

OpenQMBP2023: New perspectives in the out-of-equilibrium dynamics of open many-body quantum systems



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Monitored Fermions: Phenomenology, Effective Theory and Dark State Phase Transitions

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Monitored Fermions provide a rich playground for the study of entanglement phase transitions in non-unitary quantum dynamics. We will discuss the phenomenology of entanglement transitions in several classes of monitored Hamiltonian systems and in fermion circuits and introduce effective theories describing both setups. We will then utilize adaptive feedback to reduce the configurational entropy of random measurement outcomes in the wave function ensemble. In short-range correlated, area law phases, each wave function is then steered into a unique dark- or absorbing state with macroscopic order, replacing the mixed stationary state of the unconditioned ensemble. This scheme creates a link between measurement-induced phase transitions and new forms of quantum absorbing state transitions.

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