KTP Associate in Secure Networking Communications
Physics / ADVA Optical Networking Ltd.

Closing date: 12 May 2017
Interview date: 29 May 2017
Vacancy reference: 5678
INTRODUCTION

Recent advances in Quantum-secured networking technology combined with an increasing desire by Enterprises and Communications Service Providers for the most secure communications possible now provide for the possibility of developing a real commercial product using Quantum Key Distribution (QKD).

This role exists to bring technology which has been used as proof of concept into a test-bed based in real telephone exchanges to deal with the real issues of deployment (scalability, robustness, operational simplicity etc). This post is ideal for an Engineer with an interest in quantum physics. However no prior knowledge of quantum mechanics is required as this can be taught by the associated academic institution.

This is a chance to be at the forefront of commercial deployments of quantum technology.

The role involves leading a Knowledge Transfer Partnership (KTP) project between ADVA Optical Networking Ltd and the University of York. The KTP aims to spur innovation by connecting the company with specific academic expertise in Department of Physics at the university.

The Associate will work as part of a team of ADVA Optical Networking employees and University of York academics, involved in developing, testing and implementing systems integrating quantum communications with high-speed optical transmission systems.

The Department of Physics at York is at the forefront of pioneering global research and technological advancement in areas such as plasma physics and fusion, nuclear physics and condensed matter and quantum physics. York leads the UK Quantum Communications Hub, a major academic and industrial collaboration which is developing new secure communications technologies based on quantum physics.

ADVA Optical Networking Ltd is a global leader in the development and deployment of high-speed optical transmission systems. ADVA systems-based solutions are widely used in networks around the world. ADVA have become one of the industry’s most trusted partners and are responsible for architecting some of the world’s most advanced networks.
Main purpose of the role

The main purpose of this role is support for the development of hardware and systems software for the integration of quantum and classical communications in optical networks. This will entail work on and around the interface between the quantum key distribution (QKD) technology and the underlying high speed optical network transport. This will support both classical network management and the management of secure key transfer in various scenarios, starting with point-to-point systems, and moving to multi-node and switched networks. Working as part of a team of ADVA employees and University of York researchers, you will primarily work with Fibre Service Platform (FSP) 3000 product family from ADVA Optical Networking, along with commercial QKD systems, in deployed quantum-classical networks through the University of York and its partners in the Quantum Communications Hub.

Key responsibilities

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

- Review and become familiar with existing quantum-classical network literature / implementations.
- Employ the knowledge and insight from such review and familiarity for the refinement of project objectives.
- Support the design, development and testing of interfaces for ADVA FSP and QKD devices.
- Support development and demonstration of field trials and implementations.
- Extend the scope of the research into other relevant fields in both quantum and classical networks.
- Communicate and collaborate with experts in the classical and quantum communication domains.
- Support the exhibition and demonstration of equipment and systems relevant to the development.
- Work closely with national and international QKD standardization bodies such as NPL and ETSI.
- Document equipment / systems (manuals / specification) as required.
- Prepare and submit project reports.
- Contribute to case-studies, journal publications, conference proceedings as appropriate.
# PERSON SPECIFICATION

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<tr>
<th>Qualifications</th>
<th>Essential / Desirable</th>
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<tr>
<td>Masters-level degree relevant for networking/communications technologies and systems</td>
<td>Essential</td>
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<td>PhD or equivalent relevant for networking/communications technologies or engineering</td>
<td>Desirable</td>
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<th>Knowledge</th>
<th>Essential / Desirable</th>
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<tr>
<td>In-depth knowledge of programming languages such as C / C++ / Java</td>
<td>Essential</td>
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<td>Cyber security issues / analysis</td>
<td>Desirable</td>
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<td>Knowledge in Quantum Communications and Cryptography.</td>
<td>Desirable</td>
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<td>Knowledge in Fibre Optic Communications</td>
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<td>Electronic hardware development based on FPGAs</td>
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<th>Skills, abilities and competencies</th>
<th>Essential / Desirable</th>
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<tr>
<td>Proven skills in software development in industrial or academic environments.</td>
<td>Essential</td>
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<td>Knowledge of optical network hardware</td>
<td>Preferred</td>
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<td>Good oral and written communication skills.</td>
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<td>Ability to write up research work for publications in high profile journals and engage in public dissemination.</td>
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<td>Self-motivation and the ability to look beyond immediate specifics within the scope of the project.</td>
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<td>Presentation skills and confidence appropriate to conferences, demonstrations and exhibitions.</td>
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<td>Ability to work independently, without constant and close supervision.</td>
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<th>Experience</th>
<th>Essential / Desirable</th>
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<tr>
<td>Software-based device monitoring and control. Essential</td>
<td>Essential</td>
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<td>Relevant hardware or software development.</td>
<td>Essential</td>
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<td>Working as part of a team, as well as independently under own initiative.</td>
<td>Desirable</td>
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<td>Carrying out independent and collaborative research.</td>
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<th>Personal attributes</th>
<th>Essential / Desirable</th>
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<tr>
<td>Attention to detail and commitment to quality.</td>
<td>Essential</td>
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<td>An appreciation of and respect for appropriate confidentiality of project information.</td>
<td>Essential</td>
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<td>Interest in and enthusiasm for the wider fields in which the project is focused.</td>
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<td>Ability to prioritise in order to meet deadlines.</td>
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<td>Initiative to plan own work schedules.</td>
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<td>Commitment to personal development and updating of knowledge and skills.</td>
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<td>Willingness to travel for the purposes of the project.</td>
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THE DEPARTMENT

The University:

The Department of Physics at York has 56 academic staff members (52.2 FTE), more than 40 postdoctoral Research Fellows and visitors, and 40 support staff. The student population comprises around 475 undergraduates and 110 postgraduates (mostly PhD).

