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Physical qubits	1,180
2Q fidelity	99.99%
Logical qubits	96 LQ

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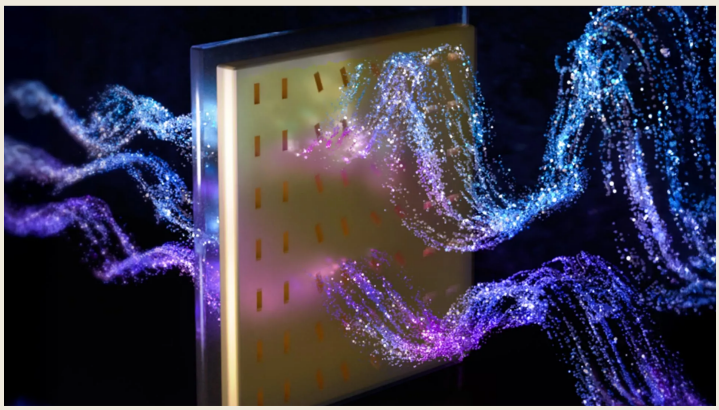
Aug 8, 2026 – Aug 9 · Daily Brief

NSF awards $4 million to support a sixty-logical-qubit trapped-ion system

19 items · 5 sources | PDF | This issue's roundup is free

01 Other

Three Things Today



1 UCLA Receives $4M NSF Grant Targeting a 60-Logical-Qubit Trapped-Ion Architecture

The U.S. National Science Foundation (NSF), through its NQVL program, has awarded $4 million to a UCLA-led team for an integrated-photonics surface trapped-ion project with 60 logical qubits [3] — the project sets 60 logical qubits as an explicit target, and

the source makes no claim of a "first" or a comparison with existing logical-qubit records.

1 D-Wave Q2 Bookings Surge; Quantum Circuits Acquisition Effect Begins to Show

D-Wave's Q2 revenue was flat because of the timing of system sales, but bookings and backlog grew sharply. Following the acquisition of Quantum Circuits, the company has begun integrating a gate-model roadmap [1] — the dual-path (annealing plus gate-model) strategy is starting to translate into commercial commitments.

1 Quantum LDPC Codes Achieve Nearly 3× Faster Joint Logical Measurements

Researchers have used cat states and scheduler codes to perform joint logical-operator measurements on LDPC code blocks, achieving a nearly 3× speedup [11] — the low-overhead advantage of LDPC codes is now showing acceleration at the logical-operation level, potentially shortening the timeline to practicality.

Hardware Frontier

> **Trapped Ions: UCLA Leads a 60-Logical-Qubit Project**

A UCLA-led team has received $4 million from the NSF to build an integrated-photonics surface trapped-ion architecture with 60 logical qubits [3]. The project is funded through the NSF National Quantum Virtual Laboratory (NQVL) program; the project title is truncated in the source abstract and was not disclosed.

Technical implications: The project explicitly targets 60 logical qubits, but the source does not state whether these are error-detecting or fully error-correcting logical qubits, nor does it make any comparison with existing logical-qubit records. The use of integrated photonics may reduce the optical-path complexity of trapped-ion systems.

Landscape impact: The NSF award demonstrates continued U.S. government investment in quantum-computing hardware, but

the $4 million scale is modest and mainly supports early-stage prototyping; substantial follow-on investment will be needed before the technology approaches practical use.

> **Superconducting: D-Wave Integrates a Gate-Model Roadmap**

D-Wave's Q2 earnings report shows that, following its acquisition of Quantum Circuits, the company has begun integrating a gate-model quantum-computing roadmap, advancing its technology roadmap on both the annealing and gate-model paths [1]. Bookings grew sharply and backlog expanded significantly; exact figures should be taken from the original earnings release.

Technical implications: D-Wave is formally entering the gate-model arena beyond its annealing roots, but the fidelities of its gate-model systems have not been disclosed and may still lag the publicly known best-in-class superconducting results (today's sources provide no comparable fidelity data). Note that annealing qubits and gate-model qubits are not directly comparable.

