Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Optimal feedback for remote entanglement[1] LEIGH MARTIN, Whaley Research Group and QNL, University of California, Berkeley, FELIX MOTZOI, HANHAN LI, MOHAN SAROVAR, Whaley Research Group, University of California, Berkeley, IRFAN SIDDIQI, QNL, University of California, Berkeley, BIRGITTA WHALEY, Whaley Research Group, University of California, Berkeley — Recent experiments in superconducting qubits have demonstrated measurement as a resource for entanglement, even when qubits are spatially separated to a significant degree. We consider the problem of using measurement combined with feedback to deterministically entangle remote qubits. This constraint forces us to consider only local feedback, which leads us to an interesting control-theory problem. Within this constraint, we derive a series of protocols for this system which generate entanglement as quickly as possible. We find that even in the presence of expected experimental imperfections, it should be possible to achieve high-fidelity entanglement with currently accessible experimental parameters.

[1]This work is supported by the National Science Foundation

Leigh Martin
Whaley Research Group and QNL, University of California, Berkeley

Date submitted: 13 Nov 2014 Electronic form version 1.4