

QpiAI's 8-inch quantum chip fab in Bengaluru begins production

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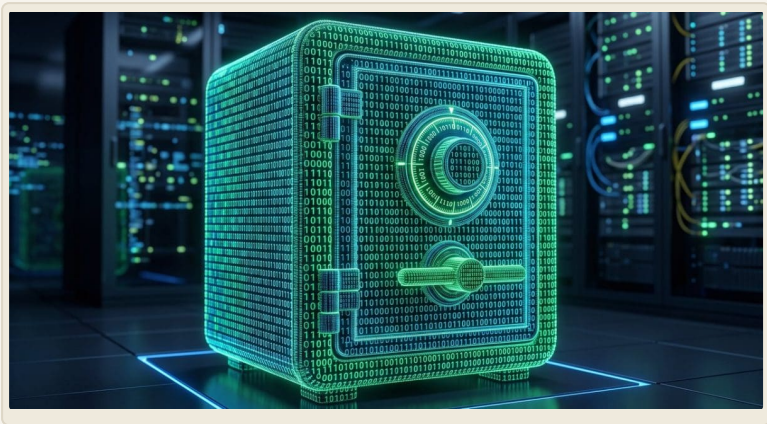
C U R R E N T S O T A

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

[Quantum hardware SOTA table](#)
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01 Other

Three Things Today

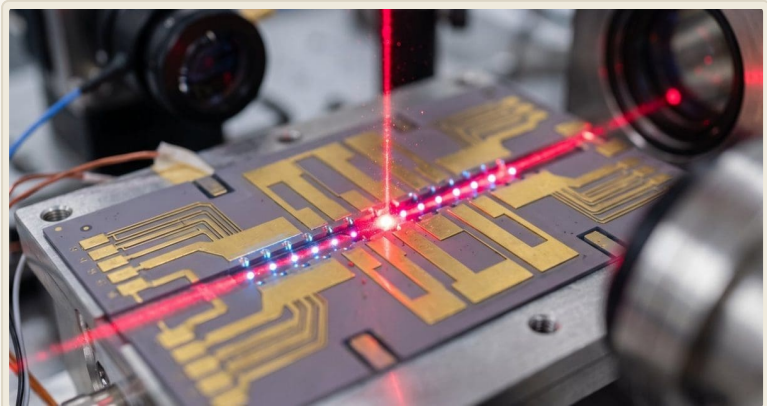


- Quantum chip mass production** QpiAI has launched an 8-inch superconducting quantum chip production line in Bengaluru, capable of manufacturing 128-qubit flip-chip devices ^[8] — India joins the quantum chip manufacturing race.
- Inflection earnings** FY2026 Q2 revenue increased from \$12.6M to \$13.5M, with full-year guidance raised to approximately \$45.1M ^[2] — driven by changes in government contract revenue recognition timing.

- 3 **D-Wave board** D-Wave appointed Kevan Kryslar to its Board of Directors and Audit Committee ^[30]—governance strengthening, with audit independence drawing attention.

02 Hardware

Hardware Frontier



Superconducting

QpiAI 8-inch quantum chip foundry begins production

QpiAI has officially launched its 8-inch quantum processing unit manufacturing facility in Jakkur, Bengaluru, India, as part of Phase II of its 70,000-square-foot R&D center. The facility can manufacture flip-chip superconducting quantum processors with up to 128 physical qubits, with Phase III expansion planned for completion by 2027 ^[8]. The source does not claim this is India's first such production line, nor does it provide any process-level benchmarking; compared with leading superconducting players such as IBM and

Google, no public qubit fidelity or coherence time data is available, making it impossible to assess proximity to SOTA. India's domestic quantum supply chain is being built from scratch and may attract government and defense orders, but commercial-grade chips still require validation.

Neutral Atoms

Shanxi University simulates Rydberg-atom CZ gate at 0.9999 fidelity

A Shanxi University team has reported in numerical simulation a two-qubit controlled-Z gate fidelity of 0.9999 for Rydberg atoms, surpassing previous methods, and maintaining this precision under $\pm 2\%$ Rabi frequency fluctuations and $\pm 1\%$ detuning ^[22]. This result is a numerical simulation rather than an experimental measurement; the source provides no experimental verification and no cross-platform comparison with other technology routes. If subsequent experiments can reproduce and extend this to multiple qubits, it would enhance the competitiveness of the neutral-atom route near fault-tolerance thresholds.

