QUANTUM FLAGSHIP

Dear Quantum Flagship member,

November's newsletter arrives with meaningful events, project updates, and more interesting news from the realm of quantum technology.

EQTC 2024 just around the corner, and so we look forward excitedly to this landmark event for the quantum community.

We also announce the third Quantum Technology (QT) training session for policymakers, showcasing quantum sensor use cases. For those in education, the QTEdu Demo Days will offer quantum learning experiences for future experts.

We have words from new EU technology chief Henna Virkkunen, we dive into the promising role of diamonds in quantum computing, the launch of QTIndu courses aimed at connecting quantum tech with industry needs, and a recap of the G7 workshop on advancing global quantum technology initiatives.

If you would like to inform the community on QT activities or events within your national or regional community, or provide feedback to the Quantum Flagship newsletter, please get in touch at newsletter@qt.eu.

Best regards,
The Quantum Flagship Coordination Team

News from the Quantum Flagship

Building Europe's quantum future together.

European Quantum Technology Conference 2024: Looking forward to Lisbon!

With the EQTC 2024 starting in just a few days, we can't wait to welcome more than 500 of you to the *Culturgest* Centre in Lisbon, Portugal! Here we preview some of the highlights in wait at the Quantum Flagship's hallmark event.

Europe's bright minds - our speakers:

We will hear over 40 talks from leaders in European quantum technology, including keynotes by **J. Ignacio Cirac, Julien Laurat, Laura Mančinska, Christoph Marquardt, Morgan Mitchell, and Stephanie Wehner**. Meanwhile, the poster sessions will involve over 200 entries from across the field of QT. Discover EQTC 2024 and **see the full programme.**

Quantum gravimeters reveal Lisbon's past

A particular highlight will see the first ever showcase of **quantum archaeology** results: quantum gravimeters have been used to explore Lisbon's Baixa Pombalina

district, revealing hidden artifacts of the city's Phoenician past. The initial findings of the joint research by PQI, the Lisbon City Council Archaeological Centre and the company Exail will be shown in the **opening session** of EQTC 2024.

Other special sessions include:

- **Quantum communications live demo** from Telsy
- **Quantum Finance Lab** from the EIB
- **Unconscious Bias Training** Workshop

There will also be talks from the EuroHPC-QC and EuroQCI initiatives, and dedicated sessions on topics such as **workforce development, quantum pilot lines, standardisation, diversity** and **ethics**.

You can also visit the exhibition showing the latest breakthroughs from Europe's quantum start-ups, projects and initiatives – **see the list of exhibitors and map of the exhibition**.

VISIT THE EQTC 2024 HOMEPAGE

Quantum Flagship event news

QT for policymakers: quantum sensor use cases

Register now for the third session of our policymaker training series: 'Quantum Sensor Use Cases: Gravimetry, Navigation, Mine clearance', taking place on **28 November 2024**.

In this session, participants will learn about quantum sensors as emerging game-changers in fields that rely on ultra-sensitive measurements. **Prof. Philippe Bouyer**, Professor at University of Amsterdam & TU Eindhoven, Founder of Muquans and Quantum Delta Chair of the Board, will present use cases of quantum sensors in navigation and mine clearance.

Read more and register now on the training webpage.

READ MORE

Quantum Flagship event news

Start of the QTEdu Demo Days

The QTEdu Demo Days series launches on **26 November 2024** with an engaging online session presented by Dr. Jens Küchenmeister from Thorlabs GmbH, showcasing their Quantum Optics Kit. Designed to introduce students to quantum physics fundamentals, this educational kit allows students to independently set up and operate experiments, enhancing hands-on learning.

In this demo, participants will explore the kit's capabilities, including generating correlated photon pairs and verifying quantum properties via second order auto-correlation measurements. The session will also cover advanced applications, such as the single-photon Michelson interferometer and quantum eraser experiments. Additionally, a preview of Thorlabs' upcoming polarization-entanglement add-on will offer insights into potential experiments measuring Bell's inequality, expanding educational possibilities for quantum entanglement studies.