The department has expanded considerably in the last five years, with both staff and student numbers increasing significantly, accompanied by an on-going rise in research funding.

The Department has a lively and expanding research programme in several areas of physics, organised within three large research areas: Condensed Matter Physics, Nuclear Physics and Plasma Physics and Fusion. The Department leads several inter-departmental ventures, including the Biological Physical Sciences Institute (BPSI) and the York Quantum Technologies Centre (YQTC). Within the UK national Quantum Technologies Programme, York also leads the recently established EPSRC Quantum Communications Hub, which is a major collaborative project comprising eight UK universities and numerous industrial partners. There has been significant major investment in laboratories and facilities at York, including the York-JEOL Nanocentre and the York Plasma Institute. There are excellent mechanical, computing and electronic workshop facilities, which support our research and teaching activities.

The Department offers both three year BSc and four year MPhys degree programmes in Physics, Theoretical Physics and Physics with Astrophysics; and joint degree programmes in Maths and Physics and Physics with Philosophy. For postgraduates it offers a taught MSc in Fusion Energy, an MSc by Research and PhD degrees, including leading the EPSRC Centre for Doctoral Training in the Science and Technology of Fusion Energy.

The Department of Physics fully endorses and adheres to the University’s policies on equality of opportunity, and in particular:

- has flexible working arrangements which exceed those stipulated by the University;
- has demonstrated commitment to the University’s policy on job sharing;
- has been awarded both Athena Swan Silver and Champion status within the Institute of Physics’ Juno programme, the intention of which is to recognise and reward departments that can demonstrate they have
THE DEPARTMENT

taken action to address the under-representation of women in university physics and to encourage better practice for both women and men.

Further information about the department is available at: http://www.york.ac.uk/physics and http://www.quantumcommshub.net/

The company:

ADVA Optical Networking Ltd is a global leader in the development and deployment of high-speed optical transmission systems. ADVA systems-based solutions are widely used in networks around the world. ADVA’s vision is to transport data, storage, voice and video signals at native speeds and lowest latency. ADVA’s products are the building blocks for tomorrow’s networks, enabling the transport of increasing amounts of data across the globe. From the access to the metro core to the long haul, ADVA create intelligent, software-automated solutions that will provide future generations with networks that can scale to meet increasing bandwidth demands. ADVA is driven by innovation allowing the company to become a technology leader. ADVA team spans the globe and includes some of the industry’s leading engineers and developers. Our Optical+Ethernet platform is built on a unified foundation of fiber-optic technology combined with Ethernet functionality and intelligent software. This technology enables service providers and enterprises to develop a highly scalable and automated infrastructure that can meet the most rigorous networking requirements. ADVA have become one of the industry’s most trusted partners and are responsible for architecting some of the world’s most advanced networks.
Founded on principles of excellence, equality and opportunity for all, the University of York opened in 1963 with just 230 students. In 2016 it is the centre for almost 16,000 students across more than 30 academic departments and research centres. In over 50 years we have become one of the world’s leading universities and a member of the prestigious Russell Group.

The University has consistently been recognised as one of the leading Higher Education Institutes and is one of just six post-war universities which appear in the world top 100 (2013-14) and 15th in the Times & Sunday Times league table (2016). The University of York has won six Times Higher Education (THE) Awards and five Queen's Anniversary Prizes.

We are proud of our association with Athena SWAN, holding ten awards in support of women in science, with gold awards for Chemistry and Biology as well as 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 on 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. With a compact and easy to get around design, York enjoys a safe, friendly atmosphere. The campus offers a wealth of facilities, which includes 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 space, 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 all staff moving to York with as much support as possible through our Relocation Package and Welcome Officers.

The University aims to offer a nurturing and supportive environment as an employer. Flexible working hours, nursery facilities, childcare vouchers, cycle to work scheme, generous holidays and an attractive pension scheme all make the University of York one of the region's leading employers.

For further information please visit Rewards Extra
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 5678
- Complete the online application form

You will need to submit your completed application by midnight (GMT) on 12 May 2017

What will I need?

We will ask you for details of:
- your employment history
- relevant qualifications
- two referees

You need to be ready to show us how you meet the requirements of the job, either in a written statement and / or by answering questions.

Help and assistance

Direct any informal queries to rupesh.kumar@york.ac.uk or tedwards@advaoptical.com

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

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