

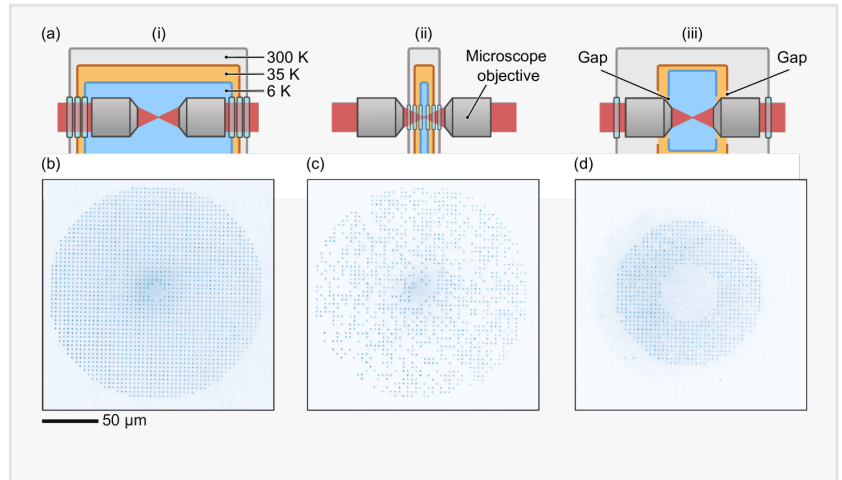
Pasqal Achieves Key Milestone Exceeding 1,000 Atoms in Quantum Processor, Paving Way for Scalable Quantum Computing

Increasing the number of trapped atoms will enable solutions for more complex use cases, such as optimization problems & quantum simulation of intricate systems

PARIS, FRANCE, June 25, 2024

/EINPresswire.com/ -- [Pasqal](#), a global leader in neutral-atom quantum computing, today announced a significant technological milestone: the successful loading of over 1000 atoms

in a single shot within their quantum computing setup. This breakthrough marks a crucial step in Pasqal's progress towards quantum advantage and scalable quantum processors.



In a major technological advancement for the quantum computing industry, Pasqal has trapped more than 1,110 atoms within approximately 2,000 traps, demonstrating the feasibility of large-scale neutral atom quantum computing. In Pasqal's quantum computing architecture, these atoms are confined and manipulated using electromagnetic fields. The internal energy states of these atoms serve as the quantum states of the qubits, which are manipulated to perform quantum operations and execute quantum algorithms.

“ These innovative results will fuel the design of future hardware products with enhanced computational power.”
Loic Henriet, Co-CEO of Pasqal

This successful trapping of single rubidium atoms in large arrays of optical tweezers, comprising up to 2,088 sites, within a cryogenic environment at a temperature of 6 K represents one of Pasqal's latest feats in quantum computing. This achievement involves innovative optical designs that combine ultra-high-vacuum-compatible microscope objectives at room temperature with windowless thermal shields, ensuring efficient trapping at cryogenic temperatures. In an industry first, Pasqal demonstrated atom-by-atom rearrangement of an 828-atom target array using moving optical tweezers controlled by a field-programmable gate array (FPGA).

This large-scale trapping of atoms is essential for building scalable quantum processors capable of solving complex problems efficiently. As the number of qubits increases, so does the computational power and the range of problems that can be tackled using quantum algorithms. The ability to trap and manipulate over 1,000 atoms represents a significant advancement towards creating quantum processors that can address problems currently beyond the abilities of classical computers.

“Achieving the 1,000-atom milestone illustrates the great scalability of Pasqal’s quantum processors,” said Loic Henriët, Co-CEO of Pasqal. “These innovative results will fuel the design of future hardware products with enhanced computational power.”

This milestone aligns with Pasqal’s strategic roadmap, which emphasizes the development of quantum computers with over 1,000 qubits, progressing towards 10,000 qubits by the 2026-2027 horizon. The roadmap highlights Pasqal’s commitment to advancing hardware capabilities and exploring high-impact business use cases in collaboration with Fortune 500 companies.

For more information on this scientific achievement, please reference the [full paper here](#).

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 us, visit www.pasqal.com.

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