Press Release

eleQtron accelerates “MAGIC App” project, bringing trapped-ion quantum computers from research to application

Partnership with Infineon Technologies

Siegen, Germany, June 26, 2023. eleQtron, a pioneer in quantum computing (QC) from Siegen, Germany and Infineon Technologies AG announced their partnership today. This marks a further step in the start of the “MAGIC App” project, which is funded by the German Federal Ministry of Education and Research. The goal of the project is to quickly develop internationally competitive and largely scalable quantum computing systems with high computing power available for significant business applications. eleQtron’s patented “MAGIC” technology will be the key to this goal.

“At eleQtron, we build quantum computers like no one else in the world. Our technology is well poised to heavily impact business models with real-world applications. The partnership with Infineon represents a significant milestone to position eleQtron as a leading hardware player in the upcoming era of quantum computers,” said Jan Leisse, Co-Founder and CEO of eleQtron. “We are confident that our pioneering technology based on ion traps and radio frequency waves, combined with Infineon’s capacity and expertise in innovative QPU (Quantum Processor Units) production, will provide the foundation for building quantum computing systems ready for first applications in the MAGIC App timeframe until mid-2027.”

“As a leading company in developing quantum computing hardware, Infineon’s goal is to provide the core components and, together with our partners, enable the first meaningful quantum computing systems based on trapped-ion technology. We contribute unique technology and world-class fabrication capabilities towards achieving quantum usefulness,” said Richard Kuncic, Senior Vice President and General Manager Power Systems at Infineon Technologies. “Being chosen by eleQtron as a QPU supplier will enable us to accelerate our quantum computing hardware roadmap and expand our business in this emerging segment.”

eleQtron and Infineon will create some MAGIC together

eleQtron's "MAGIC App" project is funded by the German Federal Ministry of Education and Research. It aims to offer internationally competitive QPUs with high computing power using the MAGIC (MAgnetic Gradient-Induced Coupling) technology by eleQtron. The patented concept allows the control of qubits using radio frequency technology at record-low crosstalk between adjacent qubits. The approach is unique to scaling TIQC hardware and complementary to other scaling strategies.

As part of the MAGIC App project, the partners will also investigate new techniques for cooling large ion crystals in strong magnetic fields to simplify future instrumentation requirements. To further enhance the capabilities of this groundbreaking technology, a novel, microstructured 3-dimensional ion memory will be developed, paving the way for the interconnection of multiple qubit registers.

Three trapped-ion quantum computers on the way

During the development phase, Infineon will provide eleQtron with three progressively improved generations of ion traps as well as the necessary expertise to adapt them to the MAGIC concept. By employing a co-design strategy, Infineon will enable eleQtron to build ion trap-based quantum computers with successively increasing functionality. These potent quantum computers will later also be made available to industrial and academic users via cloud access.

More information is available at eleqtron.com

About eleQtron:
eleQtron is the first German quantum computer manufacturer. The deep-tech startup is a spin-off from the research group of the Department of Experimental Quantum Optics at the University of Siegen and is now a 30-member team of international experts. In 2020, Prof. Dr. Christof Wunderlich, Dr. Michael Johanning, and Jan Henrik Leisse founded eleQtron in Siegen.

The goal: to finally make quantum computers usable for real-world applications. To achieve this, eleQtron relies on its proprietary and groundbreaking MAGIC (MAgnetic Gradient Induced Coupling) technology, which makes the control of ion qubits scalable and very precise. Investors and funders include the German Federal Ministry of Education and Research *(BMBF)* and *Earlybird*.

About Infineon:
Infineon's ion traps accelerate the development of powerful quantum computers to solve optimization problems that their classical counterparts could not address.

This research already started in 2016 at the Infineon fab site in Villach, Austria, to combine scientific findings with industrial-scale quantum technologies. The Villach site also offers a unique quantum test laboratory designed for fast test cycles of quantum computing systems based on trapped-ion technology. Knowing how to industrialize and combine novel materials and technologies, Infineon offers an advanced technology platform for customized traps that are predictable, repeatable, and reliable. Infineon is pursuing various approaches toward quantum computing. Next to the ion traps, the company is also active in superconducting and semiconductor-based qubits. As a co-founder of the Quantum Technology and Application Consortium (QUTAC), Infineon drives the topic from technology to usable application.

More information is available at www.infineon.com/trappedions and www.infineon.com/quantumcomputing.

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