## 1 Advertisement

**Post Title: Lecturer/Senior Lecturer/Reader in Quantum Optics and Technology**
**School/department**: School of Mathematical and Physical Sciences / Department of Physics and Astronomy
**Hours**: Full time or part time hours considered up to a maximum of 1.0 FTE
Requests for flexible working options will be considered (subject to business need).
**Contract**: permanent
**Reference**: 9880
**Salary**: starting at £44,414 to £52,841 (Lecturer B) /£54,421 to £63,059 (Senior Lecturer/Reader) per annum, pro rata if part time
**Placed on:** 8 December 2022
**Closing date**: 7 April 2023. Applications must be received by midnight of the closing date.
**Expected Interview date:** April 2023
**Expected start date**: June 2023

The School of Mathematical and Physical Sciences at the University of Sussex seeks to appoint a lecturer/reader to strengthen its quantum technology activities.

The lecturer/senior lecturer/reader position is in experimental quantum technology, including quantum information processing, quantum sensing and applied quantum technology or related areas and will sit within the Sussex Centre for Quantum Technologies (SCQT).

SCQT is a leading, international centre for quantum research and the development of novel technologies, excelling in in both theoretical and applied approaches. Our activities are expansive and include investigations into the foundations of quantum mechanics, applied research, technology development and the transition to commercialisation.

Our quantum research community currently comprises nine academic staff, more than 15 research staff and about 33 postgraduate, primarily based in the Department of Physics and Astronomy, which tied 7th in the UK for Physics research environment in REF2021. We are also closely involved with the UK National Quantum Technologies Programme.

We are looking for candidates with an emerging track record in research that complements and also shows synergy with our current activities. We'd particularly welcome candidates who:

- Have an emerging or existing track record in experimental quantum technology, including quantum information processing, quantum sensing and applied quantum technology or related areas
- Works in a research area that is synergetic with existing research activities at Sussex
- Have demonstrated the ability to attract research funding
- Have some experience in PhD and undergraduate student supervision

Please contact Professor Matthias Keller (M.K.Keller@sussex.ac.uk) or Professor Stephan Huber (S.Huber@sussex.ac.uk) for 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.*

**Please note: The University requires that work undertaken for the University is performed from the UK.**

## 2. The School / Division

Please find further information regarding the school/division at http://www.sussex.ac.uk/mps/

## 3. Job Description (Lecturer)

**Job Title:** Lecturer in Quantum Optics and Technology

**Department:** Physics and Astronomy

**Section/Unit/School:** MPS

**Location:** Pevensey 2

**Grade:** Lecturer (Research & Education focussed), Grade 8

**Responsible to:** Head of School

**Responsible for:** **n/a**

Lecturer or Reader is a career-grade teaching and research position. Post-holders will be expected to take full responsibility for the design, management and delivery of their own teaching, be able to demonstrate an established research portfolio, and a growing or established 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 design and deliver high-quality teaching programmes that are attractive to students.

2. To engage in individual and collaborative research activity resulting in high-quality publications to be submitted to the REF at acceptable levels of volume and academic excellence, and to obtain research funding and/or knowledge exchange income as appropriate to the discipline.

3. To contribute fully to the School and University by playing a significant role in working groups, committees, and other School and University activities.

KEY RESPONSIBILITIES

**1. Teaching & Student Support**

1.1 Engage in the planning, delivery and assessment of innovative high-quality undergraduate and postgraduate teaching, in liaison with the relevant programme and course convenors.

1.2 Identify, design, develop and manage new curriculum proposals that are attractive to students.

1.3 Develop high-quality inclusive teaching materials, methods and approaches, take responsibility for their quality, and ensure that they meet defined learning objectives.

1.4 Ensure that teaching materials remain up-to-date and relevant, incorporating advances in the subject area into the course of study, and utilising appropriate technology.

1.5 Set, mark, and assess coursework and examinations; select appropriate assessment instruments and assessment criteria, and provide constructive and comprehensive feedback to students.

