



Q-Newsletter

THEMATIC HIGHLIGHT

[AI Meets Quantum Security: The Race to Reinvent Data Networks](#)

In March 2025, researchers led by Xitao Ji and Wenjie He introduced a groundbreaking data transmission system that merges high-speed optical communication with quantum-level security.

The researchers created a “DSP-Lite” system that replaces traditional, power-hungry signal processing with a simpler self-homodyne method, where the signal carries its own reference, making it easier and more energy-efficient to decode. This approach enables data transmission speeds of up to 2 terabits per second. Even more impressively, the same optical fiber also carries quantum key distribution (QKD) signals, which use quantum mechanics to create unbreakable encryption keys.

This dual system not only cuts energy costs but also future-proofs data networks against quantum-computer attacks that could one day compromise current encryption. The result is a powerful step toward secure, energy-efficient communication infrastructure tailored for the demands of the AI era.

RESEARCH

[MIT Pushes Quantum Accuracy to New Heights](#)

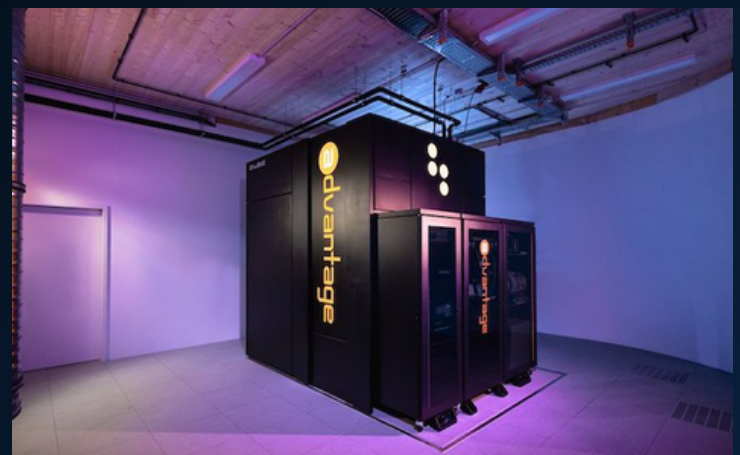
In December of last year, researchers at MIT set a new record for accuracy in quantum computing using a special type of superconducting qubit called a fluxonium qubit. The team, led by William Oliver and David Rower, achieved a single-qubit gate fidelity of 99.998%, meaning operations were almost entirely error-free.

Fidelity measures how closely a quantum operation matches the intended outcome, and even tiny

improvements make a huge difference when billions of operations are needed. This result shows that fluxonium qubits may offer a powerful path forward, reducing the need for heavy error correction and moving us closer to building reliable, large-scale quantum computers capable of solving real problems.

MARKET

[EUROPE TO HOST D-WAVE ADVANTAGE2 ANNEALER](#)



Swiss Quantum Technology SA signed a €10M agreement to deploy a 4,400+ qubit D-Wave Advantage2 annealing quantum computer in Europe, announced at the Digital Innovation Forum - ComoLake 2025. The system will be reachable via D-Wave's Leap real-time cloud and is framed as a milestone in expanding access to the company's production-grade fleet. For Italy, the placement supports the newly formed Q-Alliance, giving the country new global quantum infrastructure to underpin its Digital Transformation ambitions, with emphasis on powerful, energy-efficient computation for quantum and hybrid applications. It also strengthens Italy's overarching quantum ecosystem with production-grade compute capacity available to enterprises and researchers, including public institutions and innovation hubs.