Landscape impact: D-Wave's simultaneous push on both annealing and gate-model paths may attract enterprise customers who need hybrid workloads. The surge in bookings reflects rising market expectations for quantum-computing

commercialization, but subsequent delivery and revenue conversion need to be watched.

> **Photonics: A New Reconfigurable Photonic Quantum-Chip Architecture**

Engineers at Imperial College London have introduced the Clavina architecture, a reconfigurable photonic quantum chip that combines linear and nonlinear operations [7]. The architecture aims to address the difficulty of realizing universal gates with linear optics alone in photonic quantum computing.

Technical implications: Clavina overcomes the limitations of linear optics by combining linear and nonlinear operations. The source does not disclose the physical implementation of the nonlinear operations, nor does it provide specific fidelity or loss data. Until key metrics are published, it is impossible to benchmark the architecture against the state of the art in photonics.

Landscape impact: Reconfigurability could make photonic chips more flexible for different algorithms, but the photonics route still faces an end-to-end loss-budget challenge. The research remains at an early stage and will not affect the industry landscape in the near term.

Algorithms & Software

Quantum LDPC Codes Achieve Nearly 3× Faster Joint Logical Measurements

Researchers have proposed using cat states and scheduler codes to perform joint logical-operator measurements on quantum LDPC code blocks (Q70 and Q102), achieving a nearly 3× speedup [11] (the source headline attributes the work to IonQ; author affiliations should be taken from the original paper). LDPC codes can drastically reduce qubit overhead because of their high encoding rate, but operating on multiple logical qubits poses challenges.

Technical implications: This work demonstrates an acceleration effect of LDPC codes at the logical-operation level. A nearly 3× speedup implies shorter error-correction cycles, potentially raising the effective clock rate of fault-tolerant quantum computing. If scalable, the work could further reduce the physical-to-logical qubit ratio.

Landscape impact: The engineering path toward fault-tolerant quantum computing is being progressively refined. This result may enhance the appeal of related technology routes, but experimental verification is still needed. For investors, it is a positive signal for the practicality

of quantum error correction, though the timescale remains measured in years.

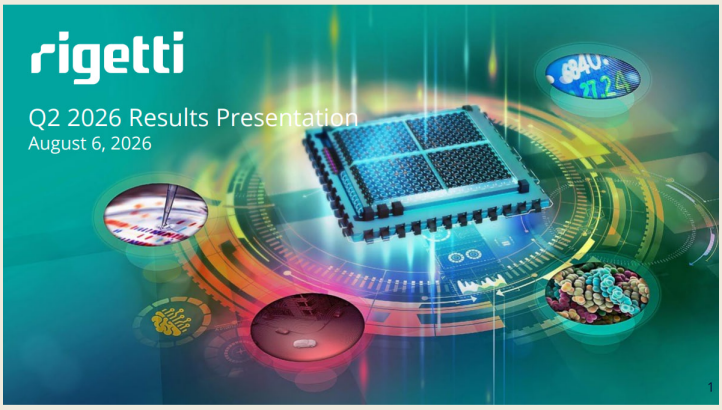
> **Limitations of Quantum Entanglement for Machine-Learning Advantage**

Research attributed to the "Korea Advanced Institute" (commonly referring to KAIST) shows that bound entanglement is insufficient to achieve an exponential quantum learning advantage, even in multi-qubit systems [12]. The study theoretically delimits the conditions under which quantum machine learning can outperform classical methods.

Technical implications: The result clarifies the impact of entanglement type on quantum advantage: bound entanglement cannot provide exponential speedup. This has guiding significance for designing quantum machine-learning algorithms — attention should be paid to the quality, not merely the quantity, of entanglement.

Landscape impact: The finding could negatively affect quantum machine-learning startups, as it weakens the narrative that "quantum advantage naturally follows from entanglement." In the long term, however, it helps focus efforts on genuinely promising algorithmic directions.

