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Abstract for an Invited Paper
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Robust, modular entanglement of two remote superconducting qubits[1]

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Superconducting quantum circuits are a leading platform for quantum computing, however scaling up to larger size systems is an open challenge. A potential pathway to scaling is provided by the modular quantum computing architecture. In this architecture, small modules consisting of a few qubits and cavity modes are optimized for a specific function, separately tested and then connected in a manner that prevents cross-talk between modules. A key primitive for this architecture is the ability to entangle two remote quantum systems that never interact directly. I will present our recent experimental realization of remote, modular entanglement of two superconducting qubits that is robust to imperfections in the connections between modules. Our implementation achieves an entanglement fidelity of 0.57 at a rate of 200 Hz. I will then discuss our efforts to improve the fidelity and generation rate in order to implement entanglement distillation.

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