1. [this talk] K Chou "Deterministic teleportation of a two-qubit quantum gate in circuit QED: Part 1"
2. J Z Blumoff: "Deterministic teleportation of a two-qubit quantum gate in circuit QED: Part 2"
3. C S Wang: "Towards entanglement purification in circuit QED"

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Deterministic teleportation of a two-qubit quantum gate in circuit QED: Part 1 K CHOU, J Z BLUMOFF, C S WANG, P REINHOLD, L FRUNZIO, M H DEVORET, L JIANG, R J SCHOELKOPF, Yale University — An important consideration for scaling quantum information processing is to minimize unwanted interactions among parts of the quantum computer. This problem is simplified in a modular architecture, where isolated registers containing a few well-controlled degrees of freedom are connected through a limited number of quantum links. To effect a quantum algorithm using this architecture, one can utilize teleported gates between modules. These gates require an ancillary entangled pair as a resource, high-fidelity local operations within the registers and measurements of the ancillary qubits, and real-time feedback. In our work, we have fulfilled these requirements in a circuit QED system to implement a CNOT operation between two qubits which do not directly interact, where the qubits are encoded in the states of two harmonic oscillators. In this first of two talks, we discuss our approach and design considerations toward realizing this teleported CNOT operation.

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