

Our scientists are leading a new £24m hub to explore how quantum physics can be used to develop secure communications.



The unique collaboration between UK universities and industry, will exploit fundamental laws of quantum physics for the development of secure communication technologies and services for consumer, commercial and government markets.

One of four hubs

Following a successful bid by the project consortium for Government funding, the new venture will be one of four hubs in the Engineering and Physical Science Research Council's new £155m National Network of Quantum Technology Hubs.

The hubs are the centre-piece of the £270 million investment in the UK National Quantum Technologies Programme announced by the Government in the 2013 Autumn Statement.

Involving eight universities - Bristol, Cambridge, Heriot-Watt, Leeds, Royal Holloway, Sheffield , Strathclyde and York - the five-year projects will draw on their collective world-class expertise and facilities.

Private sector partners include BT, the National Physical Laboratory, and Toshiba Research Europe Ltd, all of whom are world leaders in advanced research and development in quantum communications.

The main focus of the Hub will be on secure communications, with emphasis on Quantum Key Distribution (QKD) - one of the first quantum information technologies with market potential. The Hub is aiming for breakthroughs in affordability and integration that will lead to widespread use of the technology. Developments will include chip-scale integration of QKD, and the design and build of prototype hand-held QKD devices.



UK's first Quantum network

The Hub will also build the UK's first Quantum network. This will be based initially on the National Dark Fibre Infrastructure Service (NDFIS), which currently links a number of the Hub's university partners. The new network will be extended to other sites over time, providing a geographically distributed test-bed outside the lab for developing, testing and demonstrating new quantum technologies and services.

"Realising the potential of quantum technologies is a significant scientific and engineering challenge," said University of York Vice-Chancellor, Professor Koen Lamberts. "York's expertise in quantum communications across disciplines - including computer science, mathematics and physics – is at the heart of a unique and exceptionally strong partnership that will drive the Hub towards its objective of exploiting excellent research to support UK industry and business."

The Director of the Quantum Communications Hub, Professor Tim Spiller of the Department of Physics at York, said: "Collaboration is key to the project, and our Hub has brought together a multi-disciplinary team of world-class researchers and industry leaders. We will take from across the partnership the best existing theoretical and experimental research as well as current technology demonstrators. These will underpin the development necessary for prototype products and services that will stimulate the market and the consequent take-up."

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