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Q-Newsletter

HIGHLIGHT

Nobel Credentials, Controversial Ideas

Roger Penrose, a UCL alumnus and Nobel Prize-winning physicist, argues collapse of superposition is a real physical event that happens spontaneously in nature, and he speculates that gravity may set the timescale for when this collapse occurs rather than measurement. He then links this to consciousness, claiming that collapse corresponds to a discrete moment of conscious experience. Many such collapse events happening rapidly would then feel like a continuous stream of awareness.

Neven et al. take the "quantum consciousness" debate in a more test-oriented direction by flipping Penrose's timing: they conjecture that experience arises when a system enters superposition. To explain why we still experience one clear outcome, they frame this within Everett / many-worlds. This is where the overall wavefunction contains a superposition of different outcomes, 'branches', and decoherence stops those branches from interfering with each other, so each observer experiences only one branch and perceives a single definite outcome.

To move beyond philosophy, they outline experimental paths such as testing whether different xenon isotopes (same chemistry, different nuclear spin) change anesthesia effects in fruit flies and human brain organoids which would imply quantum behaviour.

Of course, major criticism remains: entanglement is famously fragile in warm, noisy systems like the brain, so it may not survive long enough to matter biologically. Still, this is exactly what makes the topic interesting, not because it's settled, but because strong claims invite strong tests.

RESEARCH

QC to Solve Differential Equations

On January 7th, a research team at ColibriTD reported a significant advance in quantum computing by demonstrating the solution of nonlinear differential equations on a 156-qubit quantum computer. This work used IBM's Heron-series 156-qubit processor and a hybrid classical-quantum algorithm called H-DES to tackle problems that are difficult or impossible for purely classical methods.

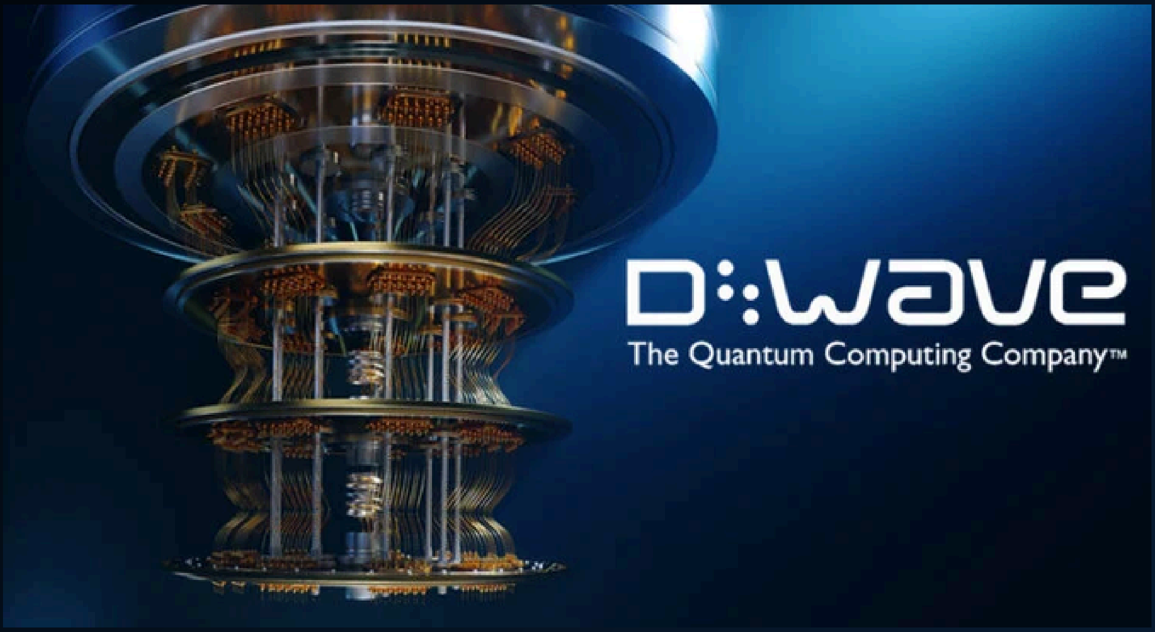
Nonlinear differential equations like the inviscid Burgers' equation and the one-dimensional material deformation model are foundational in physics and engineering but extremely challenging to solve at scale. The H-DES algorithm cleverly combines parameterized quantum circuits on the quantum processor with classical optimization loops, leveraging the unique strengths of both paradigms: quantum states represent complex wavefunctions, while classical computation refines parameters iteratively.

This research shows it's now possible to use Noisy Intermediate-Scale Quantum (NISQ) devices for physically relevant simulations, not just abstract proofs of concept. Successfully solving nonlinear partial differential equations on 156 qubits marks an important milestone in moving quantum computing toward practical scientific applications, especially in materials science and fluid dynamics.

By: Defne Aydin, Ethan Kao, George Szucsany

MARKET

D-Wave Completes Acquisition of Quantum Circuits Inc.



In a major development for the quantum computing industry, D-Wave Quantum Inc. has completed its acquisition of Quantum Circuits Inc., a move that significantly strengthens its position in the quantum technology market. The transaction brings together D-Wave's commercially proven quantum annealing systems with Quantum Circuits' advanced superconducting gate-model technology, creating a unique dual-platform company. By combining these two architectures, D-Wave is positioning itself to address a broader range of complex computational problems across research, enterprise, and government markets.

The acquisition further reinforces D-Wave's leadership in quantum annealing, which is already deployed in real customer environments and used to demonstrate quantum advantage in practical materials and optimization problems. At the same time, it accelerates the company's expansion into gate-model quantum computing, a critical path toward scalable and general-purpose quantum machines. A key asset in the deal is Quantum Circuits' dual-rail qubit design, which improves qubit fidelity and simplifies quantum error correction—one of the most persistent challenges in building commercially viable quantum computers.

Strategically, the deal reflects D-Wave's goal of expanding its addressable market by offering both near-term and long-term quantum solutions under one roof. Company leadership has described the acquisition as a watershed moment that establishes D-Wave as a leading integrated quantum computing provider. Looking ahead, D-Wave plans to make its first gate-model quantum system generally available in 2026, while continuing to support high-value optimization applications, highlighting a broader industry trend toward consolidation and vertically integrated quantum technology stacks.

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