

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Robust high-fidelity universal quantum gates** RAN LI, Kent State University, FRANK GAITAN, Laboratory for Physical Sciences, University of Maryland — We show how a robust high-fidelity universal set of quantum gates can be produced using a single form of non-adiabatic rapid passage whose parameters are optimized to enhance gate fidelity and robustness. All gates in the universal set are found to: (i) operate with fidelities in the range 0.999 — 0.99999, and (ii) use control parameters requiring no more than 14-bit precision. Such precision is within the reach of commercially available arbitrary waveform generators, suggesting the feasibility of an experimental study of this approach to high-fidelity quantum control.

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Date submitted: 16 Nov 2010

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