Trapped Ions

Oregon team cools ion crystals to ground state

An Oregon team has demonstrated single-species cooling of mixed qubit states, enabling trapped-ion quantum computers to cool their own components mid-computation without losing

information ^[21]. Previous approaches to such cooling required multi-species ion systems or lacked methods for re-cooling qubits. This technique unlocks non-destructive readout, paving the way for scalable error-corrected computation on the trapped-ion route. The source does not provide gate fidelity or coherence time metrics for the trapped-ion platform, but cooling overhead is one of the scaling bottlenecks, and this advance directly improves cycle repetition rates.

Integrated waveguides for trapped ions

Researchers have integrated curved waveguides with a 6 mm radius of curvature into ion traps, achieving single-mode optical transmission at 405 nm, which was previously difficult to realize ^[20]. Using borosilicate glass and femtosecond laser writing, this provides a more compact photonic integration solution for trapped-ion systems. This advance reduces optical system volume and alignment complexity, benefiting the engineering and miniaturization of trapped-ion quantum computers.

Photonic

Virginia team achieves 3 dB squeezing on a photonic chip

A monolithic photonic chip simultaneously generates, routes, and detects squeezed light, achieving 3 dB squeezing across 34 quantum modes ^[19]. Previously, squeezed-light

generation and measurement were separated due to conflicting material requirements. This unified architecture lays the foundation for fully integrated quantum photonic systems, but the source does not relate this squeezing level to fault-tolerance thresholds, nor does it report an end-to-end loss budget. Integrated squeezed-light sources remain a weak point for the photonic route.

Spin Qubits

Spin nonlinearity enables dense qubits

Researchers have proposed a scheme exploiting spin nonlinearity to achieve fidelities exceeding 0.98 in dispersively prepared even/odd cat states, with single-shot optical spin readout fidelity of 0.95^[10]. This scheme eliminates reliance on larger, less coherent components such as transmons, proposing a bosonic (cat-state) encoding for nanomechanical spin qubits; it is currently at the proposal stage. The source provides no metric comparison with other spin routes; the result is early-stage but demonstrates the potential of spin-photon interfaces for scaling.

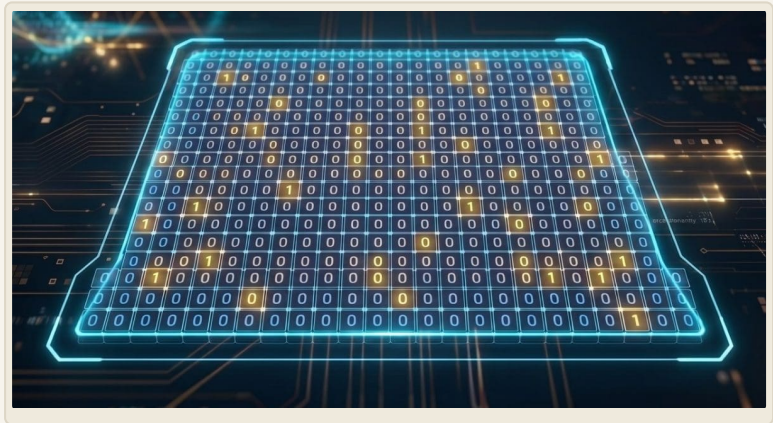
Inductive protection extends qubit coherence

Inductively protected Andreev spin qubits separate spin states into different potential wells, nearly eliminating wavefunction overlap and enhancing protection against energy loss^[17]. This design combines long coherence times with the operational advantages of spin degrees of

freedom, improving upon existing qubits. No specific coherence time is given, making direct comparison with SOTA (silicon spin T_2 of approximately 10–100 μs) difficult, but it offers a new direction for superconducting-spin hybrid routes.

