



1 Advertisement

Post Title: Senior Quantum Laboratory Engineer (Ion Quantum Technology Group)

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).

Location: Brighton, United Kingdom

Contract: Fixed term initially for 2 years, with possibility of extension

Reference: 10464

Salary: starting at £36,333 to £43,155 per annum, pro rata if part time

Placed on: 24 February 2023.

Closing date: 14 April 2023 . Applications must be received by midnight of the closing date.

Expected start date: As soon as possible.

This advert was recently posted on 20 December 2022 – Previous Applicants need not apply.

Are you a researcher or engineer with experience in supporting a research laboratory and would like to be part of an effort to develop practical quantum computers while having the possibility of settling in a stable long-term university role?

The Ion Quantum Technology group are seeking to appoint a Senior Quantum Laboratory Engineer with strong hands-on technical and engineering skills and a proven record in successfully assisting the timely delivery of research or industry R&D projects.

The main areas of responsibility for the post include:

- Carry out technical development and engineering tasks on a portfolio of research projects that require electrical engineering, computer control, and other lab related skills.
- Laboratory management through help with purchasing, health & safety, equipment training, maintenance, automation and assisting with experiments.
- Coordination of group activities and events such as inductions, skills development sessions, public outreach, and more.

You will be:

- Independent and proactive
- Organised and detail orientated
- Highly technically skilled
- A good communicator

You can find out more about the group at: <http://www.sussex.ac.uk/physics/iqt/>

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.

The University requires that work undertaken for the University is performed from the UK.

Please include with **your completed application form** a CV, cover letter, the contact details of three referees and a document explaining how you address each of the person specifications criteria. You should attach your application form and all documents to the email in **PDF format** and use the format **job reference number / job title / your name in the subject line**.

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.

2. The School / Division

Please find further information regarding the school/division at <https://www.sussex.ac.uk/physics/> (Department of Physics and Astronomy) <http://www.sussex.ac.uk/mps/> (School of Mathematical and Physical Sciences)

3. Job Description

Job Description for the post of:	Senior Quantum Laboratory Engineer (Ion Quantum Technology Group)
Department:	Physics and Astronomy
Section/Unit/School:	Mathematical and Physical Sciences
Location:	Pevensey 2
Grade:	Grade 7
Responsible to:	Prof Winfried Hensinger (Principal Investigator) through to School Administrator

Role description:

To provide a wide range of engineering and laboratory management services by (a) contributing to the engineering, setup and maintenance of experimental apparatus, laboratory instruments and infrastructure to support the research group in the successful delivery of research project objectives as well as (b) ensuring continuous lasting upkeep of the expertise required for the operation of laboratory equipment.

PRINCIPAL ACCOUNTABILITIES

1. To engage in individual and/or collaborative research activity resulting the production of operational and robust sub-systems to be used in a variety of experimental setups.
2. Provide day to day engineering lead and technical laboratory support by operating, maintaining, and modernising specialised instruments under your responsibility as well as training staff and students in the techniques required for their operations.
3. Pro-actively co-ordinate with research students, research fellows, and academic staff during the execution of the projects to assist with the successful delivery of the research objectives.

KEY RESPONSIBILITIES

1. Engineering and technical responsibilities:

1. Responsible for the preparation/development of special (non-commercially available) material, compounds, or equipment (electrical, electronic or mechanical). This includes the design, engineering, construction, and documentation of custom electronic and/or mechanical sub-systems required for the operation of quantum technology devices and quantum computing hardware.
2. Develop and maintain software for the automated control of laboratory equipment, experimental apparatus and quantum devices.
3. Carry out experiments as needed for the timely advancement of research projects. Prepare, collate, analyse, and interpret research data. Liaise with supervisor or Principal Investigator on regular basis to discuss results and project progression/direction.
4. Carry out budgeting projection and planning exercises and implement cost control measures under the supervision of, and within limits of, the Principal Investigator or supervisor. Responsible for the timing of the purchase of routine and non-routine laboratory equipment, apparatus and materials either to maintain adequate stock levels or in anticipation of the needs of advancing and future research projects in line with agreed budgets.
5. Assist academic staff and students in purchasing equipment. Lead the drafting of technical specification documents and liaise with external suppliers to arrange the commercial elements such as being provided with competitive quotes and ensuring that lead times agree with the research project timelines. Ensure the full and timely delivery of all procured equipment.
6. Instruct, train, and guide staff and students in techniques and operation of specialised equipment / apparatus under your responsibility as directed by a supervisor or member of academic staff. Participate in specialist networks and undertake development activities where necessary to keep knowledge and skills up to date and relevant for subject specialism. Apply working knowledge of theory and practice, sharing this knowledge with others as appropriate.
7. Responsible for overseeing the effectiveness and efficiency of existing procedures and developing new, or updating existing, procedures to improve levels of efficiency.