Industry & Ecosystem



D-Wave Q2 Bookings Surge

D-Wave's Q2 earnings report shows that bookings grew sharply and backlog expanded significantly, but revenue was flat because of the timing of system sales [1]; exact figures should be taken from the original earnings release. Following the acquisition of Quantum Circuits, the company has begun integrating a gate-model roadmap, advancing its technology roadmap on both the annealing and gate-model paths.

Business implications: Strong bookings growth indicates customer confidence in long-term quantum-computing commitments, but flat revenue reflects long system-sales cycles and delayed revenue recognition. Backlog conversion is key; if revenue does not grow correspondingly in subsequent quarters, market skepticism may arise.

Landscape impact: D-Wave's bookings growth could boost investment sentiment across the quantum-computing sector, but it remains to be seen whether other companies (e.g., Rigetti, IonQ) show similar trends in their earnings. The Quantum Circuits acquisition makes D-Wave a dual-path player, potentially attracting a broader customer base.

> **Rigetti Q2 Revenue Up 185%; Receives $100M CHIPS Act Letter of Intent**

Rigetti Computing's Q2 revenue grew 185 % year-over-year (absolute figures were not given in the source summary; refer to the original earnings table), and the company received a $100 million letter of intent under the U.S. CHIPS Act, while also announcing a supercomputing collaboration with HPE [5].

Business implications: Revenue growth is strong but off a small base; if the CHIPS Act funding materializes, it will significantly bolster R&D resources. The HPE collaboration could promote the adoption of hybrid quantum-classical computing in the HPC market.

Landscape impact: Government funding is critical for quantum-computing startups; Rigetti's case may encourage more companies to seek similar support. Competition on the superconducting route is intensifying, and Rigetti

needs to catch up with IBM and Google in both fidelity and scale.

> **Honda Invests in Japanese Quantum-Algorithm Startup Quemix**

Honda Motor, through its global open-innovation program Honda Xcelerator Ventures, has invested in the Tokyo-based quantum-software and algorithm startup Quemix, aiming to accelerate the practical deployment of quantum computing in new-materials development [2].

Business implications: The automotive industry's interest in quantum computing is shifting from laboratory research to practical application. Honda's investment is likely aimed at developing battery or lightweight materials. As an algorithm company, Quemix's value lies in shortening the time to practical use of quantum computing in materials simulation.

Landscape impact: Direct investment by an industry giant in a quantum-software company signals recognition of quantum computing's application potential in vertical industries. This could trigger more corporate venture capital flowing into the quantum sector.

Horizon Quantum Appoints Chief Product Officer

Horizon Quantum has appointed Amanda Chew as Chief Product Officer, effective August 17. Chew previously held management roles at Microsoft and joined Horizon Quantum in 2020 as a product manager, subsequently serving as Director of Product and VP of Product [4]. Compared with earlier reports, the incremental information provided by this source includes the effective date, Chew's full promotion path, and her new scope of responsibilities; the source is a personnel round-up that also covers appointments at Quantum Computing Inc. and Uviquity.

Business implications: The appointment indicates that Horizon Quantum is transitioning from technology development to productization. The CPO's role is to drive the commercialization of quantum-software development tools.

Landscape impact: Strengthening product teams at quantum-software companies signals that the industry is moving from pure research toward commercialization. An executive with a Microsoft background may bring enterprise-grade product experience.

Chicago Quantum Recruitment Forum to Be Held in December

The 2026 Chicago Quantum Recruitment Forum will take place on December 7 at mHUB, connecting hundreds of students and postdocs with leading quantum employers [10].

Business implications: Demand for quantum talent remains strong. Such events help alleviate talent shortages but also reflect intensifying competition for highly skilled workers.

Landscape impact: Chicago's status as a quantum-technology hub and its talent-aggregation effect may attract more companies to set up offices there.

