Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Lindbladians with multiple steady states: theory and applications
VICTOR V. ALBERT, Yale University, BARRY BRADLYN, Princeton University, MARTIN FRAAS, KU Leuven, LIANG JIANG, Yale University — Lindbladians, one of the simplest extensions of Hamiltonian-based quantum mechanics, are used to describe decay and decoherence of a quantum system induced by the system's environment. While traditionally viewed as detrimental to fragile quantum properties, a tunable environment offers the ability to drive the system toward steady-state subspaces that can store, protect, and process quantum information. This poster reviews recent results about Lindbladians with multiple steady states. These results include statements about symmetries, the dependence of the infinite-time state on initial state, effects of Hamiltonian perturbations, the energy scale of leakage out of the steady-state subspace, generalizations of Berry's phase, and extensions of the quantum geometric tensor. The results will be presented using several examples of continuous-variable quantum computation using cat-codes.

Victor V. Albert
Yale University

Date submitted: 11 Nov 2016 Electronic form version 1.4