

# Quantum Brilliance Announces First Purchase of Room-Temperature Quantum Accelerator in Europe, Powered by NVIDIA CUDA-Q

*Leading German Research Institution Fraunhofer IAF to Use Technology to Further Quantum Exploration*

CANBERRA, AUSTRALIA, November 18, 2024 /EINPresswire.com/ -- [Quantum Brilliance](#) (QB), a

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*Mark Mattingley-Scott,  
Quantum Brilliance CRO*

global leader in diamond-based quantum technology, today announced the first purchase of a room temperature quantum accelerator in the European market by Fraunhofer Institute for Applied Solid State Physics IAF ([Fraunhofer IAF](#)) following the company’s participation in a public tender.

QB’s quantum accelerators differ from other quantum mainframe computers by leveraging synthetic diamonds to

run at room temperature in any environment without the need for large, expensive and energy-intensive refrigeration units to keep qubits stable.

The purchase of its second-generation Quantum Development Kit (QB-QDK2.0) —a 19” rack-mountable quantum accelerator featuring nitrogen-vacancy centres in diamond—enhances QB’s existing software suite at Fraunhofer IAF. This includes the Qristal SDK (open-source) and Qristal Emulator, which allow users to simulate quantum computing back-ends with realistic noise models powered by [NVIDIA](#)’s CUDA-Q platform.

Fraunhofer IAF, one of the world’s leading research institutes for synthetic diamonds and their potential use in quantum computing applications, has been collaborating with Quantum Brilliance on multiple projects, including DE BRILL, which focuses on advancing quantum computing technologies using diamond-based qubits. The nitrogen-vacancy (NV) based system, together with the corresponding high-performance computing (HPC) integrated virtual emulation system, will advance the institute’s research infrastructure as part of a comprehensive quantum computing ecosystem.

“Our long-standing collaboration with Fraunhofer IAF highlights the development of room-temperature quantum accelerators and continues to push the boundaries of scalable, energy-

efficient quantum computing solutions,” said Quantum Brilliance CRO Mark Mattingley-Scott. “We look forward to delivering impactful quantum solutions to Fraunhofer IAF.”

The QB-QDK2.0 is a hybrid quantum-classical compute node that integrates classical co-processors, including NVIDIA GPUs, as well as CPUs, alongside Quantum Brilliance’s quantum processor (QPU), all positioned in very close proximity within a single box. This architecture allows users to explore different depths of hybrid quantum-classical algorithms, such as quantum machine learning techniques that seamlessly combine quantum and classical neural networks.

“Quantum Brilliance’s work with Fraunhofer IAF points to a future where quantum hardware is collocated with AI supercomputers, unlocking new possibilities for hybrid quantum-classical computing” said Tim Costa, Senior Director of CAE, EDA & Quantum at NVIDIA. “NVIDIA’s CUDA-Q platform is supporting researchers in developing and scaling these hybrid systems, which lead the charge to useful quantum computing.”

Quantum Brilliance will be supported in the installation of the new system by SVA System Vertrieb Alexander GmbH, one of Germany's leading IT system integrators focused on integrating high-quality IT products with their extensive project expertise to create tailored solutions across various sectors, including HPC. In HPC, SVA provides tailored solutions for intensive computational workloads, supporting clients from research and development through to diverse industries such as healthcare, finance, public services, and manufacturing.

The first global procurement of the second-generation Quantum Development Kit was by Oak Ridge National Laboratory in the United States.

### About Quantum Brilliance

Quantum Brilliance, founded in Australia in 2019 and grown out of research conducted at the Australian National University, is a global leader in diamond-based quantum technology. QB specialises in diamond quantum materials and the development of small, ruggedized diamond quantum accelerators that operate at room temperature, offering a scalable and energy-efficient solution for various applications. These accelerators are complemented by a range of software and application tools and are exported globally, today. As a full-stack hardware and software company, with operations in Australia and Germany, QB's mission is to enable the mass deployment of quantum technology, facilitating its integration into everyday devices and high-performance computing systems.

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