Australian National University

Position Description

College/Division:	College of Science
Faculty/School/Centre:	Research School of Physics
Department/Unit:	Centre for Gravitational Astrophysics
Position Title:	Research Fellow
Classification:	Academic Level B
Position No:	TBA
Responsible to:	Professor Kirk McKenzie
Number of positions that report to this role:	NA
Delegation(s) Assigned:	NA

PURPOSE STATEMENT:

ANU has an international reputation for research and education relevant to the health and well-being of the population of Australia, as well as that of the developing world. This is achieved through discovery research, applied research in health service settings, research-led teaching in health and medical sciences, and the translation of research findings into practice and policy.

The ANU Centre for Gravitational Astrophysics (CGA) is a joint facility of the Research School of Physics and the Research School of Astronomy and Astrophysics. The Centre brings together all aspects of gravitational wave research including instrumentation for gravitational wave detection, theory and data analysis, electromagnetic follow up, space technology, and applied metrology. The centre has a leading role in gravitational wave science and technology in Australia and has a track record of translating its expertise into industrial high-precision measurement applications. The CGA is also home to the ANU node of the ARC Centre of Excellence for Engineered Quantum Systems (EQUS) which harnesses the underlying rules of the universe to build sophisticated quantum machines for practical applications. EQUS pioneers the design of quantum materials, quantum engines, and quantum imaging systems to solve the most challenging research problems at the interface of fundamental quantum physics and engineering, and work with partners in industry to translate our research discoveries into practical technologies to the benefit of Australia's society and economy. Our capacity building programs are training the next generation of scientists, technologists and entrepreneurs in cutting-edge fundamental research, bench-to- product technology innovation, and ultimately deliver major impacts on Australia's high-tech economy.

The ANU EQUS node is working on laser interferometry techniques and precision phase measurements for future space missions including the Gravity Recovery and Climate Experiment (GRACE) series of missions, and the Laser Interferometer Space Antenna (LISA) – the space based gravitational-wave observatory.

EQUS@ANU is seeking an outstanding early-to-mid-career researcher to fill one Research Fellowship, in a coordinated effort along with the Centre's other four nodes. Deborah S. Jin was a brilliant American physicist who was one of the world's foremost experts on how ordinary atoms and molecules change their behaviour at extraordinarily low temperatures. Her visionary and methodical approach made it possible to use these ultracold gases as model systems to tease out the quantum principles that lead to behaviours in real materials, such as superconductivity. These Fellowships honour her legacy by supporting and encouraging early-and mid-career women physicists.

KEY ACCOUNTABILITY AREAS:

Position Dimension & Relationships:

The Research Fellow is expected to undertake work in all three areas of academic activity – research, education and service (including outreach). The allocation of time to each area will be discussed with the position supervisor annually and be reflective of the appointees' research agenda, school and interdisciplinary teaching requirements and leadership opportunities within the School environment. The Research Fellow may also be required to supervise or mentor less senior staff, and undertake

leadership roles as applicable. The staff member will contribute cooperatively to the overall intellectual life of the Centre, College and University.

The Research Fellow will be a member of CGA, accountable to the Director of the Centre and Director of the School. The Research Fellow will be expected to work collegially, leading by example to develop and maintain effective, productive and beneficial workplace relationships within the all-academic and professional School and College staff, students and honorary appointees, as well as with industry stakeholders. This position will also have a mentoring role for students and will engage in collegial and productive collaborations with local, national and where possible, international colleagues.

Role Statement:

In their role as an Academic Level B the Research Fellow is expected to:

- Undertake independent research in the area of precision laser stabilization and phase tracking at the quantum limit with a view to publishing original and innovative results in refereed journals, present research at academic seminars and at national and international conferences, and collaborate with other researchers at a national and/or international level.
- Actively seek and secure external funding including the preparation and submission of research proposals to external funding bodies.
- Contribute to the teaching activities of the School at the undergraduate and graduate levels. This includes, but is not limited to, the preparation and delivery of lectures and tutorials, the preparation of online material, marking and assessment, consultations with students, acting as subject coordinators and the initiation and development of course/subject material.
- Supervise students working on individual or group projects at undergraduate, honours, graduate-coursework levels. Supervision of research students.
- Supervise Postdoctoral Fellow's and research support staff in your research area.
- Actively contribute to all aspects of the operation of the School. This may include representation through committee memberships.
- Assist in outreach activities including to prospective students, research institutes, industry, government, the media and the general public.
- Maintain high academic standards in all education, research and administration endeavours.
- Take responsibility for their own workplace health and safety and not willfully place at risk the health and safety of another person in the workplace.
- A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.
- Other duties as required that are consistent with the classification of the position.

