

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Adiabatic quantum state transfer in the presence of cavity shot noise CHRISTOPHER CHAMBERLAND, AASHISH CLERK, BILL COISH, McGill Univ — Many areas of physics rely upon adiabatic state transfer protocols, allowing a quantum state to be moved between different physical systems for storage and retrieval or state manipulation. However, these state transfer protocols suffer from dephasing and dissipation. This work goes beyond standard open-systems treatment of quantum dissipation allowing us to consider non-Markovian environments. After developing the general theoretical tools, we apply our methods to adiabatic state transfer between qubits in a driven cavity. We explicitly consider dephasing effects due to unavoidable photon shot noise. These results will be useful to ongoing experiments in circuit QED systems.

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Date submitted: 09 Jan 2014

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