

Deterministic teleportation of a two-qubit quantum gate in circuit QED:

Part 1

and before the talk entitled

Towards entanglement purification in circuit QED

Abstract Submitted
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Deterministic teleportation of a two-qubit quantum gate in circuit QED: Part 2 J Z BLUMOFF, K CHOU, C S WANG, P REINHOLD, L FRUNZIO, M H DEVORET, L JIANG, R J SCHOELKOPF, Yale University — A modular architecture of superconducting circuit QED devices has been proposed as a path towards scalable quantum information processing. In this approach, the quantum computer consists of small, well-understood quantum registers that are networked through a limited number of quantum links. Gates via these links can be performed by quantum teleportation, requiring 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 second of two talks, we discuss our experimental results and outlook.

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