Skill Base:

A Level B academic will undertake independent teaching and research in their discipline or related area. In research and/or scholarship and/or teaching a Level B academic will make an independent contribution through professional practice and expertise and coordinate and/or lead the activities of other staff, as appropriate to the discipline.

A Level B academic will normally contribute to teaching at undergraduate, honours and postgraduate level, engage in independent scholarship and/or research and/or professional activities appropriate to their profession or discipline. The academic will normally undertake administration primarily relating to their activities at the institution and may be required to perform the full academic responsibilities of and related administration for the coordination of an award program of the institution.

SELECTION CRITERIA:

- A PhD in physics or engineering or a related area, with a track record of independent research in the field of laser interferometry, quantum optics, or precision measurements for physics and astrophysics instrumentation as evidenced by publications in peer-reviewed journals and conferences, a record of developing and maintaining collaborations and by other measures such as awards, and invitations to present at conferences.
- Evidence of the ability to articulate and prosecute innovative research in the field of laser interferometry or precision measurement and a vision for the activities they will undertake at the ANU.
- A demonstrated ability and commitment to apply for competitive external funding to support individual and collaborative research activities.
- Evidence of an ability and willingness to teach at all levels.

- An ability to supervise and graduate high quality PhD/Masters research students.
- The demonstrated ability to work as part of a team, contributing to team management and a demonstrated ability to meet deadlines.
- Excellent oral and written English language skills and a demonstrated ability to communicate and interact effectively with a variety of staff and students in a cross-disciplinary academic environment and to foster respectful and productive working relationships with staff, students and colleagues at all levels.
- A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

The ANU conducts background checks on potential employees, and employment in this position is conditional on satisfactory results in accordance with the Background Checking Procedure which sets out the types of checks required by each type of position.

Supervisor/Delegate Name:	**Professor Kirk McKenzie**	**Date:**	March 2023

References:

Academic Minimum Standards

Australian National University

Pre-Employment Work Environment Report

Position Details

College/Div/Centre	**College of Science**	**Dept/School/Section**	**CGA, RSPhys**
Position Title	**Research Fellow**	**Classification**	**Academic Level B**
Position No.	**TBA**	**Reference No.**	

In accordance with the Work Health and Safety Act 2011 (Cth) the University has a primary duty of care, so far as reasonably practicable, to ensure the health and safety of all staff while they are at work in the University.

- This form must be completed by the supervisor of the advertised position and appended to the back of the Position Description.
- This form is used to advise potential applicants of work environment and health and safety hazards prior to application.
- Once an applicant has been selected for the position they must familiarise themselves with the University WHS Management System via Handbook guidance https://services.anu.edu.au/human-resources/health-safety/whs-management-system-handbook
- The hazards identified below are of generic nature in relation to the position. It is not correlated directly to training required for the specific staff to be engaged. Identification of individual WHS training needs must be in accordance with WHS Local Training Plan and through the WHS induction programs and Performance Development Review Process.
- 'Regular' hazards identified below must be listed as 'Essential' in the Selection Criteria - see ' Employment Medical Procedures' at http://info.anu.edu.au/Policies/_DHR/Procedures/Employment_Medical_Procedures.asp

Potential Hazards

- Please indicate whether the duties associated with appointment will result in exposure to any of the following potential hazards, either as a **regular** or **occasional** part of the duties.

TASK	regular	occasional	TASK	regular	occasional
key boarding	☒	☐	laboratory work	☒	☐
lifting, manual handling	☐	☐	work at heights	☐	☐
repetitive manual tasks	☐	☐	work in confined spaces	☐	☐
Organizing events	☐	☐	noise / vibration	☐	☒
fieldwork & travel	☐	☐	electricity	☒	☐
driving a vehicle	☐	☐			
NON-IONIZING RADIATION			**IONIZING RADIATION**		
solar	☐	☐	gamma, x-rays	☐	☐
ultraviolet	☐	☐	beta particles	☐	☐
infra red	☐	☐	nuclear particles	☐	☐
laser	☒	☐			
radio frequency	☒	☐			
CHEMICALS			**BIOLOGICAL MATERIALS**		
hazardous substances	☐	☐	microbiological materials	☐	☐
allergens	☐	☐	potential biological allergens	☐	☐
cytotoxics	☐	☐	laboratory animals or insects	☐	☐
mutagens/teratogens/ carcinogens	☐	☐	clinical specimens, including blood	☐	☐
pesticides / herbicides	☐	☐	genetically-manipulated specimens	☐	☐
			immunisations	☐	☐

OTHER POTENTIAL HAZARDS (please specify):

Supervisor/Delegate Name:	**Professor Kirk McKenzie**	**Date:**	**March 2023**