No images? Click here

QUANTUM COMMUNICATIONS HUB

Welcome to the EPSRC Quantum Communications Hub Newsletter!

Hi there, welcome to the EPSRC Quantum Communications Hub Quarterly Newsletter. Here you can keep up to date with the latest news, events and opportunities associated with the Hub!

First demonstration of enhanced security for random number generators

Hub researchers based at the University of York and collaborators in China are a step closer to the commercialisation of next-generation random number generators (RNGs), a key technology used to ensure data security.

Most of the world's cybersecurity infrastructure is based on the exchange and use of digital cryptographic keys. RNGs are essential to this infrastructure but ensuring the numbers generated are unique and unpredictable is challenging, in part because the quality of a random number is not dependent on the number itself but on the process used to generate it. Having confidence in the quality of random numbers is important, since the use of low-quality random numbers potentially compromises security.

Quantum Communications Hub researchers are exploring the use of so-called device-independent RNGs to ensure the process that generates the numbers is secure. By exploiting the phenomenon in quantum physics known as entanglement - or the 'spooky action at a distance' concept as coined by Einstein - device-independent RNGs automatically check for faulty or tampered-with devices during the number generation process.

In collaboration with researchers at the University of Science and Technology of China, researchers at York carried out the first experimental demonstration of randomness expansion in a device-independent setting.

Find out more

Inspiring quantum-related enrichment scheme for schools funded through the Hub's Partnership Resource Fund

A project that will deliver a comprehensive scheme of classroom-based activities and quantum-related CPD for A-level students and their teachers has received renewed funding through the Quantum Communications Hub's Partnership Resource Fund.

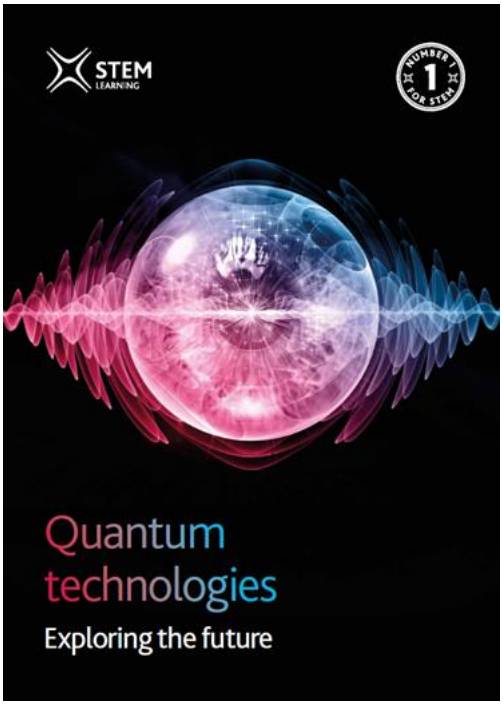
The project, titled the 'Quantum Ambassadors Programme', is led by the National STEM Learning Centre and the University of York Science Education Group and aims to help A Level students understand the scientific process and enhance their understanding of quantum physics and technology concepts, while also signposting relevant career pathways.

The project will draw upon the science and technologies of the National Quantum Technologies Programme to provide context for the activities and resources, and will harness expertise from the Hubs throughout.

The Programme will be rolled out nationally, meaning schools all over the country will be able to access the classroom activities and accompanying resources. Owing to the Covid-19 pandemic, the new phase of the Programme will be delivered online in the first instance, with classroom activities scheduled to resume later on in the project lifetime.

For information on the second phase of the scheme visit the Quantum Ambassadors website.

If you are a STEM Ambassador and would be interested in receiving training - free of charge - to become a quantum ambassador, then log on to your profile and go to the skills and qualifications tab where you can add Quantum Ambassadors to your schemes. If you are not yet a STEM Ambassador but are interested in becoming one visit the STEM Ambassador website to find out more.



Hub and NCSC jointly organised Quantum Communications and Cyber Security workshop

The Hub and the National Cyber Security Centre (NCSC) recently held a two day workshop on Quantum Communications and Cyber Security. The event was attended by around 30 Hub and NCSC experts, industrial partners and key stakeholders of the National Programme. At the first meeting NCSC and other security experts shared their perspective on three main topics: strategic direction on quantum and quantum-safe technologies; integration of new (quantum) technologies into cryptographic and wider security architectures; and engineering and assurance of systems intended for use in higher threat environments.

At the second meeting there were parallel small-group discussions covering various topics, including: implementation and integration challenges; hybrid systems; demonstrators; sector specificity; future directions for new technologies - followed by wider discussion on next steps.

A short paper will be posted on the Hub website soon.

HUB EVENT: Next Generation Quantum Networking: Applications, Use cases, Architectures and Technologies

29-30 April 2021, online

This Workshop aims to bring together researchers from UK's Quantum Communication Hub programme and similar initiatives across the world to discuss technological challenges and solutions for creating the next generation of quantum communication networks featuring enhanced operational capabilities to address the requirements for a variety of applications and use cases including quantum key distribution, quantum internet, blind and distributed quantum computing.

Registration is now open, more information regarding speakers and agenda will be released in due course.

