Chair in Experimental Quantum Communications
The York Centre for Quantum Technologies (YCQT)

Closing date: 19 January 2020
Interview date: 27 & 28 February 2020 (attendance will be required on both days)
Vacancy reference: 8240
INTRODUCTION

In recognition of the growing importance of quantum technologies, in 2014 York established the York Centre for Quantum Technologies (YCQT, http://www.york.ac.uk/physics/ycqt/). This is, by the nature of the area, an interdisciplinary centre that includes activities in the departments of Computer Science, Electronic Engineering, Mathematics and Physics. The YCQT provides a framework for interdisciplinary collaboration and projects, is a key component of the York Research Theme of “Technologies for the future” (https://www.york.ac.uk/research/themes), and has positioned York as a leading centre for quantum technologies. This resulted in the award of leadership of the Quantum Communications Hub (http://www.quantumcommshub.net/). This Hub is a major UK collaboration between academic, industrial and government partners and is the R&D Hub in the UK National Quantum Technologies Programme (http://uknqt.epsrc.ac.uk/) that represents the communications sector of quantum technologies. Following a very successful Phase 1 starting in 2014, an evolved and expanded Hub has been awarded further EPSRC funding for a five-year Phase 2, starting 1 December 2019. This new Hub collaboration will again be led by York.

Pursuit of the economic and societal benefits from quantum technologies and services has resulted in continuing growth of government and private investment in quantum technologies. In order to consolidate and expand its role as a leading centre, York is making a substantial strategic investment to establish a new experimental activity in quantum communications. This investment comprises a Chair, Lectureship and major start-up funding. The investment will be phased, with this initial Chair appointment being made so the appointee then has input to the Lectureship appointment.

This new Chair in Experimental Quantum Communications is being appointed into the YCQT. Dependent upon the preferences and research portfolio of the appointee, the potential for collaborations (experimental and theoretical) with current York staff, and laboratory requirements, the Chair could be based in one of the departments associated to the YCQT, or be a joint appointment. Applications from leaders in any areas of experimental quantum communications are welcome.

Professor Tim Spiller
Director, York Centre for Quantum Technologies
The successful candidate will be a dynamic research leader with a proven track record of internationally leading research evidenced by publications, esteem and funding. We welcome applications from candidates with research interests in any areas of experimental quantum communications. Given the evolving landscape of academic research in this sector, applications in growth areas are particularly encouraged. Examples include, but are not restricted to:

- quantum key distribution (QKD) with novel or entangled states of light
- advanced quantum networking; device-independent and measurement-device-independent QKD
- communication technologies and applications beyond QKD
- quantum communications in space

The appointee will be expected to establish a new experimental activity in quantum communications at York, and will be supported with provision of a suitable laboratory and major start-up funding. The appointee will also be expected to secure substantial research funding, from a range of sources and with particular consideration for the evolving national and international funding environment in the quantum technologies area. The successful candidate will also be expected to take on teaching and administrative responsibilities commensurate with the position, and to be able to demonstrate the ability to carry out these activities to a high standard.
Main purpose of the role

Chairs at York are expected to advance their subject nationally and internationally and to contribute to maintaining the University as an international centre of excellence for the relevant subject area through research and publication, teaching, networking and consultancy.

Chairs are required to undertake the duties outlined below:

Key responsibilities

(Role holders will be required to undertake some or all of the duties below)

To support the research activities of the Department

• To carry out internationally outstanding research and scholarship
• To disseminate this research through monographs, articles in journals of international standing, and other appropriate forms of dissemination, including national and international conference presentations
• To play a leading role in the Department in identifying and securing external funding through research grants and contracts, and in developing collaborative research income-generating activities
• To attract and supervise research students, and, as appropriate, post-doctoral researchers and other support staff
• To support, comply with, and contribute fully to research plans and policies of the Department and the University
• To support and mentor junior academic colleagues in order to promote quality of teaching and research and their career development

To support the teaching objectives of the Department

• To design and be responsible for delivery of modules and teaching programmes for undergraduate and graduate students
• To play a leading role in departmental and interdepartmental curriculum development and quality enhancement
• To coordinate team teaching, as required, including liaison with other staff and with postgraduates who teach
• To design and mark assessments, and give feedback
• To supervise undergraduate and graduate projects and dissertations
• To carry out teaching in Continuing Professional Development
• To undertake pastoral support of students, as a personal supervisor or in another designated role
• To support and promote fully the University and Department teaching quality assurance standards and procedures

