



1. Advertisement

Post Title: Research Fellow II in Quantum Technology

School/department: School of Mathematical Sciences/Dept of Physics and Astronomy

Hours: Full-time. Requests for flexible working options will be considered (subject to business need).

Location: Brighton, UK

Contract: fixed term with end date 31st May 2025

Reference: 7473

Salary: starting at £45,585 to £54,395 per annum, pro rata if part-time.

Placed on: 12 September 2023.

Closing date: 11 October 2023. Applications must be received by midnight of the closing date.

Expected Interview date: To be confirmed

Expected start date: As soon as possible.

We are delighted to offer a full-time research fellowship with the [Ion Trap Cavity-QED and Molecular Physics](#) (ITCM) group at the University of Sussex, led by [Professor Matthias Keller](#). Join our team and you will be part of an EPSRC UK-funded consortium working on a novel atomic clock and its applications. The specific research project aims to develop a novel atomic clock scheme for portable systems based on the developments at the University of Sussex.

Our consortium brings together leading teams from the University of Sussex, the University of Loughborough, the National Physical Laboratory and companies from the quantum technology, telecommunication and defense sectors. Our objective is to build a miniaturized portable atomic clock based on a novel interrogation scheme on a single calcium ion, with an accuracy at the 10^{-14} level or better.

At ITCM, we have developed a novel interrogation scheme for ion-based atomic clocks that promises significantly improved robustness compared to conventional optical atomic clocks. The project aims to demonstrate the novel scheme in an existing system, implement the system on an existing portable system and demonstrate its advantages in real-world settings.

You will join the Portable Atomic Clock team in the ITCM group and demonstrate the novel scheme and its use in portable atomic clock systems.

This position offers an exciting opportunity to work closely with academic and industry partners at the forefront of quantum technology in the UK, translating some of the latest scientific and engineering developments into real-world applications.

The role is based on our campus set in the South Downs National Park just outside the city of Brighton and Hove, close to the coast and less than an hour from London. Our university follows family-friendly and flexible working policies and our group is part of the [Sussex Centre for Quantum Technologies](#).

Please contact Matthias Keller m.k.keller@sussex.ac.uk for any informal enquiries.

The University is committed to equality and valuing diversity, and applications are

particularly welcomed from women and black and minority ethnic candidates, who are under-

represented in academic posts in Science, Technology, Engineering, Medicine and Mathematics (STEMM) at Sussex.

Please note that this position may be subject to [ATAS clearance](#) if you require visa sponsorship.

For full details and how to apply see our [vacancies page](#)

The University of Sussex values the diversity of its staff and students and we welcome applicants from all backgrounds.

CORE JOB DESCRIPTION

Job Title:	Research Fellow in Quantum Technology
Grade:	Research Fellow II, Grade 8
School:	MPS
Location:	Pevensey 2 Building
Responsible to:	Prof Matthias Keller through to Head of School
Direct reports:	n/a
Key contacts:	Members of research group, members of faculty within the School and University, academics in the field in other institutions.
Role Description:	Research Fellow II is a career-grade research position. Post-holders will be expected to take a senior role within a research team, be able to demonstrate an established research portfolio, and a growing reputation in their field of study. They will also be expected to provide support and guidance to less experienced members of staff.

PRINCIPAL ACCOUNTABILITIES

1. To engage in individual and/or collaborative research activity resulting in high-quality publications; and to contribute to obtaining research funding and knowledge exchange income as appropriate.
2. To contribute to School teaching activities.

KEY RESPONSIBILITIES

1. Research, Scholarship & Enterprise

- 1.1 Contribute to the development of School research strategy and themes.
- 1.2 Develop research objectives and proposals for own or joint research at acceptable levels.
- 1.3 Conduct research projects individually and/or in collaboration with others.
- 1.4 Assess, interpret and evaluate outcomes of research, and develop ideas for their application.
- 1.5 Produce high-quality research outputs that have impact in the field, for publication in monographs or recognised high-quality journals, or performance/exhibition, as appropriate, and contribute to the School's REF submission at acceptable levels of volume and academic excellence.
- 1.6 Lead small research projects and/or identified parts of a larger project, including supervising the work of others and managing or monitoring a research budget.
- 1.7 Make presentations at conferences, or exhibit work in other appropriate events of a similar standing and identify ways to disseminate research outputs informally via the internet, the media and other forms of public engagement.
- 1.8 Identify sources of funding and secure or contribute to the process of securing bids.
- 1.9 Identify and secure opportunities for enterprise activity, knowledge exchange income and/or consultancy where permissible.
- 1.10 Actively build internal and external contacts, and play a key role in internal networks and relevant external networks in order to, for example, identify sources of funding, secure student placements, and build relationships for future activities.
- 1.11 Contribute to a relevant national professional body or recognised events.
- 1.12 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.
- 1.13 Conduct risk assessments, and take responsibility for the health and safety of others, if required.

2. Teaching & Student Support

- 2.1 Contribute to teaching and learning in the School, including delivery of teaching if required.
- 2.2 Supervise postgraduate research students, for example as part of a postgraduate supervisory team.

2.3 Assist in the development of student research skills.

3. Contribution to School & University

3.1 Attend and contribute to relevant School and project meetings.

3.2 Mentor less experienced colleagues, supporting them in developing their research techniques, and advising on personal development.

3.3 Undertake additional duties, as required by the Principal Investigator and/or Head of School.

4. Role-specific duties

4.1 Planning, simulating and conducting experimental procedures and technologies for a portable atomic clock system based on trapped ions.

4.1 Demonstrating a novel atomic clock interrogation scheme.

4.2 Implementing the scheme in a portable format and testing the clock under real-world conditions.

4.3 Dissemination of research findings through conference presentations and articles in journals.

This Job Description sets out the current duties of the post which may vary from time to time without changing the general character of the post or level of responsibility entailed.

INDICATIVE PERFORMANCE CRITERIA

- Regular published output of original research at international level (referred journal papers, monographs, book chapters, text-books).
- Other evidence of original research contribution to the field, such as through invited conference contributions, membership of editorial panels etc.
- Evidence of successful co-supervision of doctoral students.
- Evidence of the successful supervision of others within the research group.
- Evidence of contribution to the process of obtaining competitive/peer reviewed research support funding or collaboration in significant research projects with institutions of equivalent standing.
- Involvement in the creation, transfer and use of the results of research through a range of knowledge exchange activities.
- Success in transferring research results to commercial, professional, public sector or other practical use.
- Evidence of successful engagement in teaching or supervision.

PERSON SPECIFICATION

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).
2. Evidence of significant independent contribution to the design and execution of research.
3. An emerging track record of publications in reputable journals and other appropriate media of similar standing.
4. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.
5. Ability to work individually on own initiative and without close supervision, and as part of a team.
6. Ability to exercise a degree of innovation and creative problem-solving.
7. Excellent organisational and administrative skills.
8. Ability to prioritise and meet deadlines.
9. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. PhD in experimental quantum optics, atomic clocks, laser- or atomic physics or electronics engineering.
2. An up-to-date working knowledge in the field of experimental quantum optics, laser- or atomic physics
3. Skills in working with optics and lasers or electronics
4. Competence in using data acquisition software (such as LabView) and data analysis software.
5. Good communication skills, written and oral.
6. Experience in experiments in atomic or ion physics.
7. Experience in working with lasers, ultra-high vacuum systems and scientific control systems.

DESIRABLE CRITERIA

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.
2. Experience in generating research or knowledge exchange income.
3. Solid knowledge of quantum optics, atomic or ion physics.
4. Experience in laser manipulation of neutral atoms or ions.
Experience in atomic clock research and development.