UNIVERSITÉ DE GENÈVE

PRESS RELEASE

Geneva | 14 October 2025

Launch of Geneva's first quantum network

A consortium of university, industry and public actors equips Geneva with its first quantum communication network.

On the occasion of the Swiss Quantum Industry Day, a consortium comprising the University of Geneva (UNIGE), CERN, HEPIA, ID Quantique, Rolex and the Cantonal Office for Information Systems and Digital Technology (OCSIN) announced the launch of a Geneva-based quantum network, the Geneva Quantum Network (GQN). Inaugurated in the presence of State Councillor Delphine Bachmann, this new infrastructure will enable large-scale quantum physics experiments to be conducted, promote collaboration in quantum technologies and highlight their potential through education and awareness-raising. It will strengthen Geneva's expertise in this field, which is already internationally recognised.

By exploiting the properties of superposition and entanglement of light particles, photons, quantum physics opens up new prospects for telecommunication, particularly in terms of ultra-secure data transfer, as well as for metrology, with ultra-precise time measurements. Having dedicated networks is an essential step in experimenting with and developing these technologies in real-world conditions.

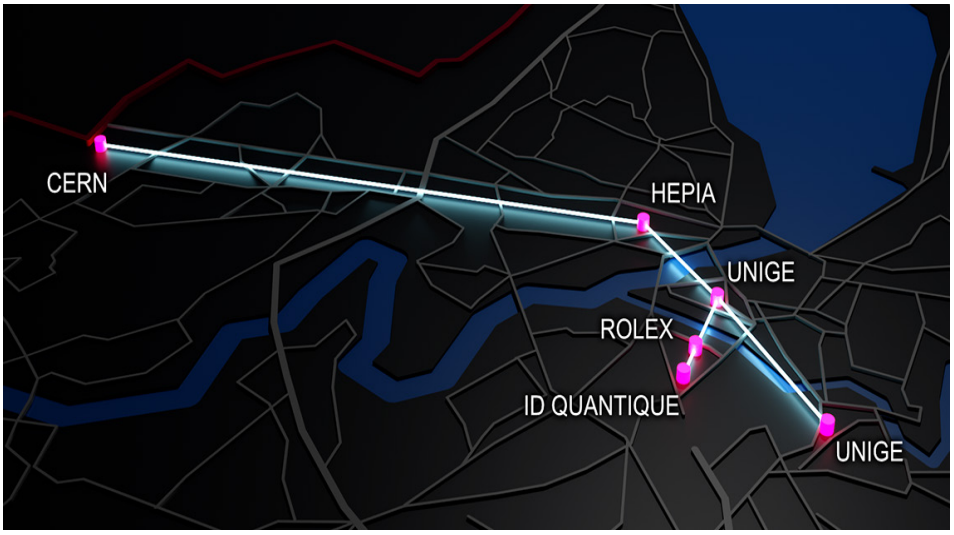
To address the many challenges posed by this technology, UNIGE, CERN, HEPIA, ID Quantique and Rolex are launching the GQN, Switzerland's first quantum network. Based on the OCSIN fibre optic network, this 262 km infrastructure will connect the various partners and draw on Geneva's expertise in the field of quantum technologies, particularly for communication, metrology and synchronisation. There are four main objectives:

- **Scientific progress:** exploring the capabilities and benefits of quantum communication and sensing through their deployment in real-world fibre optic network environments.

- **Education and training:** preparing the next generation of engineers and professionals for emerging opportunities in quantum networks and high-tech sectors.

- **Coordination and visibility:** establishing a focal point in Geneva for quantum networking activities, thereby highlighting the city's quantum ecosystem and strengthening its international visibility.

- **Public engagement:** promoting dialogue and awareness at multiple levels, so that society is informed about important developments in quantum science and equipped to make science-based decisions.



© Xavier Ravinet

Representation of the Geneva Quantum Network.

"The launch of the GQN is a magnificent example of the impact that public-private partnerships can have. Collaboration between government, academia and business facilitates and accelerates the development of innovative projects," says Delphine Bachmann, State Councillor in charge of the Department of Economy and Employment. "Quantum technologies have immense potential to bring about solutions that will enable the industrial sector to become even more dynamic."

High resolution pictures

A genuine platform for collaboration, knowledge sharing and skills development, the GQN will enable the region to play a key role in the global development of quantum technologies. The first steps aim to distribute entangled photons between UNIGE, CERN and HEPIA, as well as to deploy cryptographic systems known as 'quantum key distribution' (QKD) by ID Quantique.