To contribute to the efficient management and administration of the Department

• To make an important contribution to the leadership and management of the Department, including supporting early career staff and developing new collaborative initiatives
• To attend Departmental meetings, meetings of the Board of Studies, and other committees and working groups within the Department and University
• To carry out relevant professional duties, commensurate with the Professorial grade
## PERSON SPECIFICATION

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<tr>
<th>Qualifications</th>
<th>Essential / Desirable</th>
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<tr>
<td>PhD relevant to experimental quantum communications</td>
<td>Essential</td>
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<td>Membership of professional societies</td>
<td>Desirable</td>
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### Knowledge

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<th>Essential / Desirable</th>
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<tr>
<td>An outstanding track record of internationally-recognised contributions to the advancement of knowledge in quantum communications</td>
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<td>An outstanding track record of internationally-recognised contributions to the advancement of knowledge in the wider quantum technologies landscape</td>
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### Skills, abilities and competencies

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<tr>
<th>Essential / Desirable</th>
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<tr>
<td>Ability to define, lead, manage and attract funds for internationally excellent research, operating across disciplinary boundaries</td>
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<td>Proven leadership and managerial skills</td>
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<td>Ability to manage and interact with staff and students at all levels and to contribute to broadening the strategic development of the Department</td>
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<td>Evidence of international collaboration</td>
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<td>Evidence of industrial collaboration and technology development</td>
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<td>Evidence of peer review activities</td>
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### Experience

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<tr>
<td>International leader in quantum communications, leadership of relevant research group/theme</td>
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<td>Substantial publication record in leading peer-reviewed journals</td>
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<td>Attraction and effective supervision of postgraduate students</td>
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<td>Significant and sustained success in accessing research grants and other external funding</td>
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## Person Specification

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<th>Experience...continued</th>
<th>Essential / Desirable</th>
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<tr>
<td>Invited presentations at major international conferences</td>
<td>Essential</td>
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<tr>
<td>Effective and sustained involvement in major administrative tasks or positions of responsibility within a department or research unit</td>
<td>Essential</td>
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<td>Intellectual property and technology transfer</td>
<td>Desirable</td>
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<tr>
<td>Exceptional achievement in curriculum development, course design and teaching, learning and assessment methods at UG and PG levels and in encouraging student access and engagement</td>
<td>Desirable</td>
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<td>Authorship of books</td>
<td>Desirable</td>
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<td>Editorial duties with journals</td>
<td>Desirable</td>
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<tr>
<td>Activity as an invited examiner at other institutions</td>
<td>Desirable</td>
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<td>Participation in national teaching initiatives or international equivalents</td>
<td>Desirable</td>
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## Personal Attributes

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<td>Demonstrable capacity for strategic thinking and planning</td>
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<td>Ability to take a lead in key administration functions within the department</td>
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<td>Self-motivated, pro-active and innovative</td>
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Launched in 2014, the York Centre for Quantum Technologies (https://www.york.ac.uk/physics/ycqt/) is a cross-departmental, interdisciplinary initiative aimed at further developing the University's substantial expertise into quantum research. Based on an initial partnership between the departments of Physics, Mathematics, Electronic Engineering and Computer Science, the Centre aims to foster new collaborations across all areas of quantum theory, and in particular their applications to emerging quantum technologies.

The research focus of the affiliated staff is wide-ranging, covering various application areas: quantum communications, sensing, imaging and computing technologies (with potential applications to satellite technology). At the more fundamental level, research covers many areas of quantum mechanics, from quantum cryptography and quantum networks to quantum information and processing, including entanglement, teleportation, state reconstruction and quantum thermodynamics. Study of physical implementations of these phenomena encompasses light and matter: quantum optics, spins and charges in condensed matter systems and nanomechanical devices.

Founded by the current Director, Professor Tim Spiller (timothy.spiller@york.ac.uk), the Centre further aims to support cross-institutional collaborations through a visitors programme and research seminar series, while it also facilitates training of the next generation of quantum researchers via funding of Research Fellowships and PhD studentships in this field. Spiller is also Director of the EPSRC Quantum Communications Hub, a major academic, industrial and government collaboration which is now funded through to 2024.

This new Chair in Experimental Quantum Communications is being appointed into the YCQT. Dependent upon the preferences and research portfolio of the appointee, the potential for collaborations (experimental and theoretical) with current York staff, and laboratory requirements, the Chair could be based in one of the departments associated to the YCQT (or could be a joint appointment):

- Department of Computer Science
- Department of Electronic Engineering
- Department of Mathematics
- Department of Physics

It is also expected that the Chair’s research will significantly enhance York’s contribution to Phase 2 of the Quantum Communications Hub, which covers a broad range of quantum communications technologies and applications.
Founded on principles of excellence, equality and opportunity for all, the University of York opened in 1963 with just 230 students. In 2019 it is the home of more than 18,000 students across more than 30 academic departments and research centres. Since opening over fifty years ago, we have become one of the world’s leading universities and a member of the prestigious Russell Group.

