READER/CHAIR IN PHYSICS
SCHOOL OF NATURAL AND COMPUTING SCIENCES

Closing date: 26 October 2023
Interview date: To be confirmed
Reference number: NCS216A
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: Physics, Chemistry, Mathematics and Computing Science. Hosting over 100 academic and research staff, 60 research students, 220 postgraduate taught students, 670 campus based undergraduates and 650 undergraduates based in our Joint Institute with South China Normal University, 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. In 2021, a Joint Institute with South China Normal University was opened, focused on taught programmes in the areas of Artificial Intelligence and Data Science. Teaching in Physics focusses around our 4-year BSc (Hons) single honours programme, a range of joint honours programmes, and a very successful MSc in Data Science. Our future teaching plans include development of further MSc programs, especially in interdisciplinary areas, and in expanding our undergraduate physics and data science offerings.

Physics currently has 17 members of staff, as well as a number of post-doctoral researchers and PhD students. It is led by Dr. Murilo S. Baptista. Physics has welcomed four new staff members in the past year at lecturer and senior lecturer level and we are now seeking to develop our academic leadership with this position. Our main research areas are nonlinear sciences, complex systems and networks, data science, biophysics, quantum theory, optics and photonics, planetary sciences and material sciences. Within the University, Physics has strong research links with the School of Medicine, Medical Sciences and Nutrition, while our work in planetary sciences has strong overlap with the Planetary Sciences group in the School of Geosciences. The wider School has research foci in areas such as materials chemistry, natural product chemistry, liquid crystals, mathematical topology and algebra, computational linguistics, machine learning, cybersecurity, autonomous agents and human-centred computing.

Physics in Aberdeen has a long and illustrious history stretching back to the 16th century. Our former Professors of Natural Philosophy include James Clerk Maxwell, the Nobel Laureate G. P. Thomson and R.V. Jones.

The School is seeking to strengthen its interdisciplinary and international profile and is looking to appoint a new member of staff at either Reader or Professorial level. The successful candidate will be expected to have a passion for interdisciplinarity, with interests that are well aligned with research areas in our School. They will also demonstrate an outstanding research profile, evidenced by a strong track record of high quality published work and supporting research funding. The successful applicant must also be able to offer leadership in education with evidence of excellence and innovation in teaching in physics or data science. We expect that they will contribute to our efforts to promote and maintain a positive research culture.
The School and the University are committed to promoting and maintaining an inclusive and supportive working environment that assists all members of our University community to reach their full potential. Diversity brings strength and we welcome and encourage applications from all genders and protected characteristics across the international, national, and regional communities that we work with and serve. We have recently been re-awarded an Athena Swan Bronze Award and we are committed to improving the representation, support for progression and success of underrepresented groups within our School.
MAIN PURPOSE OF THE ROLE:

The School is seeking to strengthen academic leadership within the physics discipline; a key role will be to work with the senior academic staff in developing physics in Aberdeen. The expectation is that the successful candidate will take a prominent role in both teaching and research. The post is offered as either a full Professor or at Reader level, depending on experience.

The successful candidate will be expected to teach on our physics programs in an engaging, motivational and passionate manner, covering all aspects of teaching from lectures through to laboratory classes and project supervision, appropriate to background. All academic staff in Aberdeen act as personal tutors to students. We note that while the teaching requirements are in physics, this role may be suitable for those with more diverse academic backgrounds, noting our research interests below.

The successful candidate will have evidence of a successful research program and to develop this in Aberdeen. We invite exceptional candidates in all areas of physics, broadly defined to include areas of applied mathematics, chemistry and data science, but have preference for those working in areas aligned with our current work, and especially those who can demonstrate interdisciplinary links to other areas within either our School, or the wider University.

We are particularly open to candidates working in the following areas:

**Materials Science**
Within the School we have particular strength in work at the physics/chemistry interface, especially in materials science. Work of relevance includes ionic conductors, magnetic materials, surface and interface physics, carbon capture, fuel cells, new battery materials, magnetic materials, bioceramics for bone replacement, liquid crystals, and surface adaptation for catalysis. With new hires in optics and photonics, work in the area of optical materials and metamaterials would also be of interest.