03 Algorithms

Algorithms & Software



Hybrid boson sampling–neural network

architecture A new architecture combining boson sampling with neural networks for classification tasks has been published in npj Quantum Information ^[4]. The source provides only the paper title and DOI, without disclosing architectural details or performance data; if subsequent validation proves effective, it may offer near-term application scenarios for photonic quantum computing. However, boson sampling itself lacks universal computational capability, and its classification advantages must be rigorously

compared with classical methods on real datasets.

Magic-state concentration from arbitrary

unknown qubits A new protocol distills a target magic state from six copies of unknown input states, requiring no prior knowledge ^[13]. Achieving exact distillation, it provides a new pathway for scalable fault-tolerant quantum computing.

Magic-state distillation is a core resource-preparation step in fault-tolerant computation, and this advance relaxes input-state requirements, potentially simplifying future logical circuit design.

Quantum eigensolver shot count scales linearly

A new thresholding scheme reduces the number of shots per matrix element in non-orthogonal quantum eigensolvers from $O(M^3)$ to $O(M)$ ^[16]. This substantially lowers resource requirements for near-term quantum simulation of materials and drugs. The source states that this scheme brings near-term quantum simulation closer to reality, but provides no quantitative conclusion on hardware time costs.

Quantum resource reduction for power-grid

islanding A new sequential quantum computing framework achieves Gurobi-optimal partitioning on 11 IEEE systems (9 to 300 buses), reducing quantum resource requirements and circuit complexity ^[14]. The improvement is relative to previous quantum methods; the source provides

no speed comparison with classical solvers, and the number of qubits used is not disclosed. This work provides a benchmark for quantum algorithms in power-system applications.

Signal-learning measurement count drastically

reduced A single controllable qubit coupled to a conventional sensor reduces the number of measurements required to learn signal properties such as Fourier amplitudes by approximately 10 million times (the source headline states 7 million times, inconsistent with the body text; the original text prevails) ^[15]. This is a concrete example of quantum-enhanced sensing moving from theoretical advantage toward practical use. If reproducible on real sensors, it would disrupt the precision-measurement field.

Distributed quantum circuit nonlocal operation

reduction An MIT team has implemented CNOT circuits within CSS codes requiring only $O(nk)$ inter-block transversal CNOTs and intra-block Pauli measurements, outperforming previous teleportation-based methods ^[18]. This achieves asymptotic optimality for distributed circuits under arbitrary restricted connectivity, minimizing nonlocal operations. This is critical for quantum computer networks and modular architectures.

Decoder cost limits in fault-tolerant computing

Transversal CNOT gates reduce the number of error-correction rounds between logical operations

from O(d) to near zero, but place enormous pressure on classical decoders. The PACE scheduling framework directly addresses this bottleneck [23]. This advance reconciles the imbalance between quantum acceleration and classical decoding speed, offering a new solution for real-time error correction.

Realistic quantum algorithm benchmarks

Following prior reports, scientists have proposed more realistic quantum algorithm benchmarks incorporating hardware noise, connectivity, and compilation overhead [32]. The new benchmarks will more accurately assess the practical performance of near-term quantum devices and may influence investor expectations regarding quantum-advantage timelines.

04 Industry

Industry & Ecosystem

	Three Months Ended June 30,		Six Months Ended June 30,	
	2026	2025	2026	2025
Total revenue	\$ 13,538	\$ 5,277	\$ 23,445	\$ 13,472
Total cost of revenue	11,371	4,599	18,743	9,251
Gross profit	2,167	678	4,702	4,221
Research and development	12,675	5,311	22,626	10,478
Selling, general and administrative	19,818	6,250	46,138	12,034
Grant income	(468)	(471)	(1,173)	(1,095)
Loss from operations	(29,858)	(10,412)	(62,889)	(17,496)
Other income (expense):				
Interest income	5,021	719	8,223	1,073
Other, net	142	507	252	1,116
Total other income, net	5,163	1,226	8,475	2,191
Loss before income taxes	(24,695)	(9,186)	(54,414)	(15,005)
Income tax expense (benefit)	—	—	—	—
Net loss	\$ (24,695)	\$ (9,186)	\$ (54,414)	\$ (15,005)
Other comprehensive (loss) income:				
Unrealized loss on available-for-sale securities, net	(195)	—	(1,077)	—
Foreign currency translation adjustment	(141)	(22)	(240)	394
Total other comprehensive loss	(336)	(22)	(1,317)	394
Comprehensive loss	\$ (25,031)	\$ (9,208)	\$ (55,731)	\$ (14,611)
Net loss per share attributable to common stockholders - basic and diluted	\$ (0.11)	\$ (0.59)	\$ (0.32)	\$ (0.99)
Weighted average shares used in computing net loss per share attributable to common stockholders - basic and diluted	219,743,810	15,586,999	169,199,551	15,164,809

