



Position Description

College/Division:	College of Science
School/Centre:	Research School of Physics
Department/Unit:	Quantum Science
Position Title:	Postdoctoral Fellow
Classification:	Academic Level A
Position No:	TBC
Responsible to:	Prof. Joseph Hope

PURPOSE STATEMENT:

The Atomlaser and Quantum Sensors Group is advertising for a Postdoctoral Fellow to join a project which aims to deliver a new technique for cooling dilute ultracold gases. This technique is measurement-based feedback cooling. Unlike the current evaporative methods, feedback cooling neither loses atoms, nor relies on elastic collisions or internal atomic structure. This opens up the possibility of directly cooling traditionally uncoolable systems. This expands the quality and range of available atomic sources, benefitting research into exotic materials, and benefitting precision sensors used across applications from navigation to mining.

The Postdoctoral 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 Postdoctoral Fellow may also be required to supervise or assist in the supervision of students, and contribute cooperatively to the overall intellectual life of the School, College and University.

KEY ACCOUNTABILITY AREAS:

Position Dimension & Relationships:

The Postdoctoral Fellow will work closely with the Atomlaser and Quantum Sensors Group, working on the experimental implementation of minimally destructive imaging and dynamic feedback to control and cool the dynamics of Bose-Einstein condensates of ultracold atomic gases. The Postdoctoral Fellow will also interact closely with theoretical physicists Dr. Stuart Szigeti, Dr. Simon Haine, and Professor Joe Hope, as well as providing research guidance to postgraduate students in the Department of Quantum Science.

Role Statement:

Under the broad direction of senior members of the Atomlaser and Quantum Sensors Group, Department of Quantum Science, the Postdoctoral Fellow will:

1. Undertake independent research and develop the experimental implementation of feedback control of ultracold degenerate quantum gases with a view to publishing original and innovative results in referred journals, present research at academic seminars at national and international conferences, and collaborate with other researchers at a national level.
2. Contribute to the teaching activities of the School and undergraduate and graduate levels. This includes, but is not limited to, the preparation and delivery of lectures and tutorials, the preparation of online material, making and assessment, consultations, and with students or acting as subject coordinators. Supervise students working on individual or group projects at undergraduate, honours, graduate-coursework levels. Assist with supervision of research students.
3. Collaborate with senior staff to actively seek and secure external funding, assist to prepare and submit research proposals to external funding bodies as appropriate
4. Assist to supervise research support staff in your research area.
5. Actively contribute to all aspects of the operation of the School.
6. Assist in outreach activities including to prospective students, research institutes, industry, government, the media and the general public.
7. Maintain high academic standards in all education, research and administration endeavours.
8. Take responsibility for their own workplace health and safety and not wilfully place at risk the health and safety of another person in the workplace.

9. 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 A academic will work with the support and guidance from more senior academic staff and is expected to develop their expertise in teaching and research with an increasing degree of autonomy. A Level A academic will normally have completed four years of tertiary study or equivalent qualifications and experience and may be required to hold a relevant higher degree.

A Level A academic will normally contribute to teaching at the institution, at a level appropriate to the skills and experience of the staff member, engage in scholarly, research and/or professional activities appropriate to their profession or discipline, and undertake administration primarily relating to their activities at the institution. The contribution to teaching of Level A academics will be primarily at undergraduate and graduate diploma level.

SELECTION CRITERIA – Academic Level A:

1. A PhD (or awarding of a PhD within six months of appointment commencement) in a relevant area of experimental physics, with a demonstrated track record of working with laser-cooled atoms and Bose-Einstein condensates (BECs), as evidenced by publications in peer-reviewed journals and presentations at conferences.
2. Demonstrated research experience in the field of experimental cold-atom physics, including (a) the design and construction of a cold or ultracold atom apparatus, (b) laser cooling and BEC formation, and (c) computer coding in e.g Python, Labview, Mathematica, Matlab.
3. Track record of practical problem solving in experimental physics.
4. An ability and commitment to contribute to bids for competitive external funding to support individual and collaborative research activities.
5. The ability to assist in the supervision of students working on research projects.
6. The ability to work as part of a team and to meet deadlines.
7. 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.
8. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

Supervisor/Delegate Signature:		Date:	
Printed Name:	Professor Joseph Hope	Uni ID:	

References:

[General Staff Classification Descriptors](#)

[Academic Minimum Standards](#)



Position Description

College/Division:	ANU College of Science
School/Centre:	Research School of Physics
Department/Unit:	Quantum Science
Position Title:	Research Fellow
Classification:	Academic Level B
Position No:	
Responsible to:	Prof. Joseph Hope

PURPOSE STATEMENT:

The Atomlaser and Quantum Sensors Group is advertising for a Research Fellow to join a project which aims to deliver a new technique for cooling dilute ultracold gases. This technique is measurement-based feedback cooling. Unlike the current evaporative methods, feedback cooling neither loses atoms, nor relies on elastic collisions or internal atomic structure. This opens up the possibility of directly cooling traditionally uncoolable systems. This expands the quality and range of available atomic sources, benefitting research into exotic materials, and benefitting precision sensors used across applications from navigation to mining.

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 School, College and University.

KEY ACCOUNTABILITY AREAS:

Position Dimension & Relationships:

The Research Fellow will work closely with the Atomlaser and Quantum Sensors Group, working on the experimental implementation of minimally destructive imaging and dynamic feedback to control and cool the dynamics of Bose-Einstein condensates of ultracold atomic gases. The Postdoctoral Fellow will also interact closely with theoretical physicists Dr. Stuart Szigeti, Dr. Simon Haine, and Professor Joe Hope, as well as providing research guidance to postgraduate students in the Department of Quantum Science.