**Biophysics, Biophotonics and Bioimaging**
Our physics group has expertise in areas of biophysical modelling, particularly within DNA replication, DNA damage and repair, protein function and cell mechanics. We are developing experimental work cognate areas making use of optical manipulation, photonic sensing, spectroscopy, microscopy and microfluidic toolboxes. Our work is in partnership with researchers based in the School of Medicine, Medical Science and Nutrition, especially within the Institute of Medical Science. Our Medical School also has long established expertise in areas such as MRI imaging. A candidate who can offer significant strength in these areas would be of interest, as well as one who could develop stronger links with our chemistry groups, exploring super-resolution microscopy or cryo-electron microscopy or applications of AFM.
Machine Learning
We are interested in scientists working to understand the fundamental mathematical and physical principles of machine learning, with an aim to not only making these machines more sustainable for the environment (lightweight computation) but also to improve on algorithmic development, explainability (opening the “black box”), and accuracy. We also encourage applications from those working in the interface of machine learning and neuroscience, and in the more general machine learning approaches to solve problems in the physical sciences and applications in experimental systems.

Planetary Sciences
Our School of Geosciences has a strong Planetary Sciences research grouping, led by Prof. Javier Martin-Torres. We have recently appointed a new member of staff working on planetary atmospheres. As such we are interested in academics who can further strengthen these areas, either with backgrounds in developing new mathematical, physical and algorithmic approaches to pre-process, analyse, and model planetary data or in experimental approaches in areas of instrumentation.

Other
We are also open to candidates who can strengthen our developing research areas in experimental optics and photonics, or those working on the broad area of quantum technologies, including quantum computing. Other areas of interest include applications of physics to data science, mathematical physics, nonlinear science and complex systems, environmental physics, energy transition, and physics applied to biomedical engineering areas.

The successful candidate will be expected to play a role in the broader life of the school, which may involve staff mentoring, committee work, recruitment activities such as open days, outreach activities, welcome events, and internal seminar programs.
KEY RESPONSIBILITIES:

- Conduct and sustain internationally leading high quality research in Physics through publication of work in leading international journals and successful application to external research funders.
- Provide research leadership across the School in terms of publications, funding and mentorship to develop the international research profile of the Physics discipline and School.
- Present work at national and international conferences.
- Develop opportunities and provide mentorship for early career academics, postgraduate and undergraduate students; to provide successful training and completion outcomes for postgraduate research students.
- Explore opportunities for the wider dissemination of research through knowledge transfer opportunities and public engagement.
- To offer leadership in the development of taught programs at a strategic level, embedding best practice in teaching and learning in the context of research-led and problem and project based learning and assessment.
- To contribute to the design, development, delivery, assessment and administration of a broad range of existing and new undergraduate and taught postgraduate courses and programmes.
- To engage with modern pedagogical approaches to University teaching and implement best practice in teaching.
- To develop interdisciplinary research and teaching opportunities in keeping with the Aberdeen 2040 commitments in this area.
- To make a significant contribution to academic citizenship within the University and the development of research culture within the School.
- Represent the School and University on external bodies and at external events to promote research and teaching and learning excellence.
- To undertake administrative or any other reasonable duties, as determined by the Head of School and Academic Line Manager.
- Participating in the development and delivery of the School’s strategic objectives.
- Maintaining and expanding own knowledge and experience through continuous professional development.
- To act as a collegiate, inclusive and supportive member of the School’s academic team.
Applications are invited from candidates who can demonstrate an excellent research profile, as evidenced by publications in leading academic journals and successful mentorship to junior researchers, including PhD candidates. Candidates must also be able to demonstrate their ability to sustain a funded research programme at the University of Aberdeen.

Candidates should have appropriate experience in course delivery at the individual course level and, ideally, at program level and be able to demonstrate leadership in physics education at undergraduate and postgraduate level.

An ideal candidate would have good connections to the wider UK research landscape as well as international research networks and experience of leadership of collaborative programs, both taught and research focussed.

Candidates with links to research outside of academia who may have non-traditional research and teaching outputs are also encouraged to apply.

Candidates must have a PhD in a relevant field.
TERMS OF APPOINTMENT

Readers will be appointed at the appropriate point on the Grade 8 salary scale, £57,696 - £64,914 per annum.

Professors will be offered a competitive salary which is negotiable according to qualifications and experience.

Any appointment will be made subject to satisfactory references.

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 8 (Reader)
£57,696 - £64,914 per annum

Professor Salary:
Competitive

HOURS OF WORK:
Full-time, 37.5 hours per week

CONTRACT TYPE:
Substantive

LOCATION:
Aberdeen
## PERSON SPECIFICATION

### ESSENTIAL

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<th>Education/Qualifications</th>
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<td><strong>Academic, technical and professional education and training</strong></td>
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- PhD in Physics, Astrophysics, Applied Mathematics, Data Science, Materials Science or a related discipline.  
- Appropriate academic professional and teaching qualifications (e.g. FHEA).  
- Membership of appropriate professional/learned societies  |

### DESIRABLE

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<th>Work and Other relevant experience (including training)</th>
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<td>e.g. Specialist knowledge, levels of experience, supervisory experience, research</td>
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- Experience in the administration of academic affairs or similar experience (commensurate with career stage).  
- Evidence of working in interdisciplinary research areas.  
- Evidence of wider impact of research or teaching work outside of academia (with external stakeholders).  |

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### Reader position:

- Record of publications in leading international journals or conferences.  
- Strong research profile with ability to develop and lead research projects.  
- Record of securing funding to support research at the level of PI of UKRI projects or equivalent.  
- Evidence of teaching experience at undergraduate and postgraduate levels.  
- Experience in the development of taught courses at undergraduate or postgraduate level, or equivalent experience.  
- Ability to provide supervision to doctoral students.  
- Successful supervision of at least one PhD student to completion.

