Parliamentary and Scientific Committee

‘Quantum Technologies’

A meeting held in partnership with the Institute of Physics

Recent advances in quantum physics research have significant implications for technological progress; they have allowed new ways to control objects at the scale of atoms, and could transform many areas of life. Our discussion meeting, held in partnership with the Institute of Physics (IoP) gave an overview of recent developments in what is the International Year of Quantum Science and Technology. Visitors were welcomed by George Freeman MP, Chair of the P&SC, who introduced our four speakers, remarking that Sir Keith Burnett, the IoP President, was also present.

Quantum is a potential game changer, and firstly Tom Grinyer, Group Chief Executive of the IoP, explained the organisation’s interests in science, skills and society, and described their leading role in the International Year of Quantum, coordinating a wide variety of events and activities across the UK and Ireland, including a week-long exhibition at Parliament in June 2025, and at the Royal Institution in November with an emphasis on young people. The UK initiated the first QT programme in the world, with support from the previous government; it is encouraging that the new government is continuing this support.

Dr Najwa Sidqi, Quantum Cluster Manager, Science and Technology Facilities Council (STFC), explained that there are now potential business applications that can be derived from the theoretical research basis; today’s challenges include healthcare, public services and communications networks. Harnessing properties of materials, it is possible to unlock new possibilities in navigation systems and GPS, secure networks and satellites, reducing carbon emissions, and better energy consumption and resources management.

Jonathan Legh-Smith MBE, Executive Director for UKQuantum, the association for the UK’s quantum industry, represents the interests of members nationally and internationally. It is an open organisation, welcoming non-UK members; quantum is a strategic choice in many countries. He listed some quantum ‘unicorns’ (privately held start-up companies valued at $1bn+) in the USA and UK, citing recent US investment in the UK. It is quite early for really commercial QT companies, though many existing companies in a variety of sectors, from banking to engineering, are showing interest in quantum computing applications; there is great potential.

George Freeman, a former science minister, spoke of his involvement in QT developments in the UK. Britain is still viewed as a world leader in quantum science, though a shortage of funding is an issue; we can invent and be creative but can’t industrialise. Huge computers and huge amounts of money are needed to progress, and there is currently a global race between the USA and China.

Professor Sir Peter Knight FRS, Chair of the UK National Quantum Technology Programme Strategy Advisory Board, described how the UK was an early starter in QT; since 2014 the government has invested £1.1bn including funding for 5 research hubs involving 6 universities, and focusing on Quantum Computing, Quantum Networks, Biomedical Sensing, Quantum Enabled Position, Navigation and Timing, and Sensing, Imaging and Timing. The UK is regarded as a world leader, with centres of excellence, and talented people but there is a need to scale up, create bigger companies, and attract more venture capital, or we will lose out. In education physics is now a fast-growing subject choice, but poor teaching in schools is a challenge.

In the following Q&A session it was recognised that more investment is needed to produce home-grown ‘unicorns’, but venture capitalists remain nervous of what is a less known area of technology. We are vulnerable to foreign takeovers and mergers, but we need resultant jobs to be here in the UK.
A pipeline of young STEM educated people is essential, but there are not enough physics graduate teachers, and they often quickly leave teaching for other jobs, as do teachers with computer expertise. Creative, collaborative mentoring of teachers, with better rewards and planning for the future is necessary in what can be a challenging profession. Enthusiasm was expressed for involving young people in research at an earlier stage, making science education more hands on, and encouraging STEM engagement generally.
AI and quantum science should be regarded as partners for the future not rivals. There must be realism about what we can do just in the UK, there has to be collaboration with the USA and the EU; we must also focus on our strengths, it is impossible to do everything in this developing field.

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