

Q-Newsletter

HIGHLIGHT

Redefining Quantum Advantage

Qubit Pharmaceuticals and Sorbonne University have demonstrated that quantum computers can outperform classical machines on non-reversible Markov chains. These are processes that evolve in one direction, such as chemical reactions, protein folding, heat flow, or financial markets.

Speedup means that a quantum computer can solve a problem in far fewer steps than a classical computer and until now this was believed to be limited to simple, reversible systems, offering only modest gains.

This study shows that for real-world, irreversible processes, quantum computers can achieve much larger, even exponential speedups. The breakthrough moves the advantage of quantum computers from idealized models to the physical world, with exciting potential for drug discovery, materials design, and advanced risk modelling.

RESEARCH

Quantum Empowered Brain Scans

On 10 December 2025, researchers at the University of Bonn in Germany reported a major breakthrough in quantum brain sensing, enabling highly precise measurements of brain activity even while subjects are moving. The team is led by Prof. Dr. Dominik Bach at the University Hospital Bonn.

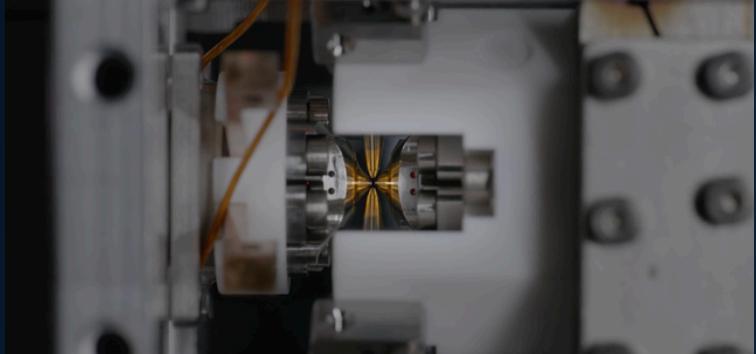
Traditional brain imaging techniques, like MRI or standard magnetoencephalography (MEG), require subjects to remain nearly motionless, limiting studies of natural behavior and making it difficult to scan patients with movement-related neurological conditions. The new approach uses Optically Pumped Magnetoencephalography (OPMEG):

participants wear a helmet containing around 100 ultra-sensitive quantum sensors that detect the brain's extremely weak magnetic fields—about a thousand times smaller than Earth's magnetic field.

By exploiting quantum effects, these sensors achieve unprecedented precision, allowing participants to move freely within a magnetically shielded booth while performing tasks, or even wearing virtual-reality glasses during scans. This development opens the door to dynamic, realistic brain imaging, offering new possibilities for studying natural behavior, neurological disorders, and potentially advancing brain-computer interface research.

MARKET

Nu Quantum Raises \$60M to Build the "Entanglement Fabric"



Nu Quantum has closed an oversubscribed \$60 million Series A round led by National Grid Partners to accelerate its quantum networking platform for distributed, fault-tolerant quantum computing. The company's Entanglement Fabric is designed to link multiple quantum processors via photonic connections, tackling the scalability limits of single-chip machines. According to the report, this is the largest financing round ever for a pure-play quantum networking company and the biggest quantum Series A in the UK so far. The funds will back product development, deployment of networking subsystems, and expansion across Europe and the United States.