University must strive to make a tangible impact in Australia and the world, working across disciplinary and sectoral boundaries and building deeper and more substantive engagement with industry, collaborators and partners. While cultivating the fundamental enabling disciplines through investigator-driven research, the University has adopted three grand challenges aspiring to solve some of the most difficult problems facing our world in the next century. These Grand Challenges include:

- Understanding our place and purpose – The place and purpose grand challenge centres on understanding all aspects of our national identity, with a focus on Australia's 'place' in the Asia-Pacific region and the world, and on our 'purpose' or mission to improve all dimensions of the human condition through our research.
- Fostering health and wellbeing – The health and wellbeing grand challenge focuses on building the scale and breadth of our capabilities in population and global health; on harnessing our contribution to the 'convergence revolution' of biomedical and health research, bringing together the life sciences, engineering and the physical sciences; and on addressing the physical, mental and social aspects of wellbeing by looking beyond the traditional boundaries of biomedicine.
- Supporting sustainability and resilience – The sustainability and resilience grand challenge addresses the critical issues of climate change, water and food security, sustainable energy and designing resilient cities and regions. In addition to the technical aspects, this grand challenge considers the physical and social functioning of cities, connecting physical phenomena with lessons from our past, and the implications of the technical solutions for economies, living patterns and behaviours.

Essential to tackling these challenges, an outstanding faculty, high performing students, wide collaboration including internationally and deep partnerships with external parties form central components of Research at Melbourne: Ensuring Excellence and Impact to 2025.

6.6 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at http://www.unimelb.edu.au/governance