The GQN will also enable the distribution of ultra-precise time signals, which are crucial for communications but also for fundamental time measurement, thanks to the White Rabbit synchronisation systems developed by CERN at all nodes or 'stations' in the network. Rolex also provides ultra-precise time signals generated by its latest-generation optical rubidium atomic clock. HEPIA will install a distributed temperature sensor along the network fibres, whose high spatial resolution is made possible using single photon detectors.

contact

Rob Thew
Research Associate
Department of Applied Physics
Faculty of Science
UNIGE
+41 76 409 26 40
Robert.Thew@unige.ch

About the University of Geneva (UNIGE)
Founded in 1559, the University of Geneva (UNIGE) now ranks among the top 100 universities worldwide. As a versatile institution with international reach, it fully integrates into the international landscape of Geneva while also contributing to the cultural, social, and economic development of the region. UNIGE is a member of the League of European Research Universities (LERU) and the 4EU+ European alliance, with its research quality being internationally recognised. It has been honoured with numerous distinctions, including several Nobel Prizes and Fields Medals. UNIGE hosts nearly 18,000 students from 150 countries across its nine faculties and thirteen interfaculty centres.

The University of Geneva has a long standing expertise and excellence in quantum information science and technologies, pioneering experimental quantum communication research for 30 years. The GQN will allow us to perform long distance quantum experiments - testing fundamental aspects of quantum physics and developing future quantum network technologies in collaboration with the GQN partners.

About HEPIA / HES-SO Genève
The Geneva School of Engineering, Architecture and Landscape (HEPIA), offering 9 Bachelors's degree programs and hosting 3 research institutes in the fields of engineering and architecture, is a leading academic partner in applied research and development (aR&D).

HEPIA is committed to promoting the integration of quantum technologies into its courses and accelerating their adoption by Swiss industry. In particular, HEPIA will implement distributed temperature measurement techniques at the single-photon level and contribute to the development of quantum communication applications within the Geneva Quantum Network.

About the CERN
CERN, the European Organization for Nuclear Research, is one of the world's leading laboratories for particle physics. The Organization is located on the French-Swiss border, with its headquarters in Geneva. Its Member States are: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. Brazil, Croatia, Cyprus, India, Latvia, Lithuania, Pakistan, Türkiye and Ukraine are Associate Member States. Japan and the United States of America currently have Observer status, as do the European Union and UNESCO.

CERN has established the CERN Quantum Technology Initiative to leverage quantum technologies to advance particle physics research and facilitate the uptake of CERN technologies and expertise by the emerging quantum industry.

About ROLEX

ROLEX, a Swiss watch manufacturer based in Geneva, is renowned worldwide for its expertise and the quality of its products. Constantly striving to push the boundaries of precision, performance and reliability, ROLEX recently took a new step forward in time measurement innovation with the development of the Rolex Rubidium Optical Atomic Clock, a latest-generation optical atomic clock. This clock is integrated into a time scale located at its Geneva premises, enabling ROLEX to provide the Geneva Quantum Network with ultra-precise time signals. This advance not only reinforces Rolex's leadership in watchmaking precision, but also highlights its strong support for cutting-edge technology, quantum science and education.

About OCSIN - Cantonal Office for Information Systems and Digital Technology (Geneva)

The Cantonal Office for Information Systems and Digital Technology is the central nervous system of the Cantonal Administration of Geneva. Through digital technology, over 600 employees work every day to improve access to information and connect people to public services. The Office supports the canton's digital transformation by guaranteeing innovative, secure and accessible solutions that promote administrative efficiency and the quality of public services.

About ID Quantique

Founded in 2001, ID Quantique (IDQ) is the world leader in quantum-secure encryption key exchange solutions, designed to build stronger and quantum-safe cybersecurity for today's telecommunication networks. The company provides comprehensive products and solutions to achieve quantum-safe communications, to enterprises and government organizations globally. Headquartered in Geneva Switzerland, the company is part of IONQ Inc. since 2025. IDQ's QKD equipment was deployed on the fiber optic network infrastructure between CERN, HEPIA, UNIGE and IDQ.

UNIVERSITÉ DE GENÈVE
Communication Department
24 rue du Général-Dufour
CH-1211 Geneva 4

Tel. +41 22 379 77 17

media@unige.ch
www.unige.ch