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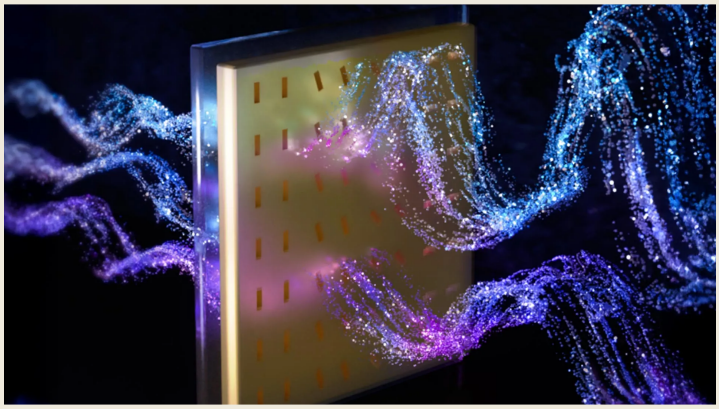
05 Other

Academic Frontier



Disorder Drives Quantum Systems Toward Classical Simulability

Using accurate tensor-network simulations of square-lattice Instantaneous Quantum Polynomial-time (IQP) architectures with up to 576 qubits, researchers have found that increasing two-qubit-gate angle disorder and single-qubit decoherence drives quantum systems toward classical simulability [14]. The output distribution first loses anti-concentration, after which the cost of tensor-network simulation drops sharply.

Technical implications: The study delineates the boundary of quantum advantage under noisy conditions. It is important to note that the conclusions are limited to square-lattice IQP architectures under the specific conditions of two-qubit-gate angle disorder and single-qubit decoherence; 576 qubits is the scale reached by this accurate tensor-network simulation, and the source does not use this to evaluate real-world quantum-supremacy experiments.

Landscape impact: The findings could influence quantum-computing benchmarking standards, prompting the industry to pay more attention to the impact of noise on quantum advantage. For investors, this underscores the importance of fault-tolerant quantum computing; short-term noisy systems may struggle to deliver practical advantage.

Breakthrough in Room-Temperature Quantum Materials

Scientists have created, for the first time, a quantum material that can classify and transport different quantum-optical states at room temperature — an ultrathin "super-crystal" made of hundreds of microscopic structures carved from a gold thin film [15]. The material can manipulate quantum light without the need for ultra-low-temperature cooling.

Technical implications: Room-temperature operation eliminates the need for bulky cryogenic equipment in quantum-optical systems, but specific performance metrics (e.g., fidelity, loss) have not been disclosed. The current photonic state of the art (e.g., PsiQuantum) relies on cryogenic SNSPD detectors; room-temperature operation with comparable performance would be disruptive for the photonics route.

Landscape impact: If scalable, the material could reduce the deployment cost of quantum networks and sensors, but the research is still at a fundamental stage; the source gives no judgment on any practical timeline.

Chromium and Nickel Compounds Open New Paths for Quantum Materials

Research at the City College of New York focuses on layered materials such as chromium triiodide,

nickel phosphorus trisulfide, and chromium sulfide bromide as candidates for novel quantum technologies [9]. These materials possess tunable magnetic and electronic properties.

Technical implications: Two-dimensional layered materials have potential in quantum sensing and spintronics, but they have not yet reached the practical stage. Compared with established quantum materials (e.g., diamond NV centers), their coherence times and control precision still need to be verified.

Landscape impact: Exploration of new materials may provide more options for quantum technology, but it will not affect mainstream hardware routes in the near term.

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06 Impact

Today's Impact

1. **Intensifying competition on the trapped-ion route**: UCLA's 60-logical-qubit project [3] and

the accelerated joint logical measurements with quantum LDPC codes [11] show that trapped ions are advancing on both logical-qubit count and operation speed, potentially accelerating the practicality of fault-tolerant quantum computers on this route. Investors should watch the technology-iteration pace of companies such as Quantinuum and IonQ.

2 **Stronger signals of quantum-computing commercialization**: The robust bookings/revenue growth at D-Wave and Rigetti [1][5], along with Honda's investment in Quemix [2], indicate that enterprise customers are moving from a wait-and-see stance to long-term commitments. However, the risk of conversion from bookings to final revenue warrants caution.

