

Stabilization of a dissipative cat-qubit

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A dynamically protected cat-qubit is an open quantum system that stabilizes a two-dimensional subspace (called code space) of a quantum harmonic oscillator and shows very promising robustness to noise. Experimental realizations of cat-qubits rely on reservoir engineering, a method of coupling a high-quality cavity with a dissipative cavity. In this talk, after an introduction to the mathematics of open quantum systems, we will present a generalized LaSalle invariance principle to prove the long-time convergence of a cat-qubit to the code space. This talk is based on a collaboration with Pierre Rouchon and Lev-Arcady Sellem [1]

- [1] R. Robin, P. Rouchon, L.-A. Sellem. *Convergence of bipartite open quantum systems stabilized by reservoir engineering*, 2023. doi :10.48550/arXiv.2311.10037.

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