POSITION DESCRIPTION

THE UNIVERSITY OF MELBOURNE

School of Physics
Faculty of Science

Aboriginal & Torres Strait Islander applicants are strongly encouraged to apply

Research Fellow in Gravitational Wave Discovery (1 Position)

POSITION NO	0051425
CLASSIFICATION	Level A / Level B
SALARY	Level A: $73,669 pa to $99,964 pa (PhD entry level - $93,130 pa) Level B: $105,232 pa to $124,958 pa
SUPERANNUATION	Employer contribution of 9.5%
WORKING HOURS	Full time
BASIS OF EMPLOYMENT	Fixed-Term for 2-years (Level A) or 1.5-years (Level B)
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

Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of country throughout Australia. The University recognises the unique place held by Aboriginal and Torres Strait Islander peoples as the original custodians of country and their continued connection to the land, waterways, songlines and culture. The University respects all Aboriginal and Torres Strait Islander People and warmly embrace those students, staff, Elders and collaborators who identify as First Nations.

Position Summary

The Australian Research Council (ARC) has invested $31.3 million of funding into a major new Centre of Excellence for Gravitational Wave Discovery, known as OzGrav, which started operations in 2017. OzGrav conducts research in instrumentation, data analysis, 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. OzGrav also pursues research translation and commercialisation, generating opportunities for staff to experience secondments to industry during their postdoctoral terms.

The 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 Research Fellow 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

1.1 RESEARCH

The position description should be read alongside Academic Career Benchmarks and Indicators.

A level A academic is acquiring skills and building academic achievements (oriented towards the benchmarks).

You are expected to significantly contribute towards the research effort of the team and to develop your research expertise with an increasing degree of autonomy.

- 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
- Contribute to and publish academic papers and other scholarly outputs to a high academic standard in accordance with the research expectations of the University of Melbourne

- 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.
- Contribute to the preparation, or where appropriate individual preparation of research proposal submissions to internal or external funding bodies as relevant
- 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
- Actively contribute to the research culture of the School of Physics and of the research group by attendance and active participation in meetings and seminars associated with the research work of the project, as well as School meetings and seminars
- Effective demonstration and promotion of University values including diversity and inclusion and high standards of ethics and integrity
- Actively contribute to School activities such as Open day to promote student engagement

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 commercialise aspects of OzGrav's research where appropriate

1.4 OTHER DUTIES

- Undertake administration primarily relating to the activities of the role and area of research
- Perform other tasks as requested by the supervisor or the Head of School
- Actively participate in the University Professional Development Framework
- Ensure an up-to-date record of University compliance courses, such as, but not limited to, Appropriate Workplace Behaviour, PDF for Staff and Supervisors, OH&S training courses
- Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S)

2. Selection Criteria

2.1 ESSENTIAL

- PhD (or near completion) or equivalent in physics, mathematics, electrical engineering, or a related discipline
- A demonstrated aptitude for research, with a sound publication record in relevant areas, commensurate with experience and opportunities
- Demonstrated ability to prepare research reports and manuscripts for publication
- Strong evidence of ability and desire to build an academic research career trajectory
- Demonstrated ability to engage with relevant professional and industry bodies and stakeholders to foster collaborative partnerships
- Excellent interpersonal and both written and oral communication skills in English
- Excellent ability to work co-operatively and positively in a multi-disciplinary research-based team environment and liaise with people from diverse backgrounds
- Demonstrated excellent organisational skills to meet deadlines and bring projects to a timely completion
- Demonstrated ability to develop, administer and see through to completion appropriately designed research projects with limited supervision
- Demonstrated ability to work with people from diverse cultural backgrounds

2.2 ADDITIONAL ESSENTIAL CRITERIA FOR APPOINTMENT AT LEVEL B AND (DESIRABLE FOR LEVEL A)

- Ability to supervise and mentor research students
- A national or international research profile, as evidenced by publication record, active collaborations, invitations to speak and/or service to relevant professional bodies
- The ability to attract funding through competitive grant applications, commensurate with experience and opportunities

2.3 DESIRABLE

- Experience in gravitational wave data analysis, astrophysics, or instrumentation
- Experience in assisting with supervision of students undertaking undergraduate or higher degree research projects

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:

https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel

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

www.ozgrav.org

OzGrav's postdoctoral and technical positions are funded by the Centre and hosted by the six partner nodes:

- University of Melbourne (led by Melatos and Evans)
- Swinburne University of Technology (led by OzGrav Director, Bailes)
- Australian National University (led by OzGrav Deputy Director McClelland)
- Monash University (led by Thrane)
- University of Adelaide (led by Veitch)
- University of Western Australia (led by Blair).

Research fellows 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. Each postdoc 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 $3.5 million 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.

The successful Research Fellow will be part of a team of four OzGrav research fellows at the University of Melbourne working 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, research fellows have the opportunity to participate in a range of collaborative projects inside and outside OzGrav. Current activities include leadership of LIGO burst (BayesWave), stochastic, and continuous-wave (Viterbi) searches; analysis of radio pulsar timing data, with an emphasis on novel tracking methods for timing noise and glitches; multi-messenger astrophysical studies of black hole binaries, including population studies with N-body simulations; multi-messenger astrophysical studies of neutron stars, including simulations of magnetic fields and quantum fluids in neutron star interiors and the nuclear equation of state; cross-disciplinary studies at the interface of LIGO detector characterization, signal processing, and computing, including Newtonian and magnetic noise suppression; industry translation opportunities, eg in telecommunications and remote sensing; and a rich public outreach effort. 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, Materials Science, Physical Biosciences, Theoretical Condensed Matter Physics and Theoretical Particle Physics.

The School of Physics hosts the following ARC Centre of Excellence groups:

- ARC Centre of Excellence for Transformative Meta-Optical Systems (TMOS)
- ARC Centre of Excellence for Dark Matter Particle Physics
- ARC Centre of Excellence for Gravitational Wave Discovery
- ARC Centre of Excellence in All Sky Astrophysics
- ARC Centre of Excellence for Quantum Computation and Communication Technology (CQC^2T)

The School also plays a major role in the Australian Synchrotron research program, and in the development of the Stawell Underground Physics Laboratory.

Currently some 30 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 1 Thomas Baker Chair and Melbourne Laureate Professor, 2 ARC Future Fellows and 1 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 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 among the most highly ranked Faculties 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 53,000 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, Australian Mathematical Sciences Institute (AMSI) and home to numerous Centres.

Science manages more than $315 million of income per annum, with a staff base in the order of 290 professional staff, and more than 630 academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 9,700 undergraduate and 2,400 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 $80 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.

* *Based on 2018-19 subject rankings by QA and Time Higher Education*

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 ADVANCING MELBOURNE

The University's strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University's commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne's academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

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 https://about.unimelb.edu.au/strategy/governance