Role Statement:

Under the broad direction of senior members of the Atomlaser and Quantum Sensors Group, Department of Quantum Science, the Research Fellow will:

1. Undertake independent research and develop the experimental implementation of feedback control of ultracold degenerate quantum gases 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.
2. Actively seek and secure external funding including the preparation and submission of research proposals to external funding bodies.
3. 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
4. Supervise students working on individual or group projects at undergraduate, honours, graduate-coursework levels. Supervision of research students.
5. Supervise Postdoctoral Fellow's and research support staff in your research area.
6. Actively contribute to all aspects of the operation of the School. This may include representation through committee memberships.

7. Assist in outreach activities including to prospective students, research institutes, industry, government, the media and the general public.
8. Maintain high academic standards in all education, research and administration endeavours.
9. 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.
10. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.
11. 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 – Academic Level B:

1. A PhD in a relevant area of experimental physics, with a demonstrated track record of working with laser-cooled atoms and Bose-Einstein condensates, as evidenced by publications in peer-reviewed journals and conferences, a record of developing and maintaining collaborations, and by other measures such as awards, invitations to give talks at leading conferences etc.
2. Demonstrated research experience in the field of experimental cold-atom physics, including (a) the design and construction of a cold or ultracold atom apparatus, (b) laser cooling and BEC formation, and (c) computer coding in e.g Python, Labview, Mathematica, Matlab.
3. Track record of practical problem solving in experimental physics.
4. A demonstrated ability and commitment to apply for competitive external funding to support individual and collaborative research activities.
5. An ability to supervise and graduate high quality PhD/Masters research students.
6. The demonstrated ability to work as part of a team, contributing to team management and a demonstrated ability to meet deadlines.
7. 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.
8. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

Supervisor Signature:		Date:	
Printed Name:	Professor Joseph Hope	Uni ID:	

References:

[General Staff Classification Descriptors](#)

[Academic Minimum Standards](#)



Pre-Employment Work Environment Report

Position Details

College/Div/Centre	College of Science	Dept/School/Section	RSPysics
Position Title	Postdoctoral / Research Fellow	Classification	Academic Level A/B
Position No.		Reference No.	

In accordance with the Occupational Health and Safety Act 1991 the University has a duty of care to provide a safe workplace for all staff.

- This form must be completed by the supervisor of the advertised position and forwarded with the job requisition to Appointments and Promotions Branch, Human Resources Division. Without this form jobs cannot be advertised.
- This form is used to advise potential applicants of work environment issues prior to application.
- Once an applicant has been selected for the position consideration should be given to their inclusion on the University's Health Surveillance Program where appropriate – see . http://info.anu.edu.au/hr/OHS/___Health_Surveillance_Program/index.asp
Enrolment on relevant OHS training courses should also be arranged – see http://info.anu.edu.au/hr/Training_and_Development/OHS_Training/index.asp
- '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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	laboratory work	<input checked="" type="checkbox"/>	<input type="checkbox"/>
lifting, manual handling	<input type="checkbox"/>	<input type="checkbox"/>	work at heights	<input type="checkbox"/>	<input type="checkbox"/>
repetitive manual tasks	<input type="checkbox"/>	<input type="checkbox"/>	work in confined spaces	<input type="checkbox"/>	<input type="checkbox"/>
catering / food preparation	<input type="checkbox"/>	<input type="checkbox"/>	noise / vibration	<input type="checkbox"/>	<input type="checkbox"/>
fieldwork & travel	<input type="checkbox"/>	<input type="checkbox"/>	electricity	<input type="checkbox"/>	<input type="checkbox"/>
driving a vehicle	<input type="checkbox"/>	<input type="checkbox"/>			
NON-IONIZING RADIATION			IONIZING RADIATION		
solar	<input type="checkbox"/>	<input type="checkbox"/>	gamma, x-rays	<input type="checkbox"/>	<input type="checkbox"/>
ultraviolet	<input type="checkbox"/>	<input type="checkbox"/>	beta particles	<input type="checkbox"/>	<input type="checkbox"/>
infra red	<input type="checkbox"/>	<input type="checkbox"/>	nuclear particles	<input type="checkbox"/>	<input type="checkbox"/>
laser	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
radio frequency	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
CHEMICALS			BIOLOGICAL MATERIALS		
hazardous substances	<input type="checkbox"/>	<input type="checkbox"/>	microbiological materials	<input type="checkbox"/>	<input type="checkbox"/>
allergens	<input type="checkbox"/>	<input type="checkbox"/>	potential biological allergens	<input type="checkbox"/>	<input type="checkbox"/>
cytotoxics	<input type="checkbox"/>	<input type="checkbox"/>	laboratory animals or insects	<input type="checkbox"/>	<input type="checkbox"/>
mutagens/teratogens/ carcinogens	<input type="checkbox"/>	<input type="checkbox"/>	clinical specimens, including blood	<input type="checkbox"/>	<input type="checkbox"/>
pesticides / herbicides	<input type="checkbox"/>	<input type="checkbox"/>	genetically-manipulated specimens	<input type="checkbox"/>	<input type="checkbox"/>
			immunisations	<input type="checkbox"/>	<input type="checkbox"/>
OTHER POTENTIAL HAZARDS (please specify):					

Supervisor's Signature:		Print Name:		Date:	
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