Find out more

IET Quantum Engineering Technical Network

The Institution of Engineering and Technology has launched a Quantum Engineering Technical Network and corresponding Community Group to achieve three prime objectives:

- The bringing together of engineers working in quantum technologies to share knowledge and practice experience concerning the development of skills, products and applications and their underpinning technologies.
- The development and evolution of the Quantum Engineering profession through the IET's extensive resources, community-building skills and established engagement initiatives in the wider engineering sector.
- The raising awareness of the developments and the need for engineering and technology engagement in the rapidly emerging Quantum Sector.

You can find out more and join the group via the link below.

Join the network

The Institution of Engineering and Technology

Events

ETSI Quantum Safe Cryptography Technical Event

18-19 February 2021, online

This two day event is designed for members of the business, government and research communities with a stake in cryptographic standardization on a global scale. It will showcase both the most recent developments from industry and government, and cutting-edge potential solutions coming out of the most recent research. The event will include a world tour of quantum activities, including a presentation on the UK Quantum Landscape.

Find out more

Screening of Quantum Shorts finalists

25 February 2021, online

Judges of the Quantum Shorts film festival recently selected ten finalists from a total 224 films received from 52 different countries during the festival's call for entries in 2020. Now is your chance to see them and vote for your favourite!

Organisers of the international Quantum Shorts film festival, the Centre for Quantum Technologies, is hosting a free online screening of the ten shortlisted films of the competition, followed by a panel discussion.

Eminent panellists including Hub Director Professor Tim Spiller, shortlisting judge and senior researcher Joshua Slater from QuTech, and past Quantum Shorts finalists Noemi Gunea and Grace Lambert will discuss the films and their takes on quantum. The panel will be moderated by shortlisting judge Michael Brooks.

Head to the Centre for Quantum Technologies YouTube channel on the day to attend the event.

Quantum Business Europe

16-17 March 2021, online

Quantum Business Europe is a digital event exploring the advances in quantum technologies across Europe and their impact on key industries. In the era of transformation, the event aims to empower the business community with the knowledge, skills, technology, and connections that they need to master the 3 dimensions of the quantum revolution : computing, communication, sensing. The event includes a virtual exhibition, a program of high-level conferences and over 30 demo-sessions for in-depth insights on this upcoming revolution.

Find out more

Quantum Tech

14-15 April 2021, online

This year's Quantum.Tech conference will be free and will take place online. The conference aims to drive forward the commercialisation of quantum applications across industry; to provide a global, annual meeting place for the quantum ecosystem; and to pull Quantum out of the research lab, and onto the shop floor. You can hear from industry experts, research institutions, government agencies and investors on the commercial applications of quantum computing, communications and sensing.

Find out more

BQIT:21

26-28 April 2021, online

The Virtual Bristol Quantum Information Technologies Workshop will return 26-28 April 2021 with a new programme of speakers presenting on various areas of Quantum Information Technologies.

BQIT is a three day annual workshop aimed at enabling leading UK and international academics and industrial partners to come together; to explore and discuss future ambitions and challenges in the field of Quantum Information Technologies.

Registration for the event is open and will close on 19 April 2021.

Find out more

SPIE Security + Defence 2021

13 - 16 September 2021, Madrid

SPIE's Security + Defence conference will take place on 13 - 16 September 2021, in Madrid. This event crosses the divide between fundamental optical science and the application of the underpinning technologies in advanced defence and security systems. The symposium will offer twelve conference topics including Emerging Technologies, Quantum Technologies and Quantum Information Science.

Find out more

SPIE. SECURITY+ DEFENCE

SPIE Photonex + Vacuum Technologies

28 - 30 September 2021, Glasgow

Join fellow academics, scientists and engineers sharing the latest research in photonics, biophotonics, quantum technologies, hyperspectral imaging, lasers, optical technologies, nanotechnology, vacuum equipment and in-vacuum technologies. The event will feature a 125-company exhibition with product demos, plenary presentations and technical workshops, and networking with exhibiting companies and colleagues.

Find out more

UK National Quantum Technologies Showcase 2021!

5 November 2021

Make sure to save the date for the UK National Quantum Technologies Showcase 2021. The Showcase will highlight the expertise, capabilities and advances of quantum technologies in the UK that take place during 2021. We look forward to seeing you there!

New Scientist Live North

28 - 30 January 2022 - Exchange Hall, Manchester

The Hub (as part of Quantum City) will be attending New Scientist Live North, in Manchester, from 28 - 30 January 2022, this is a new date as the 2021 event had to be postponed due to the Covid-19 pandemic. The Hub has previously attended the award-winning science festival 'New Scientist Live' in London, however, for the first time, the festival is being held in the north of England and we are delighted to be attending. It is expected that around 9000 people will attend the festival across the three days to view exhibits and listen to talks.

Work with us!

The Quantum Communications Hub welcomes enquiries about potential collaboration from those with interests closely aligned to our work. A number of options are available, including:

- Co-funded feasibility studies;
- Partnership in Industrial Strategy Challenge Fund proposals;
- Involvement in other externally funded schemes, both national and international in scope.

If you'd like to find out more about collaboration opportunities, visit our website or contact us via enquiries@quantumcommshub.net.

Quantum Communications Hub
Information Centre, Market Square
(Department of Physics)
University of York
York YO10 5DD

enquiries@quantumcommshub.net