Fully Integrated Quantum Computer

Challenges and objectives

High performance computing is a high growth market, with a wide range of applications, from artificial intelligence and cyber security to drug design and resource management. As the number of applications continue to increase, so does the demand for increased computational power.

Quantum computers can provide computational power inaccessible to a classical computer. Anyon Systems offers on-premises quantum computers that can act as a “co-processor” to classical hardware in high performance computing centers, to achieve exponential computational speed for certain tasks.

Technical goals

Anyon Systems has developed powerful and cost-effective technologies for the full vertical hardware stack of a quantum computer, which have been integrated into a single, stand-alone system.

Our quantum processing units (QPU) are based on superconducting technology and include qubits with impressive performance metrics.

We have developed and manufactured a dilution refrigerator comprising a cryostat and gas handling system with ultra-low cooling temperatures to host the QPU.

Our in-house designed specialized quantum control electronics include high end FPGAs and other critical components for control and readout of the qubits.

A software development kit (SDK) allows users to interface with the quantum computer to run an algorithm. The software stack was developed with HPC in mind and provides simulation capabilities for benchmarking and verification.

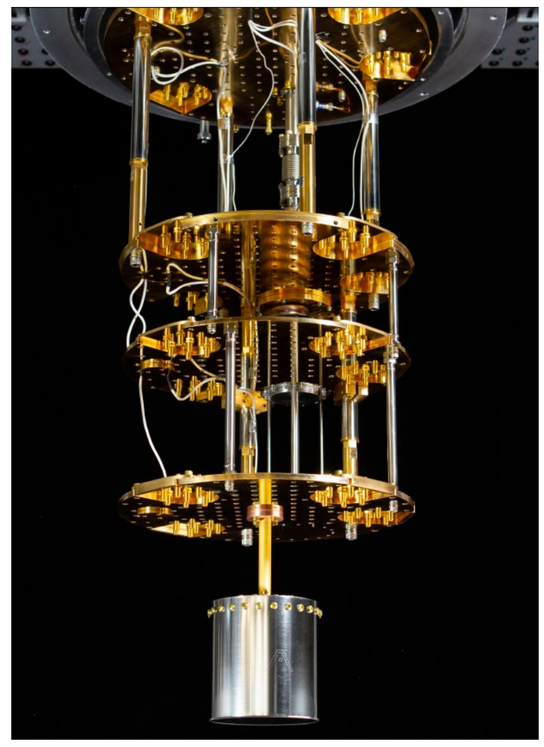
These technical goals are being realized by a team having demonstrated and measurable progress achieved to date. We continue to improve the capabilities of our fully integrated quantum computer, to push the boundaries of computational speed and performance.

Expected impact

During the past 7 years, Anyon Systems has developed the organizational capabilities enabling it to design, manufacture and fully integrate all the key components of a superconducting quantum computer.

We are one of very few companies around the world to have already sold and delivered integrated quantum computers to customers (Canadian Department of National Defense and Calcul Quebec, a leading HPC center in Canada).

Our turn-key Near-term, Intermediate-Scale, Quantum (NISQ) computers enable our clients to get started with their quantum R&D program, build eco-systems, and stay ahead of the competition.



Known partners:

- Calcul Québec
- Department of National Defence
- Ministère de l’Économie et de l’Innovation du Québec
- National Research Council of Canada
- University of Waterloo

Needed profiles:

- Early adopters of quantum computing
- HPC data centers
- Strategic investors
- Complimentary tools

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Additional information

- Full stack (hardware and software) superconducting quantum computing company
- Founded in 2015
- Location: Montreal, Waterloo
- Sold and delivered integrated quantum computers