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### Professor position

As above, and additionally:

- Track record of sustained funding to support research work.

Evidence of academic leadership in research or teaching. e.g. leading large collaborative research grant; leading internal research groups/centres; developing and implementing coursework masters programs; acting as Undergraduate program director;
ESSENTIAL

Academic Line Management experience.

Personal qualities and abilities
e.g. initiative, leadership, ability to work on own or with others, communication skills

- Excellent written, oral and presentation skills.
- Ability to think creatively and innovatively and impart enthusiasm for the subject.
- Excellent organisational skills.
- Ability to balance the pressures of teaching, research and administrative demands and competing deadlines.
- Excellent networking skills in order to develop strong relationships with external partners and with academics and researchers from other institutions.
- Ability to contribute, professionally and otherwise, to 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.
- Leadership of academic teams and projects.

DESIRABLE

- Ability to participate in appropriate national and international research networks.
- Ability and willingness to work in multidisciplinary environment.

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.
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 students\(^3\).

\(^3\) Times Higher Education World University Rankings 2021

Updated October 2022
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 goals. Our highly cited work in zero-carbon technology and global outlooks makes us Scotland’s best institution for environmental research.
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
The University values and celebrates a diverse working and learning environment and recognises the richness this brings, both in terms of contributing to the success of the University and creating safe and inclusive cultures. The University welcomes applications from individuals with diverse lived experiences.

The University supports flexible working, including hybrid working arrangements, and has policies in place to facilitate this where it is appropriate. The policies can be found at [https://www.abdn.ac.uk/staffnet/working-here/flexible-working--5607.php](https://www.abdn.ac.uk/staffnet/working-here/flexible-working--5607.php).

The University is committed to progressing gender equality across all its functions and has been a proud member of the Advance HE Athena Swan Charter, achieving an institutional Bronze award, one Silver departmental award for the School of Psychology and eleven departmental Bronze awards. LGBTQ+ equality is championed through the University’s membership of the Stonewall Diversity Champions Programme, where the University has achieved a Silver award in the Workplace Equality Index. The University is on a continual journey to respond to, and combat, GBV in our community and beyond. We are proud to be working towards the EmilyTest Charter, in partnership with the charity, EmilyTest. We all have a role to play in knowing how to signpost colleagues and students to support for gender-based violence, and training and support is available to all staff on this topic.

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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 staff and students who identify as belonging to a racialised group. The University launched its Antiracism Strategy in 2022, representing a bold framework for progress on race equality. Recognising the importance of addressing the under-representation of racialised groups in the senior team, the University’s new Recruitment and Selection Policy embeds specific positive action measures to address this.

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. The University’s Wellbeing Strategy commits it to progressing work to tackle stigma related to mental health and action to promote and improve health and wellbeing for staff and students. Candidates who are British Sign Language (BSL) users can contact us directly by using [contact SCOTLAND-BSL](https://www.abdn.ac.uk/staffnet/contact/bsl).

The University’s work on equality, diversity and inclusion is supported by a range of networks and engagement activities, designed to provide safe spaces and raise awareness of the support available and the steps everyone can take to create inclusive campuses.

[www.abdn.ac.uk/staffnet/governance/equality-and-diversity-277](https://www.abdn.ac.uk/staffnet/governance/equality-and-diversity-277)
HOW TO APPLY

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

Applications should include:

- A curriculum vitae.
- A research statement outlining your research plans over the next 3 years (max 2 pages A4).
- A teaching statement outlining your views on physics teaching in the era of new AI tools (max 1 page A4).
- A cover letter outlining your reasons for making an application and your fit with the job description and the School (max 2 pages A4).

The closing date for receipt of applications is 26 October 2023

Should you wish to make an informal enquiry please contact:

Professor David McGloin, Head of School of Natural and Computing Sciences
hos-ncs@abdn.ac.uk

or

Dr Murilo Baptista, Head of Physics
murilo.baptista@abdn.ac.uk

Please do not send application forms or CVs to Professor McGloin or Dr Baptista

Please quote reference number NCS216A on all correspondence