



Interfacing Superconducting Quantum Processors with Cryogenic Digital Circuitry

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Superconducting qubits based on Josephson junctions are one of the leading candidates for building a largescale quantum information processor. There have been significant advances in the performance of superconducting qubits over the past decade and there is currently rapid progress in the development of systems with up to tens of qubits. In order to build to yet larger systems, new techniques will need to be developed to address the overhead requirements for room-temperature electronics hardware and cryostat wiring for controlling and reading out large numbers of qubits. One approach to this challenge involves implementing more of the qubit control and readout in the low-temperature environment. I will describe our efforts on integrating superconducting classical digital circuitry with superconducting qubits for coherent control and readout.