2. Laboratory management duties

1. Ensure that all laboratory equipment is functional at all times. Responsible for regular first line maintenance tasks by either investigating, identifying faults and carry out minor repairs or organising larger repairs to be carried out by external suppliers in a timely manner. Develop contingency plans in the event of the failure of equipment that is critical to the timely advancement of research projects. Implement rolling hardware modernisation and automation for existing laser, optics, cryogenic, and electronics systems.
2. Planning, inventory, and organisation of resources for the routine running of research / general laboratories. Ensuring that the provision and sufficient supply of standard components for the laser and electrical laboratories and cleanroom are maintained at all times. This includes components relating to optical, laser, mechanical, electrical, chemical, and vacuum systems / apparatus as well as general laboratory and cleanroom environment consumables.
3. Provide technical assistance and advice to staff and students on the preparation of high-quality technical documentation. Collate and administer research group shared records, data, and documentation, ensuring their good organisation for reliable future accessibility, effective communication and efficient research project progression.
4. Carry out regular assessments of essential laboratory infrastructures. Plan, organise and undertake preventive measures and carry out emergency repairs of water supply, electrical supply and laboratory air conditioning systems with the assistance of the University technical staff and external suppliers as necessary. Assist the academic staff with any expansion of the research laboratories when needed.
5. Responsible for the establishment of good working practices ensuring that laboratories always remain in a clean and tidy state. Responsible for the regular monitoring of compliance by staff and students.
6. Ensure the implementation of a safe laboratory environment using good working practices in line with relevant local and legal requirements. Coordinate and administer health and safety records by undertaking standard risk, or other safety, assessments, and producing standard operating procedures, when necessary, under the supervision of the Principal Investigator or supervisor. Lead health and safety training by carrying out H&S lab induction, monitoring compliance, and holding regular H&S update sessions. Assist student and staff with incident reports.
7. Attend research group meetings and communicate with other group members on group-wide and project specific issues. Communicate and liaise with other departmental or University staff on laboratories issues such as infrastructure upgrades, repairs and plans for future laboratory expansions.

3. Other tasks and responsibilities:

1. Supervision of technical staff may be required within own area of responsibility as directed by a supervisor or member of academic staff.

2. Autonomously lead, plan and organise group events (workshops, group meetings) and outreach activities. Responsible for the inventory and maintenance of outreach equipment as well as showing initiative in commissioning (i.e. design, construction, installation, operation and maintenance) new outreach hardware and materials. Organising and carrying out lab tours for visitors, prospective students and joining research group members.
3. Support doctoral students in the preparation of annual review progress reports and support academic staff during their appraisals to ensure that staff and students gain the most from this exercise.
4. 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.
5. Undertake additional duties, as required by the Principal Investigator.

INDICATIVE PERFORMANCE CRITERIA

The post holder will report direct to the Head of Group (Principal Investigator). Working under their general direction within a clear framework the post holder will manage their own work to achieve their agreed objectives. The role holder will play a key role in supporting the Ion Quantum Technology research group to achieve the strategic research and operational goals within the School of Mathematics and Physical Sciences. The post holder will work collaboratively across the University and with key stakeholders to deliver single team working that efficiently and effectively supports the achievement of those goals and objectives.

Working closely and in collaboration with the Head of Group the postholder will:

- Coordinate the support for the IQT research group
- Actively contribute to the engineering and production of sub-system used for quantum computing applications
- Ensure laboratory infrastructure and equipment uptime is maximised
- Be accountable for adequate technical and safety training, and compliance with applicable policies

4. Person Specification

SKILLS / ABILITIES

Essential Desirable

Ability to work individually on own initiative and without close supervision, and as part of a team	X	
Ability to exercise a degree of innovation and creative problem-solving	X	
Strong oral and written communication skills, and interpersonal skills	X	
Highly developed organisational skills with the ability to manage multiple project streams. Ability to prioritise and ensure tasks are completed.	X	
Experience in the operation and maintenance of ultra-high vacuum, cryogenic and laser systems as well as		X

other standard laboratory equipment		
Ability to develop and maintain source code for laboratory control systems (LabVIEW and Python)		X
Ability to develop advanced electronics		X
Ability to operate HF testing equipment (e.g. network analyser, impedance analyser, LCR meter, etc.)		X

KNOWLEDGE

Essential

Desirable

Excellent ICT knowledge, including a good working knowledge of project management software, word processing, spreadsheets, databases, internet, email	X	
Understanding of the principles/fundamentals to perform engineering calculation / design of electrical, mechanical and laser sub-systems		X
Good level of knowledge in mechanical and electronics manufacturing processes		X
Good level of knowledge in Python and/or LabVIEW	X	

EXPERIENCE

Essential

Desirable

Possession of a breadth and/or depth of experience showing full working knowledge and proficiency of own area of expertise and the ability to discharge the role effectively and efficiently	X	
Postgraduate qualification in engineering or science (Masters or PhD), or other equivalent qualification, or level of experience in engineering (electronical, mechanical, cryogenics, or laser system) or physical sciences.		X
Undergraduate qualification in engineering or physical sciences (BSc or 4 year Master's degree) and relevant experience in engineering or physical sciences.	X	
Design experience of advanced PCBs		X
Experience in the development of scientific instruments		X
Proven record in managing research laboratories		X
Experience in interacting with suppliers, and ensuring best value for money	X	
Experience of developing new systems and procedures	X	
Excellent record-keeping and report-writing skills and ability to write documents and make presentations clearly with appropriate logical structure, description	X	

and explanation, and good layout and presentation.		
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PERSONAL ATTRIBUTES AND CIRCUMSTANCES

Essential

Desirable

Willing to act as a point of reference to others and demonstrate continuous specialist development, acquiring and refining skills and expertise in new or related areas	X	
Dependable and reliable	X	
Evidence of a high degree of personal initiative and commitment to self-development	X	
Being comfortable working both as part of a team, and independently	X	