

Abstract. This talk is based on a joint work with Lev-Arcady Sellem, Philippe Campagne-Ibarcq, Mazyar Mirrahimi and Alain Sarlette: <https://arxiv.org/abs/2203.16836>

Based on the stabilizer formalism underlying Quantum Error Correction (QEC), the design of an original Lindblad master equation for the density operator of a quantum harmonic oscillator is proposed. This Lindblad dynamics stabilizes exactly the finite-energy grid states introduced in 2001 by Gottesman, Kitaev and Preskill for quantum computation. Stabilization results from an exponential Lyapunov function with an explicit lower-bound on the convergence rate. Numerical simulations indicate the potential interest of such autonomous QEC in presence of non-negligible photon-losses.