

First results of the AQTION research project on the development of a European Quantum computer with the participation of AKKA

PRESS RELEASE

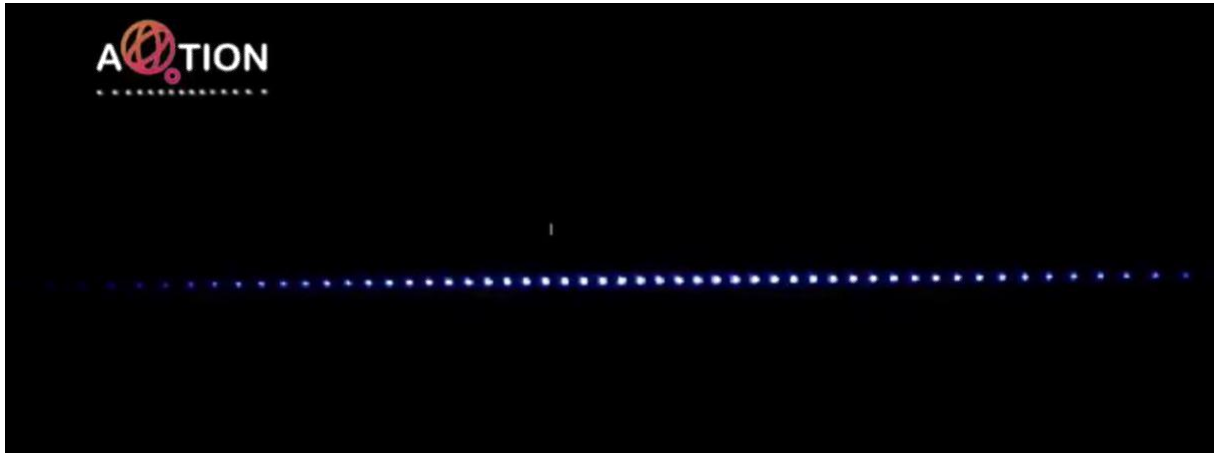
Ulm, October 14, 2020 - Qubits and ion traps sound like science fiction to you? In the "*Quantum Flagship Initiative*" of the European Commission, scientists and companies are studying a scalable architecture of a fully automated ion trap European quantum computer. AQTION stands for *Advanced Quantum Computing with Trapped Ions* and is involved in research for new quantum applications for industry. The AQTION project, which is funded by Horizon 2020, is now showing first results: a quantum register of 55 ions was recently recorded in the laboratory of the Leopold-Franzens University of Innsbruck.

A powerful quantum computer can make a decisive contribution to solve complex problems. Examples of applications can be found in the fields of material research, medical technology or finance. In these areas algorithms exist which can, with enough quantum bits, solve problems that are too computationally intensive even for the largest supercomputer currently available.

In the AQTION project, which is part of the "*Quantum Flagship Initiative*" of the EU, a basic, scalable architecture for the entire quantum computer system will be developed. The goal of the project is to develop the scalability from a few quantum bits, as used in current systems, to a true 50-qubit quantum processor within three years. This is to result in a compact and user-oriented scalable system, which can control a corresponding number of qubits, so that even larger problems can be solved. For this purpose, scalable components must be used in all areas of the quantum computer. This concerns not only the trap technology and optics but also the control electronics.

"As an innovation-driven company, we are proud to be part of the Quantum Flagship Initiative of the European H2020 program which aims to drive the development of a European ion trap quantum computer. The path to a true 50 qubit quantum processor will be a huge step towards solving complex problems. The further development of expertise in the field of quantum computing is perfectly logical for AKKA, as we already have profound knowledge in AI, deep learning and algorithms", emphasizes Derrick Zechmair, CEO AKKA BU Germany.

As a leading European provider in the field of engineering consulting and R&D services for the mobility industry, AKKA brings several years of experience in the development of control electronics for quantum optical experiments with segmented ion traps to the project. On the part of AKKA Stefan Ulm is responsible for the AQTION project. The team leader for Embedded Systems Development emphasizes: *"We appreciate the cooperation with our partners. Together with the Johannes Gutenberg University Mainz we are working on the AQTION project to extend the existing control electronics in all aspects to the requirements of a scalable system. This concerns not only the modularization of the software and hardware components and the networking of the components among each other, but also the adaptation of the processes to growing system sizes. This enables AKKA's control electronics to make decisions in the program sequence on the time scale of the experiments in order to minimize idle times in view of the increasing complexity of the calculations in the quantum computer."*



Quantum register of 55 ions in the laboratory of the Leopold-Franzens-University Innsbruck, image rights: AQTION project.

„After developing the theoretical foundations and successfully implementing the necessary technologies, we are now on the way to the third quantum revolution. To continue this path, we must increase our understanding of the system to the application for everyday industrial and commercial life. AKKA Research is proud to also be involved in the cutting-edge field of quantum computing“ says Felix Jakob, Head of AKKA Research in Germany.

The AQTION Consortium consists of 9 partners in 5 countries and is supported for a 3-years periods with a total funding by the European Union of about 10.000.000,00 €.

This project is part of the Quantum Technologies (QT) Flagship of the European Commission under grant agreement No. 820495.

About AKKA

AKKA is the European leader in engineering consulting and R&D services in the mobility segment. As an innovation accelerator for its clients, AKKA supports leading industry players in the automotive, aerospace, rail and life sciences sectors throughout the life cycle of their products with cutting edge digital technologies (AI, ADAS, IoT, Big Data, robotics, embedded computing, machine learning, etc.).

Founded in 1984, AKKA has a strong entrepreneurial culture and is pursuing its fast-paced growth and international development in line with its CLEAR 2022 strategic plan. With 22,000 employees, who are passionate about technology and dedicated to advancing the future of industry, the Group recorded revenues of €1.8 billion in 2019.

Following the completion of the friendly take-over bid of Data Respons launched in January 2020, AKKA now holds 100% of the company's shares; with the success of this operation, AKKA leverages the most comprehensive portfolio of digital solutions in Europe to harness the growing demand from its customers in the mobility sector.

AKKA Technologies is listed on Euronext Paris and Brussels – Segment A – ISIN code:

FR0004180537. For more information, please visit www.akka-technologies.com

Follow us on: twitter.com/AKKA_Tech

AKKA Contacts

Media Relations AKKA Germany

Jürgen Ströbele

Head of Communications

Tel.: +49 (0)151 746 1236

juergen.stroebele@akka.eu

Anne Friedrich

Corporate Affairs Manager

Tel.: +49 (0)151 746 3470

anne-k.friedrich@akka.eu

Did you know? AKKA is currently involved in 8 funded research projects in Germany and is a strongly innovation-driven company. More information on : <https://www.akka-technologies.com/innovation/?lang=de>

Stay up to date via the associated project website: <https://www.aqtion.eu>