



Position Description

College/Division:	ANU College of Science
Faculty/School/Centre:	Research School of Physics
Department/Unit:	Nonlinear Physics
Position Title:	Postdoctoral Fellow
Classification:	Academic Level A
Position No:	TBC
Responsible to:	Head of Department
Number of positions that report to this role:	
Delegation(s) Assigned:	

PURPOSE STATEMENT:

The ANU College of Science (CoS) comprises: the Research School of Astronomy and Astrophysics, the Research School of Biology, the Research School of Chemistry, the Research School of Earth Science, the Fenner School of Environment and Society, the Mathematical Sciences Institute, the Research School of Physics, and the Centre for the Public Awareness of Science. Staff and students within the ANU College of Science conduct research and delivers a research-led education program that encompasses the entire breadth of the sciences, supported by extensive international networks and by world-class facilities. The College has a strong tradition of research excellence that has fostered distinguished Nobel Laureates and Kyoto Prize winners and that trains scientific leaders in disciplines in which the ANU is consistently ranked in the top twenty in the world.

The Nonlinear Physics Centre (NLPC) is engaged in fundamental research on nonlinear phenomena and their applications in various branches of physics. The Postdoctoral Fellow will conduct research in the field of synthetic multi-dimensional optical circuits.

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.

POSITION DIMENSION AND RELATIONSHIPS:

Major responsibility will be to undertake theoretical research on the fundamental physics and applications of planar optical structures featuring unconventional synthetic multidimensional properties in classical and quantum regime. Specific research aim will be the development and investigation of photonic lattices, such as arrays of coupled waveguides or resonators. Demonstrated practical expertise in topics such as integrated photonics and optical waveguides, quantum optics and coupled-mode theory is essential.

The position will collaborate with other researchers in the NLPC and RSPHys and will be expected to supervise undergraduate and postgraduate students.

Role Statement:

In their role as an Academic Level A the Postdoctoral Fellow is expected to:

1. Undertake independent research in the area of Physics 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 level.
2. Collaborate with senior staff to actively seek and secure external funding, assist to prepare and submit research proposals to external funding bodies as appropriate.
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, and with students or acting as subject coordinators.
4. Supervise students working on individual or group projects at undergraduate, honours, graduate-coursework levels. Assist with supervision of research students.

5. Assist to supervise research support staff in your research area.
6. Actively contribute to all aspects of the operation of the School.
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 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:

1. A PhD (or awarding of a PhD within six months of appointment commencement) in Physics, or equivalent qualifications and/or research experience with the demonstrated ability to carry out independent research with a high level of achievement (relative to opportunity) as evidenced by published works in refereed journals, conference proceedings, and associated measures of research impact such as citation metrics.
2. Research expertise in integrated photonics and quantum optics. An aptitude in developing photonic lattices with synthetic multi-dimensional properties for manipulation of classical light and quantum multi-photon states. Experience in analysis and processing of experimental measurements of classical or quantum optical states is highly desirable.
3. Demonstrated skills in the analytical and numerical modelling of coherent light and quantum multi-photon state evolution in optical structures. Practical knowledge of Matlab, Python, COMSOL, or similar packages is a plus.
4. An ability and commitment to contribute to bids for competitive external funding to support individual and collaborative research activities.
5. Evidence of an ability and willingness to teach at all levels.
6. The ability to assist in the supervision of students working on research projects.
7. The ability to work as part of a team and to meet deadlines.
8. 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.
9. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

Delegate Signature:		Date:	21/11/2019
Printed Name:	Andrey Sukhorukov	Position:	Associate Professor

References:

[Academic Minimum Standards](#)



Position Description

College/Division:	ANU College of Science
Faculty/School/Centre:	Research School of Physics
Department/Unit:	Nonlinear Physics
Position Title:	Research Fellow
Classification:	Academic Level B
Position No:	TBC
Responsible to:	Head, Department of Nonlinear Physics
Number of positions that report to this role:	
Delegation(s) Assigned:	

PURPOSE STATEMENT:

The ANU College of Science (CoS) comprises: the Research School of Astronomy and Astrophysics, the Research School of Biology, the Research School of Chemistry, the Research School of Earth Science, the Fenner School of Environment and Society, the Mathematical Sciences Institute, the Research School of Physics, and the Centre for the Public Awareness of Science. Staff and students within the ANU College of Science conduct research and delivers a research-led education program that encompasses the entire breadth of the sciences, supported by extensive international networks and by world-class facilities. The College has a strong tradition of research excellence that has fostered distinguished Nobel Laureates and Kyoto Prize winners and that trains scientific leaders in disciplines in which the ANU is consistently ranked in the top twenty in the world.

The Nonlinear Physics Centre (NLPC) is engaged in fundamental research on nonlinear phenomena and their applications in various branches of physics. The Research Fellow will conduct research in the field of synthetic multi-dimensional optical circuits.

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.

POSITION DIMENSION AND RELATIONSHIPS:

Major responsibility will be to undertake theoretical research on the fundamental physics and applications of planar optical structures featuring unconventional synthetic multidimensional properties in classical and quantum regime. Specific research aim will be the development and investigation of photonic lattices, such as arrays of coupled waveguides or resonators. Demonstrated practical expertise in topics such as integrated photonics and optical waveguides, quantum optics and coupled-mode theory is essential.

The position will collaborate with other researchers in the NLPC and RSPHys and will be expected to supervise undergraduate and postgraduate students.

Role Statement:

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

1. Undertake independent research in the area of Physics 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:

1. A PhD in Physics or a related area, with a track record of independent research with a high level of achievement (relative to opportunity) in the field of Physics 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.
2. Research expertise in integrated photonics and quantum optics. An aptitude in developing photonic lattices with synthetic multi-dimensional properties for manipulation of classical light and quantum multi-photon states. Experience in analysis and processing of experimental measurements of classical or quantum optical states is highly desirable.
3. Demonstrated skills in the analytical and numerical modelling of coherent light and quantum multi-photon state evolution in optical structures. Practical knowledge of Matlab, Python, COMSOL, or similar packages is a plus.
4. A demonstrated ability and commitment to apply for competitive external funding to support individual and collaborative research activities.
5. Evidence of an ability and willingness to teach at all levels.
6. An ability to supervise and graduate high quality PhD/Masters research students.
7. The demonstrated ability to work as part of a team, contributing to team management and a demonstrated ability to meet deadlines.
8. 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.
9. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

Delegate Signature:		Date:	21/11/2019
Printed Name:	Andrey Sukhorukov	Position:	Associate Professor

References:

[Academic Minimum Standards](#)