Inflection updates FY2026 Q2 financials

Inflection reported Q2 revenue growth from

\$12.6M to \$13.5M, with full-year revenue guidance raised from approximately \$43M to approximately \$45.1M, reflecting changes in revenue recognition timing for two government contracts; the increase is partially offset by corresponding reductions in revenue already recognized in 2024 and 2025, with no impact on cash or fundamentals^[2]. The company has filed Form 10-Q. The accounting adjustment for government contract revenue recognition does not change business substance, but revenue fluctuations may affect market sentiment.

D-Wave appoints new board member D-Wave has appointed Kevan Kryslar to its Board of Directors and Audit Committee^[30]. The source only announces the appointment itself, without introducing his background or making any judgment on audit committee independence; board strengthening has a positive effect on enhancing corporate governance image.

Serendipity Capital interview In a podcast, Serendipity Capital founder Rob Jesudason discusses how to evaluate cross-modality quantum companies; its \$1.3 billion evergreen fund has invested in Quantinuum, Monarch Quantum, Delta g, and QuantX^[7]. The interview provides institutional investors with a framework for evaluating quantum companies and may influence subsequent capital allocation.

Columbia materials center receives third NSF

award Columbia University has received its third NSF MRSEC award, totaling \$18 million, for advanced electronic materials research^[9]. This is a continuation of prior coverage; the new development is confirmation of the specific amount and direction of the third round of funding, further consolidating its position in quantum materials.

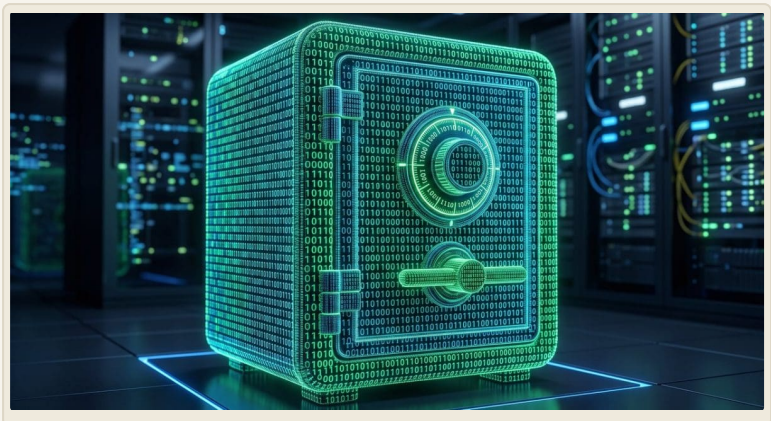
International Workshop on Quantum

Computing, Privacy, and Security

The IWQPS2026 workshop will focus on quantum computing, privacy, and security^[6]. The conference provides a platform for academic and industry exchange and may catalyze new collaborations and standards discussions.

05 Other

Academic Frontier



Cross-moiré orbitals in rhombohedral

graphene moiré superlattices In rhombohedral

graphene, the renormalization strength of moiré-period flat bands is hundreds of times larger than previously estimated, forcing electrons into newly observed "cross-moiré orbitals" that disappear at twist angles above 1° , consistent with the disappearance of the fractional quantum anomalous Hall effect ^[11]. This discovery deepens understanding of correlated electronic states in moiré materials and may provide a new material platform for topological quantum computing.

