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Q-Newsletter

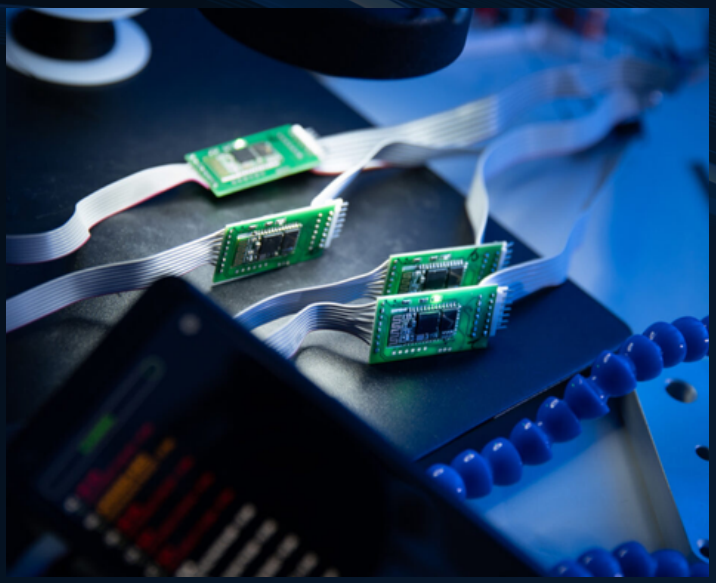
HIGHLIGHT OF THE WEEK

First Continuously Operating Quantum Computer

Researchers at Harvard University's Quantum Initiative lab and Many-Body Physics Group, led by Prof. Mikhail Lukin, have achieved a record-breaking result: they ran a quantum computer continuously for over two hours, far longer than the usual few milliseconds that current devices manage before losing coherence.

Quantum computers normally fail due to atom loss, the escape of qubits (atoms) from their traps. The Harvard team, which specializes in neutral-atom quantum computing, overcame this by using tools such as optical lattice conveyor belts and optical tweezers. These are precise laser tools that can move and reinsert atoms into the system. This allowed them to replenish lost qubits faster than they escaped, maintaining a stable number of atoms over long durations.

This is a crucial step toward fault-tolerant, industrially usable quantum machines. It shows that continuous operation once seen as purely theoretical is becoming practical. The researchers estimate that fully stable, continuously running quantum computers could be realized within just two years, paving the way for reliable quantum servers and long-running simulations.



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RESEARCH

Magic State Breakthrough

Researchers at QuEra Computing, a Boston-based startup known for its neutral-atom quantum computers, have achieved a decades-long milestone: performing magic state distillation on error-corrected (logical) qubits for the first time on their neutral atom quantum computer.

Magic state distillation is one of the final building blocks for making quantum computers truly useful. Magic states are special quantum resources that make universal quantum computation possible. Distillation is the process of purifying magic states into high-quality ones suitable for reliable computation. Until now, no team had successfully demonstrated this using logical qubits (qubits that are protected by error correction).

This advance, made in collaboration with researchers from Harvard and MIT, moves quantum computing closer to the goal of true fault tolerance, the ability for quantum systems to compute without error accumulation.

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MARKET

PsiQuantum Partners with NVIDIA

Quantum startup PsiQuantum has raised $1 billion in Series E funding at a $7 billion valuation, led by BlackRock and Temasek, to build new quantum facilities in Brisbane and Chicago.

The company develops photon-based quantum computers, encoding qubits as particles of light on semiconductor chips. This allows the company to leverage standard semiconductor fabrication processes.
The firm also announced a new collaboration with Nvidia focused on GPU-QPU integration and quantum software development. The partnership is particularly noteworthy because Nvidia has also invested in other leading quantum companies such as QuEra and Quantinuum, signalling a wider strategy to position its GPUs and software as the backbone of hybrid quantum-classical computing.

These news indicate that investor confidence is increasingly directed toward scalable, interoperable technologies, and photonic systems are attracting attention for their compatibility with existing chip-manufacturing methods.