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Progress towards measurement-induced entanglement of remote superconducting qubits[1] M. E. SCHWARTZ, N. ROCH, C. MACKLIN, R. VIJAY, I. SIDDIQI, QNL, UC Berkeley — Generation and distribution of entanglement are critical capabilities for quantum computation and simulation. In superconducting qubits, entanglement can be achieved via direct qubit-qubit coupling on chip. In contrast to this type of local interaction, we present experiments and simulations targeted at generating entanglement between remote (non-coupled) 3D transmons. Entanglement is achieved via joint measurement in a basis that does not project, and thus does not dephase, the odd-parity Bell manifold (|01>/|10>). The experiments rely on coherent state detection, rather than photon-counting, and are a step towards deterministic feedback stabilization of remote qubit entanglement. We also model the effects of experimental realities, including excess amplifier noise, cable insertion loss, and finite qubit coherence times.

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