Quantum processor simulates fluid dynamics

Multi-timestep accurate simulation has been achieved on quantum hardware for convection-dominated fluids at Reynolds numbers around 10^2 , surpassing previous methods limited by circuit depth ^[12]. This extends quantum simulation beyond linear processes, opening a path for modeling complex physical systems. The current demonstration is small-scale, with orders-of-magnitude gaps remaining before practical engineering fluid problems.

Topological material quantum transport study

Published in Nature Communications in May, this study identifies an unusual class of quantum oscillation regimes in three-dimensional topological insulators ^[31]. Such fundamental research provides key data for the feasibility of topological qubits.

Quantum-as-a-service pipeline threat model A

University of Jyväskylä team has released a six-stage STRIDE threat model mapping the full attack surface of quantum-as-a-service pipelines used by IBM Quantum, Amazon Braket, and IonQ, identifying three cross-stage risk chains^[33]. Full technical details and the threat matrix are available in an arXiv preprint (accepted as a poster at QCE26), not yet peer-reviewed. This model provides a systematic framework for quantum cloud service security assessment and may drive industry security standard development.

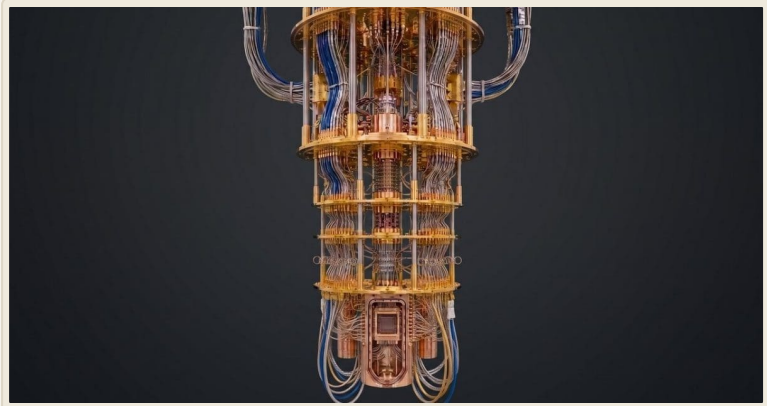
Zero-knowledge proofs for cryptographic

inventories Four research teams built privacy-

preserving verification systems for bills of materials, but none could prove that the records describe the assets they claim to represent^[51].

This work identifies a fundamental limitation of zero-knowledge proofs in cryptographic inventory applications, with cautionary implications for post-quantum cryptography and blockchain security.

Today's Impact

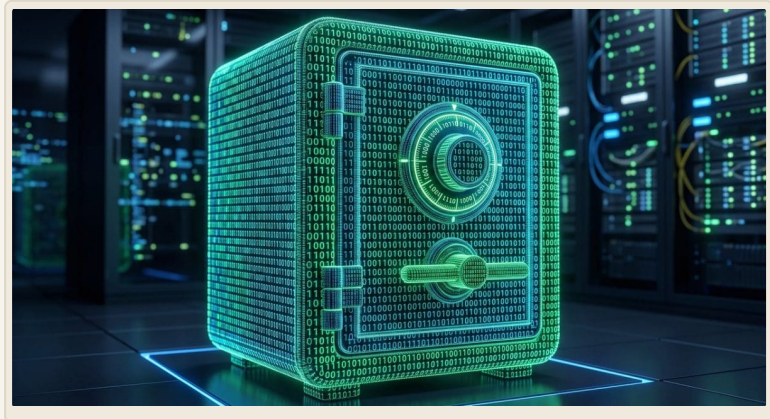


- 1 Indian quantum manufacturing** QpiAI's production line launch gives India domestic quantum chip manufacturing capability, potentially altering the geopolitical landscape of the global quantum supply chain; its subsequent orders and yield data merit attention ^[8].
- 2 Government contract accounting** Inflection's revenue guidance adjustment illustrates the complexity of government contract revenue recognition; investors must distinguish accounting changes from real business growth ^[2].
- 3 Quantum sensing practicalization** Signal-learning measurement counts show order-of-magnitude reductions (the source headline and body text state 7 million and 10 million times, respectively); if validated on industrial sensors, this would open a commercialization window for quantum sensing ^[15].

