

The logo for QUERA, consisting of the word "QUERA" in a stylized, dotted font with a right-pointing arrow at the end, set against a dark blue background with a grid pattern and floating spheres.

QUERA

HPC Forum, Sep '24

The Quantum Computer Built for HPC Centers

Yuval Boger, Chief Commercial Officer
yboger@quera.com

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.
- Deploying in Japan, next to 2000-GPU H100 computer.
- Used today to solve **simulation, machine learning and optimization** problems.



Recent On-Premises Contracts

UK



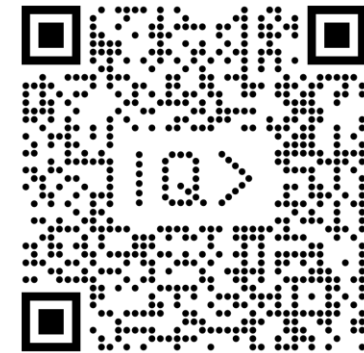
UK Research
and Innovation



Japan



AIST



Ongoing or Completed Collaborations

- DARPA
- European telecom
- DOE Labs
 - - LBL/NERSC
 - - Los Alamos
 - - Oak Ridge QCUP
- Major aircraft company (with Deloitte)
- Moody's
- National quantum programs
- Several pharma companies
- Two major energy/oil companies
- International HPC centers:
 - - Pawsey (Australia)
 - - AIST (Japan)

And several others!

Working with QuEra



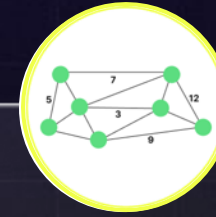
Machine Sales

- 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”

Quantum for AI

- Ideal for generating synthetic data
 - - True randomness
 - - Efficient sampling and support of complex probability distributions
 - - Efficient exploration of rare events
 - - Sampling higher-dimensional spaces
- Quantum GANs
- Quantum Machine Learning uncovers relationships that classical doesn't
- References:
 - - Large-scale quantum reservoir learning: [arXiv:2407.02553](https://arxiv.org/abs/2407.02553)
 - - ReCon: [...] Quantum Generative Adversarial Networks: [arXiv:2408.13389](https://arxiv.org/abs/2408.13389)

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.



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**Quantum Computing Will be Critical for
HPC Centers.**

Are you Ready?

Yuval Boger

yboger@quera.com