ICFO



Launch of the Quantum Technologies Flagship

ICFO will coordinate two projects and partner in five more

October 29, 2018

Europe launches the highly ambitious Quantum Flagship, positioned to be one of the most ambitious of the European Union with a 1b? budget funded by the European Commission. It will support large-scale and long-term research and innovation projects that will have the main goal of transferring quantum physics research from the lab to the market by means of commercial applications.

The goal the initiative over these next 10 years is to place Europe at the forefront of the second quantum revolution, which is now unfolding worldwide. It aims to bring disruptive quantum technologies to the scientific arena and to society in general by bringing forward new commercial opportunities addressing global challenges, providing strategic capabilities for security and seeding yet unimagined applications for the future. It will build a network of European Quantum Technologies programs that will foster an ecosystem capable of delivering the knowledge, technologies and open research infrastructures and testbeds necessary for the development of a world-leading knowledge-based industry in Europe.

Prof. Tommaso Calarco, from the Institute for Quantum Control of Forschungszentrum Jülic and coordinator of theQuantum Coordination and Support Action in charge of successfully launching the Quantum Flagship asserts, "The European Quantum Technologies community has worked long and hard towards realizing this initiative. We are very happy that the first research and innovation actions are now ready to start with high momentum. Together, we will further strengthen Europe?s leading role in quantum research and transfer the insights from this into relevant applications for the benefit of all European citizens."
The initiative divides all topics in five main areas of study: **Quantum Communication (QComm), Quantum Computing (QComp), Quantum Simulation (QSim), Quantum Metrology and Sensing (QMS), and finally, Basic Science (BSci)**. The first 3-year phase of the Quantum Flagship, known as the ramp-up phase (October 2018 - September 2021), will fund projects with an overall budget of ?132 million.
140 proposals were submitted for the first stage for these main areas plus for a Coordination and Support Action. After a thorough peer-review evaluation, 20 projects, involving over 500 researchers, have been selected for execution during these first three years.
ICFO, a veritable powerhouse in the field of Quantum Physics, is the only research institute to coordinate two projects in the ramp-up phase. In addition, ICFO is a partner in five additional Quantum Flagship projects.

ICFO COORDINATED PROJECTS:

CiViQ (Continuous Variable Quantum Communications) will be coordinated by ICREA Prof. at ICFO Valerio Pruneri with the participation of ICREA Prof. at ICFO Antonio Acin and ICFO spin-off QuSide Technologies. The project aims to develop low cost, flexible, adaptable secure devices, services and protocols that can be easily integrated into existing telecommunication networks.
2D-SIPC (Two-dimensional quantum materials and devices for scalable integrated photonic circuits) will be coordinated by ICFO Prof. Dmitri Efetov with the participation of ICREA Prof. at ICFO Frank Koppens. The project aims to develop and demonstrate the first all optical on-chip quantum components based on 2-D materials for their future integration into quantum networks.

PROJECTS WITH ICFO PARTNERNSHIPS:

QFLAG (Quantum Technology Flagship Coordination and Support Action) Lydia Sanmarti from the ICFO KTT unit and Dr. Alina Hirschmann from the ICFO Communications Unit will lead the Outreach and Communications work package. Project Coordinator: VDI Technologiezentrum
QRANGE (Quantum Random Number Generators: cheaper, faster and more secure) ICREA Professors at ICFO Drs. Valerio Pruneri and Antonio Acin, as well as the ICFO spin-off QuSide

Technologies are partners in the project that will be coordinated by Universite de Geneve, Switzerland.

QIA (Quantum Internet Allliace) ICREA Professors at ICFO Drs. Hugues de Riedmatten and Darrick Chang are partners in the project that will be coordinated by Technische Universiteit Delft, Netherlands.

MACQSIMAL (Miniature Atomic vapor-Cells Quantum devices for SensIng and Metrology AppLications) ICREA Prof. at ICFO Dr. Morgan Mitchell is a partner in this project that will be coordinated by CSEM, Centre Suisse d?Electronique et de Microtechnique SA - Recherche et Developpement, Switzerland .

SQUARE (Scalable Rare Earth Ion Quantum Computing Nodes) aims at establishing individually addressable rare earth ions as a fundamental building block of a quantum processor node, where multiple qubits can be used for quantum storage, quantum gates, and optical interfacing. ICREA Prof. at ICFO Dr. Hugues de Riedmatten is a partner in this project that will be coordinated by Karlsruher Institut fuer Technologie, Germany.



Quantum Flagship kick-off event at Vienna



ICFOnians involved with the Quantum Flagship projects attended the event