Suppression of decoherence due to classical noise by dynamical decoupling[1] LUKASZ CYWINSKI, ROMAN M. LUTCHYN, CODY P. NAVE, SANKAR DAS SARMA, Condensed Matter Theory Center and Joint Quantum Institute; Department of Physics; University of Maryland — We consider a pure dephasing model in the context of superconducting qubits. We show that the coherence time T_2 can be significantly increased by the application of a series of π pulses. The most well known example, spin echo, a one pulse sequence, removes inhomogeneous broadening. However, T_2 can be further increased by applying more pulses. We discuss the experimental implications of various pulse sequences in the context of classical $1/f^\alpha$ noise in a Cooper-pair box qubit. We show that a recently proposed coherence-restoring pulse sequence [1, 2], discovered in the context of the spin-boson model, is optimal in certain regimes of parameter space. [1] G. S. Uhrig Phys. Rev. Lett. 98, 100504 (2007)
[2] B. Lee, W. M. Witzel, S. Das Sarma, arXiv:0710.1416 (2007).

Lukasz Cywinski
Condensed Matter Theory Center, University of Maryland

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