- 4 **Quantum cloud security** The six-stage threat model sounds an alarm for quantum-as-a-service providers; IBM, Amazon, and IonQ need to review their pipeline security ^[33].
- 5 **Algorithm benchmark updates** More realistic quantum algorithm benchmarks will affect the credibility of quantum-advantage claims and may curb overly optimistic market expectations ^[32].

07 Other

Editorial Commentary



Today's news reveals two distinct trends: first, the geographic diffusion of hardware manufacturing—QpiAI's 8-inch line in India signals that quantum chip fabrication is no longer confined to the US, Europe, and Japan, intensifying competition in Asian supply chains; second, quantum algorithms and software are shifting from proof-of-principle to resource optimization, with multiple works

focused on reducing measurement counts, shot counts, and circuit depth, indicating that the field is moving from qubit-count pursuit toward improving the practicality of near-term devices.

Notably, several hardware stories today lack direct comparison data against SOTA—for example, QpiAI has not disclosed fidelity, and the spin-nonlinearity scheme reports only 0.98 fidelity. In the quantum computing hype cycle, investors and researchers should insist on reproducible, fully distributed metrics rather than isolated best values. The order-of-magnitude reduction in measurement counts in quantum sensing, if independently verified, could become the first commercial application to deliver on quantum advantage and merits continued tracking.

References

- | | |
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| [1] Data Centers Doomed By Upside Down Numbers | [6] The International Workshop on Quantum Computing, Privacy and Security |
| [2] Inflection Reports Updated Financial Results for Q2 2026 and FY26 Revenue Guidance | [7] Podcast with Rob Jesudason, CEO and Founder of Serendipity Capital |
| [3] IQT Sunday Edition | [8] QpiAI Inaugurates 8-Inch Quantum Chip Foundry in Bengaluru Targeting 10,000-Qubit QPUs |
| [4] Hybrid boson sampling-neural network architecture for enhanced classification | [9] Columbia's materials center wins NSF funding for a third time |
| [5] Proving Your Crypto Inventory Is Complete Without Handing Over the Map | [10] Researchers Propose Dense Qubits Using Spin Nonlinearities |

- [11] Researchers Map Trans-Moiré Orbitals Enabling Quantum Hall Effect
- [12] Researchers Simulate Fluid Dynamics on Quantum Processor
- [13] Researchers Concentrate Magic States from Any Unknown Qubit
- [14] Researchers Cut Quantum Resource Demand for Power Grid Islanding
- [15] Researchers Cut Signal-Learning Measurements by Seven Million-Fold
- [16] Researchers Bound Quantum Eigensolver Shots to Linear Scaling
- [17] Researchers Extend Qubit Coherence Using Inductive Protection
- [18] MIT Cuts Non-Local Operations in Distributed Quantum Circuits
- [19] Virginia Team Measures 3dB Squeezing on a Photonic Chip
- [20] Researchers Build Integrated Waveguide for Ion Traps
- [21] Oregon Team Cools Ion Crystal to Ground State
- [22] Shanxi University Team Simulates 9999 Fidelity CZ Gate
- [23] Researchers Limit Decoder Costs for Faster Fault-Tolerant Computation
- [24] OpenAI funds research to try to stop AI from being used to make bioweapons
- [25] How Hurricane Lala was juiced by El Niño
- [26] How climate change created a new 'Ice Silk Road' in the Arctic
- [27] AI decodes the mathematical 'fingerprints' of famous jazz musicians, from Chick Corea to Thelonious Monk
- [28] Total solar eclipse, vaccine controversy and coffee health benefits
- [29] From Beaches to Bits to Qubits – Silicon's Journey in Quantum Computing
- [30] D-Wave Appoints Kevan Krysler to Board and Audit Committee
- [31] QpiAI Opens Quantum Chip Foundry in India, Targets 10,000-Qubit Processors
- [32] Study Deepens Understanding of Quantum Transport in Topological Materials
- [33] Scientists Propose More Realistic Benchmarks For Quantum Algorithms
- [34] Researchers Map Six-Stage STRIDE Threats Across Quantum-as-a-Service Pipeline
- [35] The Company Lab Launches CO.LAB Q Commercialization Studio to Scale Quantum Startups

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