

Research Fellow - Optical Physics

SCHOOL OF NATURAL & COMPUTING SCIENCES

Closing date: **16 February 2023**

Interview date: **To be confirmed**

Reference number: **NCS20R**



INTRODUCTION

The School of Natural and Computing Sciences is a vibrant and dynamic centre, internationally renowned for excellence both in teaching and research. It currently comprises four academic units: Chemistry, Computing Science, Mathematics and Physics. Hosting over 95 academic and research staff, 60 research students, 130 postgraduate taught students, and 680 undergraduates, it is a close-knit and friendly community based on the main campus at King's College.

The School offers a range of undergraduate and taught postgraduate degree programmes, and in 2020 launched our first joint degree at the University of Aberdeen's Qatar campus and in 2021 opened up a Joint Institute and new taught programs with South China Normal University, focused on Artificial Intelligence and Data Science.

The Physics unit currently has 15 members of staff, as well as a number of post-doctoral researchers and PhD students. It is led by Prof. Bjeorn Schelter. The main research areas are Complex Systems, Data Science, Biological Physics, Quantum Theory, Optics and Material Sciences. In REF2021 staff from physics were submitted as part of the mathematics, chemistry and engineering units of assessment.

Physics undergraduate teaching revolves around the 4-year BSc (Hons) degree, as well as multiple joint degrees taught with other disciplines. In 2019, a new MSc Degree in Data Science complemented a strategic focus on Data and Artificial Intelligence. This has proven to be a very successful programme which we are looking to grow.

The appointment of new Head of School, Prof. David McGloin has led to the development of a new optics laboratory, with a focus on tools for optical manipulation and imaging applications. The lab is seeking a postdoctoral research fellow to help establish the laboratory instrumentation and to work on projects related to optical manipulation, microscopy and spectroscopy.

JOB DESCRIPTION

MAIN PURPOSE OF THE ROLE:

The School of Natural and Computing Sciences is looking to appoint a postdoctoral research fellow in optical physics to support the newly established laboratory of Prof. David McGloin. The post will last for 24 months.

The role will offer some flexibility in choice of research topic, but it is expected that work linked to developing tools for the optical manipulation of aerosols, making use of dual beam optical trapping and complex photonics beam shaping will be a priority, as well as developing optical trapping and spectroscopy (especially Raman) tools for building collaborations with groups in Aberdeen's Institute of Medical Sciences and in the Schools of Geosciences and Engineering.

Candidates will be expected to have strong experimental optics/photonics skills and the ability to carry out instrumental control and computational modelling of systems as appropriate.

The role is research focussed, but the successful candidate may be able to develop teaching experience if desired and support will be given for development of personal research funding applications within the area of optics and photonics.

KEY RESPONSIBILITIES:

Research

- *To conduct high quality research in optical physics.*
- *To prepare and submit manuscripts for publications in leading international journals*
- *To present work at national and international conferences.*
- *To support the development of interdisciplinary research opportunities.*

Education

- *To support the supervision and training of postgraduate research students and honours students aligned with the laboratory.*

Administrative & Support

- *Participating in the development and delivery of the School's strategic objectives as appropriate.*

CANDIDATE BACKGROUND

Applications are invited from candidates who can demonstrate an excellent research profile, as evidenced by publications in leading academic venues or via a PhD thesis. Candidates should also be able to demonstrate strong experimental optics skills.

Candidates must have a PhD and demonstrable research experience in optical physics or areas aligned with optical physics, such as photonics, biophotonics or optical spectroscopy.

The ideal candidate will have experience in the building and application of optical trapping techniques, such as optical tweezers, dual beam optical traps, or holographic optical traps. Additionally, experience in force spectroscopy, Raman spectroscopy, holographic beam shaping, complex photonics, microscopy or aerosol analysis is desirable. Experience of optical modelling approaches using python, matlab, labview etc would also be desirable.

TERMS OF APPOINTMENT

Salary will be at the appropriate point on the Grade 6, £35,333 - £42,155 and negotiable with placement according to qualifications and experience.

Any appointment will be made subject to satisfactory references and probation period.

For further information on various staff benefits and policies please visit www.abdn.ac.uk/staffnet/working-here

This role is based in the UK and as such the successful candidate will be required to live and work in the UK.

Should you require a visa to undertake employment in the UK you will be required to fulfil the minimum points criteria to be granted a Certificate of Sponsorship under the requirements of the Skilled Worker visa. At the time an offer of appointment is made, you will be asked to demonstrate that you fulfil the criteria in respect of qualification and competency in English. For research and academic posts, we will consider eligibility under the Global Talent visa. Please do not hesitate to contact Lucy Redmayne, HR Adviser (e-mail: lucy.redmayne@abdn.ac.uk) for further information.

The candidate appointed to this post may be eligible for homeworking on an occasional or regular basis. For more information, please refer to our Homeworking Policy.



