Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Error correction in adiabatic quantum computation KEVIN YOUNG, MOHAN SAROVAR, ROBIN BLUME-KOHOUT, Sandia National Laboratories, SANDIA NATIONAL LABORATORIES TEAM — In conventional quantum computing models (e.g. the circuit-model) it is well understood that error suppression techniques by themselves are insufficient for fault-tolerant quantum computing. From a thermodynamic perspective this is because error suppression alone does not provide a mechanism to remove the entropy generated by errors from the encoded system . Since the thermodynamic argument is independent of the computational model it is expected that error suppression alone is insufficient for fault-tolerant quantum computing in the adiabatic quantum computing (AQC) model also. In this talk we provide a scheme for performing error correction for AQC and discuss the differences between our method and those used in quantum circuit model implementations.

Kevin Young
Sandia National Laboratories

Date submitted: 10 Nov 2012 Electronic form version 1.4