We are consistently recognised as one of the leading Higher Education Institutes and one of just six post-war universities to have appeared in the world top 100. We were rated 22nd in the 2019 Times & Sunday Times league table. The University of York has won six Times Higher Education (THE) Awards and five Queen’s Anniversary Prizes.

The University is proud of its association with Athena SWAN, holding multiple awards in support of gender equality, representation and success for all, with gold awards for Chemistry and Biology and a University-wide bronze award.

Of 154 universities that took part in the Research Excellence Framework (REF) in 2014, The University of York ranked 14th overall and 10th for the impact of our research. The University is consistently in the top ten UK research universities and attracts over £60m a year of funding from research alone.

Our vision is to make the University of York a world leader in the creation of knowledge through fundamental and applied research, the sharing of knowledge by teaching students from varied backgrounds and the application of knowledge for the health, prosperity and well-being of people and society.
Attractive workplace

Centred around the picturesque village of Heslington on the edge of the city of York, our colleges are set in an attractive landscaped campus. York enjoys a safe, friendly atmosphere with facilities including bars, shops, theatres and concert halls all within easy walking distance.

The University has undergone an unprecedented period of expansion and renewal since 2000. We have invested in twenty new buildings on the original campus and have completed the first and second phases of a £750m campus expansion. Our investment in new colleges, teaching and learning spaces, laboratories, research facilities and a new sports village mean there has never been a better time to join us.

During this period of change we've worked hard to retain our friendly, informal and collegiate atmosphere, which is important to our core values of inclusivity and interdisciplinarity.

We have a thriving international community and are committed to providing staff moving to York with as much support as possible through our Relocation Package and Welcome Officers.

The University is committed to promoting a diverse and inclusive community - a place where we can all be ourselves and succeed on merit. We offer a range of family friendly, inclusive employment policies, flexible working arrangements, staff engagement forums, campus facilities and services to support staff from different backgrounds.

For further information please visit our employee benefit pages.
THE CITY AND THE REGION

The City of York

Internationally acclaimed for its rich heritage and historic architecture, York’s bustling streets are filled with visitors from all over the world. Within its medieval walls you will find the iconic gothic Minster, Clifford’s Tower and the Shambles - just a few of the many attractions.

But York isn’t just a great place to visit - it’s also a great place to live and work. While nourishing a vibrant cosmopolitan atmosphere, York still maintains the friendly sense of community unique to a small city.

Visit www.visityork.org for more information on the city of York.

Shopping, culture and entertainment

York boasts specialist and unique boutiques but also all the high street stores on its busy shopping streets. Alongside them you will find cinemas, theatres, an opera house, art galleries, a vast range of restaurants, live music venues and clubs. York is particularly renowned for its multitude of pubs and bars, from the modern to the medieval.

Housing and schools

Whether you choose to live close to the city, in one of the surrounding villages or further afield, you will find a wide range of housing within comfortable distance of York and the University. For families, the area has a range of excellent schools both in the state and independent sector.

Great location

York is one of Britain’s best-connected cities. Halfway between London and Edinburgh on the East Coast mainline, on intercity trains you can reach London King’s Cross in less than two hours and Edinburgh in two and a half hours. York is also well served by road links, and it is easily accessible from the A1, M1 and the M62.

For those travelling from overseas, Manchester Airport is two hours away and Heathrow Airport just three and a half. Flights from nearby Leeds Bradford Airport provide easy access to mainland Europe. By Eurostar from London St Pancras, Paris is just over six hours away.

Yorkshire

The Lonely Planet guide recently declared Yorkshire the third best region in the world to visit. There is something to cater to every taste, whether it be the rugged landscapes of the Moors or the Dales, the picturesque seaside towns of Scarborough and Robin Hoods Bay, the gothic architecture of Whitby or the vibrancy of cosmopolitan Leeds.
Apply online

- Go to https://jobs.york.ac.uk
- Find this job using reference 8240
- Complete the online application form

You will need to submit your completed application by midnight (local UK time) on 19 January 2020.

What will I need?

We will ask you for details of:

- Your CV
- A letter describing how you meet the requirements of the job
- A statement of your research and teaching intentions

You will also need details of three academic referees (one International) and one Employment referee.

Help and assistance

Direct any informal queries to Professor Tim Spiller (timothy.spiller@york.ac.uk)

If you have any questions about your application, contact the HR Services team:

recruitment@york.ac.uk
+44 (0)1904 324835