AT A GLANCE

SALARY:

Grade 6

£35,333 - £42,155

HOURS OF WORK:

37.5 hours per week

CONTRACT TYPE:

Limited funding: 24 months

LOCATION:

Aberdeen

PERSON SPECIFICATION

	ESSENTIAL	DESIRABLE
Education/Qualifications Academic, technical and professional education and training	• <i>PhD in optical physics or a related discipline (or about to complete a PhD).</i>	
Work and Other relevant experience (including training) e.g. Specialist knowledge, levels of experience, supervisory experience, research	• <i>Strong experimental skills in optical physics, photonics, or related areas</i> • <i>Demonstrable skills in modelling and analysis of optical phenomena</i>	• <i>Evidence of publications in optical physics or related fields commensurate with experience</i> • <i>Experience in optical trapping techniques, including building systems.</i> • <i>Experience in areas such as optical force spectroscopy, Raman spectroscopy, holographic beam shaping, complex photonics, microscopy or aerosol analysis.</i> • <i>Experience of supervising/supporting honours or other more junior staff/students in experimental projects</i> • <i>Experience of interdisciplinary research</i>
Personal qualities and abilities e.g. initiative, leadership, ability to work on own or with others, communication skills	• <i>Excellent written, oral and presentation skills.</i> • <i>Ability to think creatively and innovatively and impart enthusiasm for the subject.</i> • <i>Excellent organisational skills.</i> • <i>Ability to contribute, professionally and otherwise, to</i>	• <i>Ability to participate in appropriate national and international research networks.</i> • <i>Ability and willingness to work in multidisciplinary environment.</i>

ESSENTIAL

DESIRABLE

the life of the School and the University.

- *Demonstrable ability to work well as part of team.*
- *Ability to work with minimum supervision and act on own initiative.*
- *Commitment to personal development and updating of knowledge and skills.*

- *Excellent networking skills in order to develop strong relationships with research collaborators*

Other

e.g. special circumstances (if any) appropriate to the role such as unsocial hours, travelling, Gaelic language requirements etc.

- *Willingness and flexibility to respond to demands of the role.*
- *Willing to travel nationally and internationally in support of the role.*

UNIVERSITY OF ABERDEEN

open to all and dedicated to the pursuit of truth in the service of others

The University of Aberdeen is a broad based, research intensive University, and we put students at the centre of everything we do. Outstanding in a wide range of discipline areas, Aberdeen is credited for its international reach and commercialisation of research ideas into spin out companies. The University has over 16,000 matriculated students and 3,600 staff representing 130 nationalities. We encourage bold thinking, creativity and innovation, and we nurture ambition with many opportunities for professional and personal development in an inclusive learning environment which challenges and inspires.



CURRENT CONTEXT

The University continues to uphold the principals of the foundational purpose. We remain committed to delivering positive change both locally and globally. We work together and with our partners in an interdisciplinary way, catalysing world-leading research in our areas of strength: Energy Transition; Social Inclusion and Cultural Diversity; Environment and Biodiversity; Data and Artificial Intelligence; and Health, Nutrition and Wellbeing. We are investing in our future and have committed £100m to upgrading our campus, including the new fully digitised Science Teaching Hub, the regeneration of the historic King's Quarter and a new Business School building. Our commitment to our students, campus and community has led to us being named a Top 20 UK institution in two major league tables¹ and 4th in the UK for overall student satisfaction².

¹ The Times and Sunday Times Good University Guide 2023 and the Guardian University Guide 2023

² National Student Survey (NSS) 2022

ABERDEEN 2040

On our 525th anniversary as a University we launched [Aberdeen 2040](#), our strategic vision for the next 20 years. Four strategic themes will shape our learning and discovery, underlined by 20 commitments we have made against each theme:

- **Inclusive**
We welcome students, staff and partners from all backgrounds, organisations and communities. We value diversity.
- **Interdisciplinary**
We innovate in education and research by generating, sharing and applying new kinds of knowledge. We learn together.
- **International**
We connect with others and extend our networks and partnerships around the world. We think across borders.
- **Sustainable**
We understand and nurture our environment, and take care of our resources, including our people and finances.

We work responsibly.

OUR EDUCATION

Recognised as the Scottish University of the Year in the Times and Sunday Times Good University Guide 2019, we remain true to our roots as an ancient Scottish university, combining breadth and depth in our degree programmes and drawing strength from the quality of our research. Our flexible curriculum encourages students to grow as independent learners and therefore to thrive as graduates in the diverse workplaces of the future. Our education is open to all and we are setting ambitious targets to further widen access.

OUR RESEARCH

Researchers at the University of Aberdeen have been at the forefront of innovation and excellence throughout the centuries, generating insights in medicine, science, engineering, law, social sciences, arts and humanities. This research has contributed to five Nobel prizes as well as other awards such as the Queen's Anniversary prize. Our research is intellectually rigorous working within our established areas of excellence as well as new methods of enquiry. We will continue to generate new knowledge addressing economic and societal issues with ambition and imagination, ensuring that it is globally excellent and locally relevant.

INTERNATIONAL

Aberdeen is increasing its international presence, positioning the University as a global organisation and building on established global partnerships around the world, including Qatar, China, North America, Europe. We feature in the top 50 institutions worldwide for international students³.

