

Superconducting Quantum Computing Technology Roadmap: First Cut

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Abstract — Superconducting circuits are a promising approach to quantum computing. Both IBM and Google have presented timelines with goals of one million physical superconducting qubits. Key technologies to achieve this goal include physical qubits with sufficiently low error rates, an efficient error-correction scheme, error-corrected logical qubits, and control systems that don't exceed available refrigeration capacity. A roadmap for the key technologies is presented and assessed for feasibility.

Keywords (Index Terms) — Superconducting qubits, quantum computing, technology roadmaps, qubit control, quantum error correction

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