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Quantum dynamics and entanglement in open systems

Thursday, June 5, 2025 9:30 AM (1h 30m)

I will discuss Page-curve entanglement dynamics between a system and its environment under various scenarios. In particular, I will discuss an analytically tractable model of a gas of noninteracting fermions on a lattice that is released from a box into the vacuum [1]. I will then discuss the dynamics of entanglement in a one-dimensional XXZ spin-1/2 chain [2], with and without integrability-breaking interactions, that is connected to a bath. Finally, I will discuss quantum dynamics when particles are injected into systems that are either subjected to dephasing mechanisms or are themselves interacting [3].

[1] M. Saha, M. Kulkarni, A. Dhar, Phys. Rev. Lett. 133, 230402 (2024)

[2] T. Ray, A. Dhar, M. Kulkarni, arXiv:2504.14675 (2025)

[3] T. Ray, K. Ganguly, M. Kulkarni, B. Agarwalla (manuscript in preparation)

Presenter: KULKARNI, Manas