1.6 Undertake continuous professional development to maintain an understanding of appropriate pedagogy in the subject area.

1.7 Supervise the work of undergraduate and taught postgraduate students, providing advice on study skills.

1.8 Contribute to the accreditation of courses and quality-control processes.

1.9 Undertake and complete administrative duties required in the professional delivery of teaching.

1.10 Undertake academic advising duties, and provide first-line support for sensitive issues, referring on as appropriate to services providing further assistance.

1.11 Adopt an approachable and accessible attitude towards students, offering office hours, informal advice etc.

2. **Research, Scholarship & Enterprise**

2.1 Contribute to School research strategy and themes.

2.2 Develop research objectives and proposals for own or joint research.

2.3 Conduct research projects individually and in collaboration with others.

2.4 Assess, interpret and evaluate outcomes of research, and develop ideas for their application.

2.5 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.

2.6 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, if appropriate.

2.7 Make presentations at conferences, or exhibit work in other appropriate events, and identify ways to disseminate research outputs informally via the internet, the media, and other forms of public engagement.

2.8 Identify sources of funding and secure or contribute to the process of securing bids.

2.9 Identify and secure opportunities for enterprise activity, knowledge exchange income and/or consultancy.

2.10 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.

2.11 Supervise doctoral students as part of a supervision team.

2.12 Contribute to a relevant national professional body or recognised events.

2.13 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2.14 Conduct risk assessments, and take responsibility for the health and safety of others, if required.

## 3. Contribution to School & University

3.1 Attend and contribute to School meetings.

3.2 Engage in activities beyond day-to-day teaching duties, for example Admissions Days.

3.3 Assist with undergraduate and postgraduate recruitment.

3.4 Play a key role in School or University working groups or committees, as required.

3.5 Advise and provide support to less experienced colleagues.

3.6 Undertake additional administrative duties, as required by the Head of School.

## 4. Role-specific duties

4.1 Conduct leading experimental research in quantum technology, including quantum information processing, quantum sensing and applied quantum technology or related areas.

4.2 Seek research collaboration and synergies with existing research activities at Sussex.

4.3 Attract continuous research income.

4.4 Actively contribute the activities of the Sussex Centre for Quantum Technologies.

4.5 help to support teaching of quantum technology modules

INDICATIVE PERFORMANCE CRITERIA

- A record of development of new modules/groups of modules, course or significant components of schemes of study or CPD courses.
- Proven and sustained track record of successful teaching at the levels appropriate for the post.
- A high standard of teaching performance as judged by standard evaluation methods.
- Evidence of using feedback information from a range of sources to improve the student experience.
- Evidence of using knowledge arising from research and scholarship to enhance teaching and curriculum development.
- Evidence of engagement in advising students and proactively responding to student problems.
- Regular published output of original research at international level (refereed journal papers, monographs, book chapters, text-books).
- Other evidence of original research contributions to the field, such as through invited conference contributions, membership of editorial panels etc.
- Evidence of successful postgraduate masters and doctoral research supervision i.e. to completion.
- Sustained success in obtaining competitively awarded research grants and contracts, and knowledge exchange income.
- 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 contributions to a relevant national professional body or recognised event.

## 4. 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. Excellent interpersonal skills, with the ability to engage with students using a variety of different methods.

3. Experience in teaching at undergraduate and taught postgraduate level.

4. Evidence of significant independent contribution to the design and execution of research.

5. An emerging track record of publications in reputable journals and other appropriate media of similar standing.

6. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

7. Ability to work individually on own initiative and without close supervision, and as part of a team.

8. Ability to exercise a degree of innovation and creative problem-solving.

9. Excellent organisational and administrative skills.

10. Ability to prioritise and meet deadlines.

11. A willingness to participate in support activities beyond normal classroom duties.

12. Excellent IT skills, with the ability to produce high-quality learning support materials.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Emerging track record in performing experimental research in quantum technology, quantum optics and related areas.

