

Pasqal and Weling Partner to Develop Tailored Quantum Interconnects for Neutral-Atom Quantum Computing

Tailored quantum interconnects would significantly boost quantum computer connectivity and performance

PARIS, FRANCE, April 23, 2024 /EINPresswire.com/ -- [Pasqal](#), a global leader in neutral atom quantum computing, and [Weling](#), a pioneering quantum networking company, today announced a groundbreaking partnership set to bring new standards in the quantum computing industry. This collaboration leverages the distinctive strengths of both companies to address some of the most challenging and exciting problems in neutral atom quantum computing.



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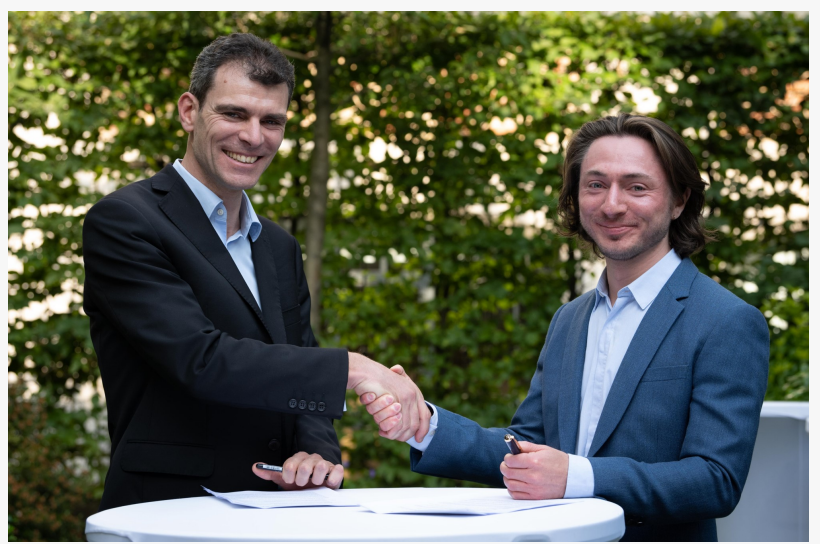
Tom Darras, CEO & Co-founder of Weling

The next-generation Quantum Processing Units (QPUs) are expected to execute quantum algorithms relying on a large number of qubits, while applying error correction would necessitate an even larger number. Leveraging Weling's innovative quantum interconnect technology that allows for the networking of multiple QPUs, this long-term partnership will enable Pasqal to surmount the hurdles of qubit scaling for fault-tolerant quantum computing.

Weling harnesses a unique solution to interconnect multiple QPUs, significantly enhancing computational power. This innovative approach not only facilitates scaling

up the number of qubits and optimized QPU deployment, but also establishes the foundation for expansive quantum networks. Central to this breakthrough are Weling's world-leading quantum memories, which are essential in creating these pivotal quantum links.

Together, the two companies aim to push the boundaries of quantum processing unit (QPU) interconnectivity. Welinq brings to the partnership their full-stack, turnkey quantum links, and the world's most efficient quantum memories based on cold neutral atoms, promising to provide the scalability necessary for achieving fault-tolerant quantum computing. Pasqal offers expertise in quantum computing with neutral atoms, featuring full-stack capabilities from hardware design and development to software solutions.



Georges-Olivier Reymond, CEO and Co-founder of Pasqal with Welinq's CEO and Co-founder Tom Darras

Welinq and Pasqal's ambitious joint quantum roadmap outlines ambitious milestones. By the end of 2024, Welinq targets an industrial prototype of their neutral atom quantum memory with cutting-edge efficiency, storage time, and fidelity. Pasqal aims for a breakthrough in 2024 with 1000-qubit QPUs. The roadmap will extend further in the 2026-2027 horizon with projected 10,000-qubit QPUs and high-fidelity two-qubit gates. By 2030, they aim to foster a thriving quantum computing ecosystem, driving major scientific and commercial advancements.

The companies ultimately envision interconnected multi-QPU systems, unlocking secure quantum information sharing and ushering in an era of large-scale quantum computation. For the first time, multiple Pasqal neutral atom quantum processors will be interconnected, significantly boosting computing power. This represents a substantial step toward developing a complete, fault-tolerant quantum computing architecture that supports distributed computing.

Georges-Olivier Reymond, CEO & Co-founder Pasqal commented, "The partnership between Pasqal and Welinq is a strategic step towards practical quantum computing. Our collaboration is centered on creating tangible solutions by integrating Pasqal's precision in quantum processing with Welinq's innovative networking and quantum memory systems. This is quantum advancement with real-world application in mind, striving to solve complex problems with greater efficiency and reliability."

"I am delighted to see that Welinq's unique vision for the scale-up of quantum computing is in alignment with quantum computing leaders like Pasqal." said Tom Darras, CEO & Co-founder of Welinq. "This is a landmark for boosting the global quantum community towards achieving practical quantum computing in networked quantum computer architectures."

About Pasqal

Pasqal is a leading Quantum Computing company that builds quantum processors from ordered

neutral atoms in 2D and 3D arrays to bring a practical quantum advantage to its customers and address real-world problems. Pasqal was founded in 2019, out of the Institut d'Optique, by Georges-Olivier Reymond, Christophe Jurczak, Professor Dr. Alain Aspect – Nobel Prize Laureate Physics, 2022, Dr. Antoine Browaeys and Dr. Thierry Lahaye. Pasqal has secured more than €140 million in financing to date. To learn more about Pasqal, visit www.pasqal.com.

About Welinq

Welinq is a pioneering Quantum Networking company that develops and commercializes quantum links based on laser-cooled neutral atom quantum memories to interconnect quantum computers in order to drastically increase their computational power and to ensure their deployment in clusters on customer premises. Welinq is a spin-out from Sorbonne Université, CNRS and PSL-University, founded in 2022 by Tom Darras, Prof. Julien Laurat, Dr. Eleni Diamanti and Jean Lautier-Gaud. To learn more about Welinq, visit www.welinq.eu.

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