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The Quantum Computer Built for HPC Centers

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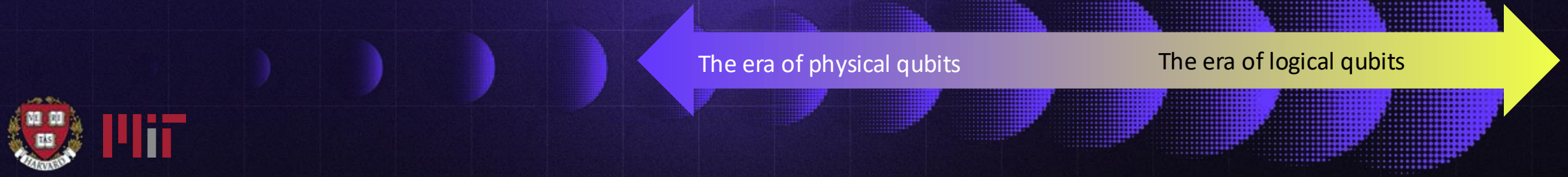
About QuEra

- Headquartered in Boston, close to Harvard and MIT.
- We build quantum computers using neutral-atoms, the most promising quantum technology.
- Deployed on the AWS cloud in November 2022.
- Engaged with several HPC centers
- Used today to solve simulation, machine learning, and optimization problems.

|QuEra>

Transitioning from Physical to Logical Qubits

Top row: Academic demonstrations at Harvard and MIT
Bottom row: Commercialization activities at QuEra



Nov ’17
Programmable quantum processor with 51 qubits

Ref: Bernien (Harvard) et al., Science 2017

Jul ’19
QuEra founded as a spin-off of Harvard-MIT

Jul ’21
First demonstration of control over 256 atoms with scientific discoveries

Ref: Ebadi (Harvard) et al., Nature 2021

Nov ‘22
QuEra neutral-atom 256-qubit machine launches on AWS, the largest quantum computer on the public cloud

Apr ’23
World record 99.5% two-qubit gate fidelity
a critical breakthrough for QEC

Ref: Evered (Harvard) et al., Nature 2023

Dec ’23
Breakthrough demonstration of algorithms with multiple logical qubits

Ref: Bluvstein (Harvard) et al., Nature 2023

Recent Success

Google

Google makes strategic investment in QuEra

UKRI UK Research and Innovation

QuEra wins award to deploy neutral-atom testbed in the UK

AIST

QuEra wins award to deploy neutral-atom computer in Japan

Why Quantum?

- The next major computing accelerator
- 2-4 years from delivering substantial business value
- Many HPC centers and users are preparing for the quantum revolution
- Very low energy consumption

Neutral Atoms: the Most Promising Approach

- **Nature's perfect qubits**
  We use atoms – all identical – pure and resistant to noise, unlike alternative approaches.

- **Easier to scale – more qubits**
  256-qubit machine today, 1000 qubits already demonstrated at Harvard lab, can scale to 10,000+ qubits without requiring interconnects.

- **Efficient**
  Reconfigurable layout and movable qubits lead to efficient problem encoding and easier error correction without connectivity limitations.

- **Operate at room temperature**
  Our room-temperature approach can scale without any cryogenics, thereby reducing complexity and footprint.

Why QuEra?

- The only company with a publicly-accessible neutral-atom quantum computer
- The commercial and scientific leader in neutral atoms
- AWS experience, Google backing

The Computer Built for HPC Centers

- The QPU is the ideal complement for the GPU.
- Easy to install. No cryogenic cooling.
- Requires less than 10 KW of power.
- Engaged in exciting collaborations on **simulation, optimization, machine learning.**
- Partnering with forward-looking HPC centers that want to prepare for the quantum revolution.

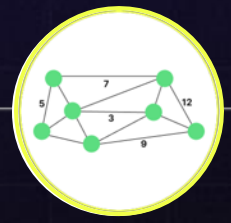
Working with QuEra

On-Premises

- Purchase a QuEra computer.
- On-site installation, support, and community development.

Cloud Access

- Secure remote access.
- Mentoring and support by QuEra scientists.



Joint Development

- Long-term collaborations with strategic customers to develop “killer applications”

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Quantum Computing Will be Critical for HPC Centers.

Are you Ready?

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