2. Knowledge of or involvement in the UK’s National Quantum Technology Programme and similar international programmes

3. Emerging track record in the commercialization of research and engagement with industry.

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| **3.** | **Job Description (Lecturer)** |
| **Job Title:** | Senior Lecturer in Quantum Optics and Technology |
| **Grade:** | Senior Lecturer (Research & Education focussed), Grade 9 |
| **School:** | Mathematical and Physical Sciences |
| **Location:** | Pevensey 2 |
| **Responsible to:** | Head of School |
| **Direct reports:** | n/a |
| **Key contacts:** | Students, other members of Faculty within the School and University, School Officers, academics in the field in other institutions. |
| **Role description:** | Senior Lecturer is a senior career-grade teaching and research position. Post-holders will be expected to show academic leadership in both teaching and research, and to support the management and strategic planning processes of the School and the University. |

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**PRINCIPAL ACCOUNTABILITIES**

4. To provide academic leadership in the design and delivery of high-quality teaching programmes.

5. To engage in high-quality research activity resulting in high-quality publications to be submitted to the REF at acceptable levels of volume and academic excellence; to lead research projects or research initiatives in the School; to secure research funding and third-stream income; and to contribute to the School's research strategy.

6. To support the management activities of the School and University, and undertake a key role in School or University working groups or committees, as required.

## KEY RESPONSIBILITIES

### 1. Teaching & Student Support

1.12 Lead the innovative design, development and delivery of a range of programmes of study at various levels.

1.13 Ensure that course design and delivery comply with the University quality standard and regulations, and take responsibility for the quality of programme units.

1.14 Regularly review and update course content and teaching materials, ensuring that they remain up-to-date and relevant, incorporating advances in the subject area and utilising appropriate technology.

1.15 Set, mark, and assess coursework and examinations; select appropriate assessment instruments and assessment criteria; and provide constructive and comprehensive feedback to students.

1.16 Actively maintain an understanding of appropriate pedagogy in the subject area.

1.17 Provide academic leadership to those working within programme areas, e.g. as a course leader.

1.18 Supervise taught postgraduate students, providing advice on study skills.

1.19 Undertake and complete administrative duties required in the professional delivery of teaching.

1.20 Undertake academic advising duties, and provide first-line support for sensitive issues, referring on as appropriate to services providing further assistance.

1.21 Adopt an approachable and accessible attitude towards students, offering office hours, informal advice etc.

### 2. Research, Scholarship & Enterprise

2.15 Contribute to the development of School research strategies and themes.

2.16 Identify and develop research objectives, and proposals for own or joint research.

2.17 Carry out independent research and act as a Principal Investigator or project leader on major research projects. This may involve leading and line-managing the staff including their recruitment, probation, mentoring, performance review and staff development; managing the budget, and taking responsibility for the delivery of the programme.

2.18 Define research objectives and questions, review and synthesise the outcomes of research studies, and develop ideas for application of research outcomes.

2.19 Develop proposals for major research projects which will make a significant impact, and lead to an increase in knowledge or understanding or the development of new explanations, insights, concepts or processes.

2.20 Produce high-quality research outputs that have significant impact in the field, for publication in monographs or recognised high-quality journals, or performance/exhibition, as appropriate, and make a significant contribution to the School's REF submission at acceptable levels of volume and academic excellence.

2.21 Make presentations at national or international 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.

2.22 Develop and maintain an independent research reputation by, for example, serving on peer review committees, and acting as a referee for journal articles and research grant applications.

2.23 Contribute to the internal management of the REF assessment exercise.

2.24 Provide academic leadership to those working within relevant research areas.

2.25 Play an influential role in identifying sources of funding and secure and/or contribute to the process of securing bids.

2.26 Play a leading role in identifying and securing opportunities for enterprise activity, knowledge exchange income and/or consultancy.

2.27 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.

2.28 Develop links with external contacts such as other educational bodies, businesses, the public sector, and professional bodies to foster collaboration and potentially generate a source of income.

