

Non-Hermitian topology in monitored quantum circuits

Apoorv Tiwari

KTH, Sweden

apoorvt@kth.se

We demonstrate that genuinely non-Hermitian topological phases and corresponding topological phase transitions can be naturally realized in monitored quantum circuits, exemplified by the paradigmatic non-Hermitian Su-Schrieffer-Heeger model. We emulate this model by a 1D chain of spinless electrons evolving under unitary dynamics and subject to periodic measurements that are stochastically invoked. The non-Hermitian topology is visible in topological invariants adapted to the context of monitored circuits. For instance, the topological phase diagram of the monitored realization of the non-Hermitian Su-Schrieffer-Heeger model is obtained from the biorthogonal polarization computed from an effective Hamiltonian of the monitored system. Importantly, our monitored circuit realization allows direct access to steady state biorthogonal expectation values of generic observables, and hence, to measure physical properties of a genuine non-Hermitian model. We expect our results to be applicable more generally to a wide range of models that host non-Hermitian topological phases