READ MORE

News from the European Parliament

Henna Virkkunen prioritises quantum for Europe's sovereignty

© European Union 2024 - Source : EP

The new EU technology chief Henna Virkkunen made an emphatic case for Europe's leadership in QT during her confirmation hearing, 12 November.

Finnish MEP Virkkunen is due to join the European Commission as Executive Vice-President for Tech Sovereignty, Security and Democracy for a five-year term.

During her confirmation hearing at the European Parliament, Virkkunen outlined an ambitious vision for Europe, promising to launch a long-term EU Quantum Chips Plan. She highlighted the need for a unified approach to QT, discussing the possibility of a comprehensive 'Quantum Plan'.

Praising Europe's 'super-talented' quantum researchers, she said: "Quantum is an area where we can be positive and optimistic in Europe."

READ MORE

News from Quantum Flagship projects

News from SPINUS

Diamonds are a quantum computer's best friend

The SPINUS project, launched by the European Commission and part of by the Quantum Flagship, builds a new quantum computer with the help of diamonds. This technological approach promises to make quantum computers more practical and scalable.

The group of European scientists is using diamonds and silicon carbide to build quantum computers and quantum simulators that can run at room temperature, increasing their usability and opening up new avenues for hybrid computing applications. While SPINUS is working to demonstrate quantum simulators with more than 50 qubits and quantum computers with over 10 qubits, the team expects that their research will provide a strategy to scale up to over 1000 and 100 qubits, respectively, within five years post-project.

READ MORE

News from QTIndu

'Quantum Tech for Industry' courses now available

The first series of Quantum Technologies Courses for Industry (QTIndu) is now available. QTIndu develops courses directly linked to industry needs and is tailored to different business sectors, such as telecommunications, software, logistics, pharmaceuticals, healthcare, finance, and consulting, where QT is relevant. Each of

these business sectors has its own specific QT applications and workforce qualification needs, which is why QTIndu helps train the specialised workforce of tomorrow.

Modules and courses of various competency levels, industries, target audiences and durations will be stored on a novel block-chain powered ecosystem.

READ MORE

News from the Community

News from Italy

G7 workshop on the future of quantum technologies

A recent G7 workshop brought together researchers and industry leaders for an in-depth look at the future of QT. Split into two segments, the event first explored education and training strategies necessary to cultivate a skilled quantum workforce, emphasising interdisciplinary learning for a robust innovation ecosystem.

The second half of the workshop focused on industrial applications and supply chain considerations, including vital enabling technologies like photonics and cryogenics. Here, experts examined the growing quantum technology market, stressing the importance of resilient supply chains and the need for secure resources in the face of global demand.

The event was hosted by Italy and included members of the Quantum Flagship and the European Quantum Industry Consortium (QuIC).

READ MORE

News from CEN-CENELEC JTC22

JTC22-WG2 specifies metrics for Entangled Photon Pair Sources

Entangled Photon Pair Sources (EPPS) are a key component in quantum communication systems. The Horizon Europe projects LaiQa and QuTechSpace have proposed metrics to characterise EPPS. These projects develop components for satellite quantum communication. The proposal by TNO, QTLabs, Thales Alenia Space Italy, UPM and NKUA was accepted as input for standardisation by CEN-CENELEC JTC22-WG2. The metrics include details on EPPS architecture, reference points, EPP

generation, EPP quality, and environmental (space) metrics.

Next steps involve metrology institutes, and the development, specification and testing of the required metrology. The goal is reliable data sheets for EPPS, and their certification. The draft JTC22-WG2 Metrics document is available here (login required, see link below).

For more details, please reach out to Oskar van Deventer.

READ MORE

QUANTUM FLAGSHIP

Funded by the European Commission

Responsibility

This newsletter is operated by the project “QUCATS – the Quantum Flagship Coordination and Support Action”, which is funded by the European Commission.

Responsible for the content of this newsletter is:

VDI Technologiezentrum GmbH
VDI-Platz 1
D-40468 Düsseldorf
Germany

Email: info@qt.eu

Unsubscribe