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Title: Quantum simulation of typical non-Hermitian Hamiltonians

Abstract: In this talk, we will introduce our recent works to simulate typical non-Hermitian quantum two-level systems by linear combinations of unitaries (LCU), including pseudo-Hermitian, τ -anti-pseudo-Hermitian, (anti) PT-symmetric systems, etc. We develop the PT and pseudo-Hermitian symmetries to arbitrary-phase-symmetry (or anyonic symmetries), and investigate how to simulate them by LCU, enabling implementations and experimental investigations of novel properties on small quantum devices and near-term quantum computers. At last, we will give a brief introduction of our non-Hermitian generalization of quantum entropy.

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