2.29 Play a role in a relevant national professional body or recognised events.

2.30 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2.31 Conduct risk assessments and take responsibility for the health and safety of others, if required.

**3. Contribution to School & University**

3.7 Attend and contribute to School meetings.

3.8 Contribute to the overall management of the School in areas such as budget management and business planning, as required.

3.9 Contribute to School-level strategic planning, and University-level strategic planning processes if required.

3.10 Engage in activities beyond day-to-day teaching duties, for example Admissions Days.

3.11 Assist with undergraduate and postgraduate recruitment.

3.12 Chair and/or play a key role in School or University working groups or committees, as required.

3.13 Undertake an administrative or organisational role within the School e.g. Library Representative, Year Tutor, Exam Board Chair, or personal/academic tutoring.

3.14 Advise and provide support to less experienced colleagues, and conduct Performance and Development Reviews, as required.

3.15 Undertake additional administrative duties, as required by the Head of School.

## 4. Role-specific duties

4.1 Conduct leading experimental research in quantum technology, including quantum information processing, quantum sensing and applied quantum technology or related areas.

4.2 Seek research collaboration and synergies with existing research activities at Sussex.

4.3 Attract continuous research income.

4.4 Actively contribute the activities of the Sussex Centre for Quantum Technologies.

4.5 help to support teaching of quantum technology modules

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

## INDICATIVE PERFORMANCE CRITERIA

- Evidence of novel or innovative approaches to teaching supervision or assessment, including appropriate uses of technology.

- Sustained high-quality teaching across both undergraduate and postgraduate portfolios, as evidenced by surveys, questionnaires and peer review.

- Evidence of the integration of research, scholarship and professional practice with teaching activities.

- Regular published output of original research, with a significant proportion at international level (referred journal papers, monographs, book chapters, text books).

- Responsible for leading and managing a major research group.

- Sustained success in obtaining competitively awarded research and knowledge exchange grants and contracts, with evidence of leadership in securing such awards (for example, as Principal Investigator).

- A successful track record of completed postgraduate research supervision at MPhil and DPhil level.

- Significant involvement in knowledge creation and transfer in conjunction with partner organisations in industry, commerce, government or NGOs. This could be in the form of externally funded research, knowledge exchange and/or consultancy.

- Evidence of external profile, such as membership of professional body, editorial board or similar.

- Successful prosecution of a major task which facilitates School or organisational unit performance or business.

- Evidence of a capacity to contribute creatively and constructively to the management of School business.

- Evidence of successful management of more junior and/or support staff where such opportunities exist.

- Responsible and effective involvement in the broader arena of the School and/or University including, where appropriate, a role providing support, pastoral care and guidance to students or colleagues.

**PERSON SPECIFICATION**

**ESSENTIAL CRITERIA**

13. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).

14. Excellent interpersonal skills, with the proven ability to engage with students using a variety of different methods.

15. Significant experience of high-quality teaching at undergraduate and postgraduate level.

16. Experience of successful curriculum design or re-design.

17. Ability to lead and manage a major research programme.

18. Track record of significant and high-quality publications in reputable journals and other appropriate media of similar standing.

19. Successful track record of generating research and knowledge exchange income, and the translation of research results into practice.

20. Significant experience of supervising postgraduate students.

21. An emerging international reputation in the field of study.

22. Evidence of proactive contribution to School and/or University.

23. Excellent presentation skills, with the proven ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

24. Leadership and people management skills.

25. Ability to exercise a high degree of innovation and creative problem-solving.

26. Excellent organisational and administrative skills.

27. Ability to prioritise and meet deadlines.

28. A willingness to participate in support activities beyond normal teaching duties.

29. Excellent IT skills, with the ability to produce high-quality learning support materials.

**ESSENTIAL ROLE-SPECIFIC CRITERIA**

1. Good track record in performing experimental research in quantum technology, quantum optics and related areas.

2. Knowledge of or involvement in the UK's National Quantum Technology Programme and similar international programmes

3. Good track record in the commercialization of research and engagement with industry.