Development of the quantum processing units (QPUs) at IQM Finland Oy

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Abstract

Realizing large-scale quantum computers is one of the most important goals of science and technology today. It will revolutionize computing technology and push the boundaries of all fields of science. As a spinout from Aalto University and VTT, IQM focuses on the realization of a quantum computer based on superconducting circuits [1,2,3]. Here, we present the fabricated devices and results achieved to date, which includes resonators with high quality factors, long qubit lifetime and 3D integration techniques.

References

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[2]   Heinsoo, Johannes, et al. "Fast and high-fidelity readout of transmon qubits in scalable QPU architecture." *Bulletin of the American Physical Society* (2022)

[3]   Landra, Alessandro, et al. "KQCircuits, an open-source package for drawing automation of superconducting quantum processors." *Bulletin of the American Physical Society* (2022).
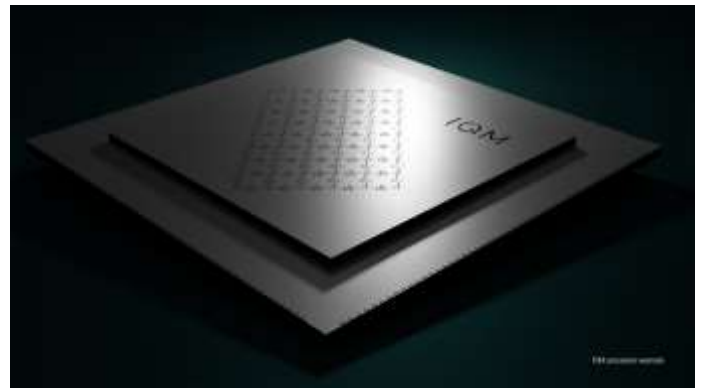
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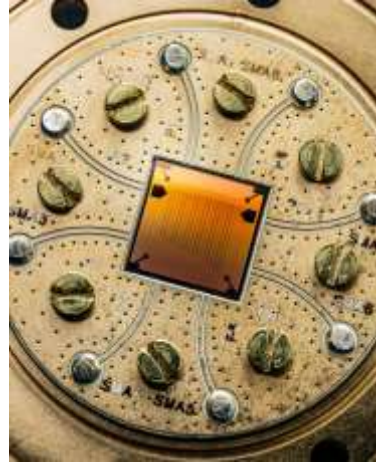
Figure 1: IQM's quantum processing unit (QPU)

Figure 2: KQCircuits to automate the design of superconducting quantum processors.