QphoX, Rigetti and the NQCC Announce Collaboration on Multi-Channel Optical Readout of Quantum Processors

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DELFT, Netherlands, BERKELEY, Calif. and OXFORDSHIRE, United Kingdom, May 06, 2025 (GLOBE NEWSWIRE) -- QphoX B.V., a Dutch quantum technology startup developing leading frequency conversion systems for quantum applications, Rigetti Computing, Inc. (Nasdaq: RGTI), a pioneer in full-stack quantum-classical computing, and the National Quantum Computing Centre (NQCC), the UK's national lab for quantum computing, today announced that they have been awarded a multinational grant to perform readout of superconducting qubits using light transmitted over optical fiber.

In a recent demonstration, QphoX and Rigetti validated the potential of this technique by optically reading out the state of a single superconducting qubit[1]. Optical readout is made possible by microwave-to-optical transduction at the base temperature of the cryostat. This transduction process converts the information contained in the microwave readout pulse into an optical signal carried over optical fiber. This approach could eventually replace conventional microwave amplifiers and coaxial wiring as part of the qubit signal processing chain and thereby offer considerable scaling advantages due to the comparatively low dissipation of the transducer and the negligible passive heat loads from telecommunications optical fiber.

QphoX, Rigetti and the NQCC are partnering to take the next step in this research to realize optical readout of a fully-fledged superconducting quantum computer. In this multinational collaboration, QphoX will scale its optical qubit readout system that will interface with Rigetti's 9-qubit Novera QPU, enabling optical readout of all qubits in the processor. The combined system will be installed and operated at the NQCC.

"Using light to readout the state of a superconducting qubit will remove a significant amount of heat load on cryogenic systems and therefore allow to overcome one of the critical bottlenecks in building a universal quantum computer. We are excited to take our developments to the next level and work with our partners in demonstrating this critical technology at scale," says Simon Groeblacher, CEO of QphoX.

"This innovative solution to a well-known scaling challenge is made possible by an open and modular system architecture," says Dr. Subodh Kulkarni, Rigetti CEO. "Integrating our partners' technology with our QPU enables us to benefit from even more expertise to accelerate our work towards fault tolerance."

"Demonstrating optical qubit readout at the system level represents an important step in our mission to advance scalable quantum computing, and we are delighted to host this collaborative work at the NQCC with such innovative project partners," commented Dr. Michael Cuthbert, Director of NQCC.

The 33-month program is funded by the Rijksdienst voor Ondernemend Nederland (RVO) and Innovate UK via the Eureka network, an intergovernmental organization for research and development funding and coordination.

[1] van Thiel, T.C., Weaver, M.J., Berto, F. *et al.* Optical readout of a superconducting qubit using a piezo-optomechanical transducer. *Nat. Phys.* 21, 401–405 (2025).

About QphoX
QphoX is the leading developer of quantum transduction systems that enable quantum computers to network over optical frequencies. Leveraging decades of progress in photonic, MEMS and superconducting device nanofabrication, their single-photon interfaces bridge the gap between microwave, optical and telecom frequencies to provide essential quantum links between computation, state storage and networking. QphoX is based in Delft, the Netherlands. See qphox.eu for more information.

About Rigetti
Rigetti is a pioneer in full-stack quantum computing. The Company has operated quantum computers over the cloud since 2017 and serves global enterprise, government, and research clients through its Rigetti Quantum Cloud Services platform. In 2021, Rigetti began selling on-premises quantum computing systems with qubit counts between 24 and 84 qubits, supporting national laboratories and quantum computing centers. Rigetti's 9-qubit Novera™ QPU was introduced in 2023 supporting a broader R&D community with a high-performance, on-premises QPU designed to plug into a customer's existing cryogenic and control systems. The Company's proprietary quantum-classical infrastructure provides high-performance integration with public and private clouds for practical quantum computing. Rigetti has developed the industry's first multi-chip quantum processor for scalable quantum computing systems. The Company designs and manufactures its chips in-house at Fab-1, the industry's first dedicated and integrated quantum device manufacturing facility. Learn more at rigetti.com.

About the NQCC
The NQCC is the UK's national lab for quantum computing, dedicated to accelerating the development of quantum computing by addressing the challenges of scaling up the technology. The centre is working with businesses, government, and the research community to deliver quantum computing capabilities for the UK and support the growth of the emerging industry. The NQCC's programme is being delivered jointly by UKRI's research councils, EPSRC and STFC. It is a part of the National Quantum Technologies Programme (NQTP) to develop and deliver quantum technologies across the areas of sensing, timing, imaging, communications and computing. The centre is headquartered in a purpose-built facility on STFC's Rutherford Appleton Laboratory site at the Harwell Campus in Oxfordshire. Visit nqcc.ac.uk for more information.

Cautionary Language Concerning Forward-Looking Statements
Certain statements in this communication may be considered "forward-looking statements" within the meaning of the federal securities laws, including statements with respect to the Company's future success and performance, including expectations with respect to timing of the development and commercialization of superconducting quantum computing; expectations regarding the advantages and impact of the multinational-funded projects on the Company's operations, technology roadmap, milestones, and the Company's position in the industry; statements to optical readouts eventually replacing conventional components as part of the qubit signal processing chain and thereby offering scaling advantages; the extent that the optical qubit readout systems may interface with Rigetti's Novera QPU and enable optical readout of all qubits; the extent that using light will remove a significant amount of heat load on cryogenic systems; the extent that using light will overcome critical bottlenecks in building a universal quantum

computer; and the extent to which Rigetti's open and modular system architecture will allow for partners to integrate their technology with Rigetti's QPUs. These forward-looking statements are based upon estimates and assumptions that, while considered reasonable by the Company and its management, are inherently uncertain. Factors that may cause actual results to differ materially from current expectations include, but are not limited to: the Company's ability to achieve milestones, technological advancements, including with respect to its technology roadmap; the ability of the Company to obtain government contracts successfully and in a timely manner and the availability of government funding; the potential of quantum computing; the success of the Company's partnerships and collaborations, including the strategic collaboration with Quanta; the Company's ability to accelerate its development of multiple generations of quantum processors; the outcome of any legal proceedings that may be instituted against the Company or others; the ability to maintain relationships with customers and suppliers and attract and retain management and key employees; costs related to operating as a public company; changes in applicable laws or regulations; the possibility that the Company may be adversely affected by other economic, business, or competitive factors; the Company's estimates of expenses and profitability; the evolution of the markets in which the Company competes; the ability of the Company to implement its strategic initiatives and expansion plans; the expected use of proceeds from the Company's past and future financings or other capital; the sufficiency of the Company's cash resources; unfavorable conditions in the Company's industry, the global economy or global supply chain, including rising inflation and interest rates, deteriorating international trade relations, political turmoil, natural catastrophes, warfare and terrorist attacks; and other risks and uncertainties set forth in the section entitled "Risk Factors" and "Cautionary Note Regarding Forward-Looking Statements" in the Company's Annual Report on Form 10-K for the year ended December 31, 2024 and other documents filed by the Company from time to time with the SEC. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and the Company assumes no obligation and does not intend to update or revise these forward-looking statements other than as required by applicable law. The Company does not give any assurance that it will achieve its expectations.

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