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Title: Dynamics of monitored SSH Model in Krylov Space:

From Complexity to Quantum Fisher Information

Abstract:

We have investigate the dynamics of a non-Hermitian Su-Schrieffer–Heeger model that arises out of the no-click limit of a monitored SSH model in the Krylov space. We find that the saturation timescale of the complexity associated with the spread of the state in the Krylov subspace increases with the measurement rate, and late time behaviour differs across the PT symmetry transition point. Furthermore, extending the notion of this complexity for subsystems in Krylov space, we find that the scaling of its late time value with subsystem size shows a discontinuous jump across the PT transition point, indicating that it can be used as a suitable order parameter for such transition but not for the measurement-induced transition. Finally, we show that the measurement-induced transition can be detected using a generalized measure in the Krylov subspace, which contains information about the correlation landscape, such as Quantum Fisher information, which also possesses some structural similarity with the complexity functional.