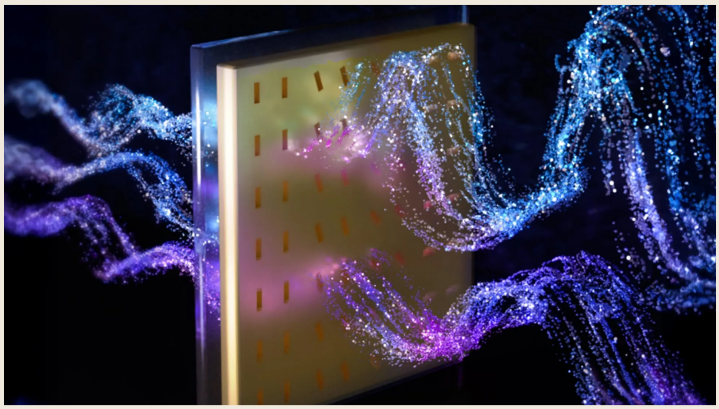
3 **Clearer boundaries for quantum advantage**: Research on disorder-induced classical simulability [14] and the limitations of bound entanglement [12] sets stricter conditions for quantum advantage, which could affect the technology narratives and valuation logic of quantum-computing companies.

4 **Intensifying talent war**: The Chicago recruitment forum [10] and Horizon Quantum's CPO appointment [4] reflect the industry's urgent demand for quantum talent, which may drive up labor costs and pose challenges for startups.

5 **Emergence of room-temperature quantum technology**: Progress on the room-temperature super-crystal [15] could open new quantum-technology paths that do not require cryogenics, potentially altering deployment models in the long term.

07 Other

Editorial Commentary



Today’s quantum-computing landscape exhibits a coexistence of "technological deepening" and "commercial warming." On one hand, academic research (e.g., 576-qubit simulability, LDPC-code acceleration) is continuously refining the conditions for quantum advantage, forcing the industry to take a more pragmatic view of the limitations of noisy intermediate-scale quantum (NISQ) systems. On the other hand, surging corporate bookings and increased government funding indicate that market confidence in the long-term value of quantum computing remains

undiminished. Notably, the earnings reports from both D-Wave and Rigetti show revenue growth or a jump in bookings, but the former's revenue was flat while the latter's base is small — commercialization is still in its early stages. Progress on the trapped-ion route in both logical-qubit count and operation speed is eye-catching, but the superconducting and neutral-atom routes are also iterating rapidly; the technology race is far from over. Investors should focus on key metrics — such as logical-qubit count, error-correction capability, and bookings-to-revenue conversion — rather than on raw qubit-count growth alone.

References

[1] D-Wave Reports Its Q2 2026 Financial Results Showing Bookings Surge, Technical Progress, and Quantum Circuits Acquisition Impact

[2] Honda Invests in Japanese Quantum Algorithm Startup Quemix

[3] UCLA-Led Consortium Secures $4 Million NSF Grant for 60 Logical Qubit Trapped-Ion Architecture

[4] Who's News: Strategic Appointments at Horizon Quantum, Quantum Computing Inc., and Uviquity

[5] Rigetti Computing Reports Q2 2026 Financial Results: Revenue Up 185% YoY, $100M CHIPS Act LOI, and HPE Supercomputing Partnership

[6] PubChem physics-based verification flags errors in 80% of cases

[7] Imperial engineers build a reconfigurable photonic quantum chip

[8] UChicago student builds quantum skills at PsiQuantum this summer

[9] Chromium, nickel compounds offer quantum material path

[10] Quantum employers will meet talent at Chicago's mHUB in December

[11] IonQ Quantum LDPC Codes Unlock 3× Faster Joint Logical Measurements

[12] Quantum Entanglement Alone Isn't Enough For Quantum Machine Learning

[13] Gemini app reaches 950 million monthly users, Google says

[14] Researchers find disorder drives quantum system to classical simulation at 576 qubits

[15] This tiny gold crystal could bring quantum technology out of the deep freeze

[16] Hank Green AI controversy raises questions for science communicators

[17] Monkeys keep pets and maintain friendships with other animals

[18] Why loneliness and not social isolation may be making you sick

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