

UK position on Quantum Technology and Space

Community Workshop on Cold Atoms in
Space

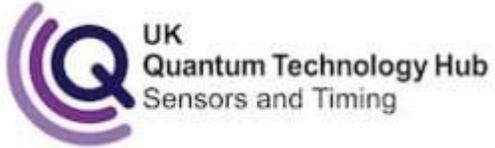
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UK Policy on Quantum Technology

- In 2014, the Government established the National Quantum Technologies Programme (NQTP) to create a coherent government, industry and academic QT community. It provides investments in research, innovation, skills and technology demonstration to support UK industry to commercialise new technologies.
- It is a two phase 10-year programme (2014-2024) run in partnership between UKRI (EPSRC, Innovate UK, STFC), NPL, MoD, GCHQ, Defence Science and Technology Laboratory (Dstl), NCSC, BEIS.
- The programme set up four National QT Hubs based at the Universities of Oxford, Glasgow, Birmingham and York. Over 150 companies partnered with the four QT Hubs in first phase.
- Sustained funding in the Hubs has led to the development of prototype devices in the first phase, including high-sensitivity wearable technologies for medical imaging (quantum magnetometers), field-deployable cold-atom gravity sensing, and miniature atomic clocks for precising timing.
- In the programme's second phase, further funding of over £350m over 5 years has been provided to:
 - Continue academic leadership through the National Hubs network
 - A further £153m for industry-led projects as part of the ISCF quantum challenge
 - An enhanced quantum test and evaluation programme at the National Physical Laboratory
 - Continued support for training skilled individuals through Centres for Doctoral Training
 - £93m for the National Quantum Computing Centre, to help deliver quantum computing capabilities for the UK and support the growth of the sector

The four UK QT Hubs



Birmingham, Glasgow, Imperial, Nottingham, Southampton, Strathclyde and Sussex, NPL, the British Geological Survey , 110 projects, £120M income, 70 industrial partners



This hub is led by the University of Glasgow and incorporates the universities of Bristol, Edinburgh, Heriot-Watt, Oxford, and Strathclyde.



The Quantum Computing & Simulation Hub (QCS Hub) is a collaboration of 17 universities, led by the University of Oxford and supported by over 25 national and international commercial and governmental organisations.



The EPSRC Quantum Communications Hub is a synergistic partnership of ten UK research-leading universities (Bristol, Cambridge, Glasgow, Heriot Watt, Kent, Oxford, Queen's Belfast, Sheffield, Strathclyde, and the lead – York) private sector companies and public sector bodies that have come together in a unique collaboration for research-led development and commercialization of quantum secure communications.

UKSA and Quantum technology for space

- We recognise the importance of Voyage 2050's position on cold atom technology in light of the UK's work on this area through the National Quantum Technologies Programme.
- As a funding agency, UKSA National Space Science programme is responsible for supporting space science mission candidates and selected missions in the ESA Science Programme, by funding UK universities and industry to develop science instruments and data processing for them.
- As a UK Executive Agency, UKSA runs on a different model to some other national Funding Agencies and does not employ research experts, so does not hold in house research expertise in quantum technologies.
- Generic quantum technology research is handled by UKRI in the UK - the primary point of contact and best placed to progress the applicability of these early stage technologies.

The role of UKRI-STFC

- UKRI-STFC supports research in astronomy, physics, space science and operates world-class research facilities for the UK. It is a part of UK Research and Innovation, which is a part of BEIS.
- By extension, UKRI provides the mechanisms and has responsibility for supporting cutting-edge, novel and exciting quantum technologies, including cold atom research.

How can UKSA assist?

- As a result of our interest in emerging space technologies, we can ensure that interested parties can connect with the right people in UK government
- UKSA expects to continue to be involved in discussions on quantum technology in space in readiness for the development of specific science mission concepts.



Thank you for your time

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