IMPACT

In 2020 the University signed the United Nations Sustainable Development Goals accord, solidifying our commitment to developing the world in a sustainable way. In 2022 we were listed in the global Top 100 for 8 of these goals⁴.

Our highly cited work in zero-carbon technology and global outlooks makes us Scotland's best institution for environmental research⁵.

THE SCHOOL OF NATURAL AND COMPUTING SCIENCES

The School of Natural and Computing Sciences addresses the fundamental physical sciences, applies mathematics to interdisciplinary problems, develops the next generation of smart computational systems, and takes chemistry from lab to every-day life. The School consists of four departments: Chemistry; Computing Science; Mathematics & Physics. Our research is high quality and often outward facing, with many interactions with other disciplines, with public bodies and with industry. We have leading groups in each discipline. From topology to transition metals, from natural language to natural products, from complex systems to catalysis, our research is diverse and also covers the range from pure to applied.

³ Times Higher Education World University Rankings 2021

⁴ Times Higher Education Impact Rankings 2022

⁵ QS World University Rankings 2022

In addition, we have been involved in a number of spin-out companies in diverse areas such as drug development for Alzheimer's disease (TauRx, Chemistry, Physics), natural language generation for multiple applications including medical monitoring and weather reporting (Arria, Computing Science) bone replacement materials (Sirakoss, Chemistry) and new fuel cell materials (Enocell, Chemistry).

ABERDEEN AND ABERDEENSHIRE

Scotland's third largest city, Aberdeen sits on the coast between the mountains of Aberdeenshire and the stunning North Sea coastline. The Aberdeen City region is a can-do place that is actively investing, at scale, in its future.

Renowned as a Global Energy Hub, Aberdeen is a vibrant, entrepreneurial region, home to a unique mix of business opportunities and specialist skills across various sectors including energy, technology, life sciences and food & drink. More than 20% of Scotland's top businesses are located in this region which is taking great strides to ensure that it continues to compete on a world stage. Investments of more than £10 billion of public and private infrastructure is due to be delivered before 2030, marking an exciting time to be part of a genuine world-class location.

Built from sparkling local granite Aberdeen has earned the name of the Silver City. As the energy capital of Europe, Aberdeen nevertheless retains its old-fashioned charm and character making it an attractive place in which to live, work and study. Due to its global business and international energy industry credentials, Aberdeen is well served by local and national transport infrastructure with excellent rail networks that run both North and South of Scotland and the rest of the UK. It also acts as an international travel hub. Flying time to London is just over one hour with regular daily flights and serves international travel to European centres such as Amsterdam (Schiphol) and Paris (Charles de Gaulle) as well as flights to other European destinations.

The City and the surrounding countryside provide a variety of urban, seaside and country attractions. Aberdeen has first class amenities including [His Majesty's Theatre](#), [Music Hall](#), [Art Gallery](#), [the P&J Arena](#), [Museums](#), and [Beach Leisure Centre](#). The City is framed by its accessible beach front which is within a short walk of the city centre and there are an array of activities available across the region such as hill walking; mountaineering; sailing; surfing; salmon, trout and sea fishing; golf; sailing; surfing and windsurfing. The surrounding countryside, known as Aberdeenshire, is also one of Scotland's most appealing regions. Royal Deeside and the Cairngorms National Park are within easy access of the city, and there are a variety of towns and villages scattered along the coastline.

The city and the surrounding area have ranked consistently highly in nationally recognised quality of life surveys, coming out top 10 as one of the best places to live in Scotland in 2020 in the annual Bank of Scotland survey.

To find out more visit www.visitabdn.com

EQUALITY AND DIVERSITY

The University values a diverse working environment and recognises the benefits this can bring. The University is keen to receive applications from individuals from across all of the equality protected characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation).

The University supports opportunities for flexible working for a range of reasons and has policies in place to facilitate this. The policies can be found at <https://www.abdn.ac.uk/staffnet/working-here/flexible-working--5607.php>.

The University's commitment to gender equality has been recognised through the achievement of an Athena SWAN Bronze award at an institutional level and across all its subject areas. The University is also a Stonewall Diversity Champion to further LGBT+ equality.

The University is signed up to Advance HE's Race Equality Charter, affirming the University's commitment to the charter's aim of improving the representation, progression and success of minority ethnic staff and students within higher education.

Candidates who are British Sign Language (BSL) users can contact us directly by using [contact SCOTLAND-BSL](#).

The University is delighted to be accredited as a [Disability Confident](#) employer and strives to ensure that disabled staff and students have the opportunity to work and study in an inclusive, accessible and supportive environment.

www.abdn.ac.uk/staffnet/governance/equality-and-diversity-277

HOW TO APPLY

Online application forms are available at www.abdn.ac.uk/jobs

The closing date for receipt of applications is **16 February 2023**

Should you wish to make an informal enquiry please contact:

| Prof. David McGloin, Head of School of Natural and Computing Sciences |

david.mcglain@abdn.ac.uk

Please do not send application forms or CVs to **Prof McGloin.**

Please quote reference number NCS20R on all correspondence