

## **,Launch of EuRyQa Project: A New European Infrastructure for Rydberg Quantum Computing**

October 1, 2022 -- The European Commission has just launched the “European infrastructure for Rydberg Quantum Computing (EuRyQa)” project aimed at establishing Rydberg quantum processors as a leading platform for scalable quantum computing in Europe. Assembling eleven partners from seven countries, EuRyQa is funded under the highly competitive Horizon Europe programme (HORIZON-CL4-2021-DIGITAL-EMERGING-01-30) with a total budget of almost 5 million € over the next three years.

Ultracold trapped atoms have recently emerged as one of the most promising physical platforms for digital quantum computing, having already demonstrated systems with more than 200 qubits (the computational unit of a quantum computer) with strong interactions mediated by their highly excited Rydberg states and a clear path to further scalability to thousands of qubits. To develop the next generation of fully programmable and scalable quantum computing systems based on ultracold Rydberg atoms, EuRyQa will bring together four complementary European Rydberg platforms. In this way, the consortium aims to provide a unique European solution for Rydberg-based quantum computing, together with the first pan-European benchmarking and standardisation of the technology.

*"We will provide a common quantum computing stack for Rydberg atoms, a federated cloud service, solutions to concrete computational problems, and key technology for fault-tolerant quantum computing with Rydberg qubits,"* says Prof. Guido Pupillo from the University of Strasbourg, who coordinates EuRyQa. *"The success of EuRyQa will be a game changer for Europe in a global competition for quantum computing."*

To achieve the project's aims, EuRyQa unites partners from academia at the forefront of ultracold-atom-based quantum technology with industrial partners providing complementary expertise on quantum hardware, classical electronics, firmware, and software. EuRyQa is coordinated by the University of Strasbourg (France) and other partners include the SME PASQAL (France), the University of Stuttgart, the spin-off Quise GmbH from the Research Centre Jülich, and the consultancy EURICE GmbH (Germany), the University of Amsterdam and the Technical University of Eindhoven (the Netherlands), the research institute Idryma Technologias Kai Erevnas (Greece), Associacao Portuguese Quantum Institute (Portugal), Università degli Studi di Padova (Italy) and the SME QM Technologies (Israel).

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