

A year full of quantum celebrations

 Check for updates

On 7 June 2024, the United Nations proclaimed 2025 as the International Year of Quantum Science and Technology.

In June 1925, on a small island called Helgoland in Germany, the 23-year-old Werner Heisenberg developed matrix mechanics, one of the foundations of quantum mechanics. Heisenberg's work laid the groundwork for his uncertainty principle, which is one of the key concepts of quantum theory. The year 2025 was chosen for the International Year of Quantum Science and Technology (IYQ) to mark the 100th anniversary of the birth of modern quantum mechanics.

"The idea for IYQ initially proposed to UNESCO by Mexico received the support of Ghana at the United Nations General Assembly stage. It emerged from the growing recognition of quantum science and technology's transformative potential in addressing global challenges across diverse fields, such as computing, healthcare and communications," said Amal Kasry, the Chief of Section for Basic Sciences, Research, Innovation, and Engineering at UNESCO, whose responsibilities include advising and supporting Member States to build institutional and human capacities in the fields of basic sciences, engineering and STEM to support sustainable development.

"The initiative gained unanimous support, reflecting the scientific community's collective vision for quantum science's role in shaping the future," Kasry emphasized.

The objectives of the IYQ are numerous. It aims to promote global awareness of quantum science and technology and its applications, and to foster international collaboration in research, education and innovation. It seeks to reduce technological gaps by ensuring equitable access to quantum education and



infrastructure, particularly in underserved regions. It also aims to inspire young people, especially women and underrepresented groups, to pursue careers in quantum science. Last but not least, it aims to highlight how quantum science and technology can contribute to achieving sustainable development.

"IYQ 2025 is a call to action for scientists, educators, policymakers and the public to come together to harness quantum technologies responsibly and inclusively, with a particular focus on reducing the technological gap between the Global North and South. For the scientific community, this is an opportunity to advance collaboration, share knowledge widely, and ensure equitable access to quantum education and infrastructure. For the general public, it is a chance to engage with innovations that can drive sustainable development and foster a more inclusive global scientific landscape," Kasry urged.

"A major focus of the IYQ in 2025 is to inspire citizens, and especially the next generation, about the transformative opportunities quantum technologies offer in addressing global challenges and how they as citizens can play

a role," said Sir Peter Knight, who is an emeritus professor at Imperial College London, UK, Chair of the National Physical Laboratory's Quantum Metrology Institute, and co-chair of the Steering Committee of the IYQ.

"By the end of 2025, we aim to have established a robust global framework for quantum education and collaboration, increased participation of underrepresented groups, and built greater public and policymaker awareness of the transformative potential of quantum technologies in addressing global challenges, and towards reducing the gap and the quantum divide between the North and the South," Kasry remarked.

Quantum science represents not just an extraordinary leap in our understanding of the natural world but also a critical tool for addressing some of humanity's most pressing challenges.

With the support of six founding partners – the American Physical Society, the Chinese Optical Society, the German Physical Society, the Institute of Physics, Optica, and SPIE – as well as other partners from universities, industry, societies, organizations and, most importantly, the scientific community, 2025 is going to be a year full of quantum successes!

As Sir Peter Knight said in his Q&A with us, "This coming year gives us a wonderful opportunity to share the excitement we feel about this emerging technology, how it will affect people's lives, and contribute to the world economy."

Let's engage with quantum science and technology education and celebrate IYQ throughout 2025! You can find out more about the IYQ's events and resources from around the world on <https://quantum2025.org>, and you are invited to submit your events too!

The opening ceremony of IYQ will be held at the UNESCO headquarters in Paris, France, on the 4th and 5th February 2025.

Published online: 30 January 2025