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Automated Bringup of Superconducting Qubits SHANE CALDWELL, MICHAEL CURTIS, ANTHONY POLLORENO, MATTHEW REAGOR, ROBERT SMITH, WILLIAM ZENG, CHAD RIGETTI, Rigetti Quantum Computing — As the size and complexity of quantum integrated circuits increases, it is critical to maximize the rate at which qubits can be characterized for design feedback and calibrated for use in computation. Steps such as identifying and optimizing readout points, maximizing spectral purity of applied tones, and tuning a set of gates, often involve a lot of human interaction and interpretation. We present an automated qubit bring-up process from single-tone spectroscopy through randomized benchmarking.

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