

Quantum energy teleportation and information teleportation tradeoff in the ground state of Kitaev model

SEMINAR

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PAMU SEMINAR ROOM

The quantum energy teleportation protocol (QET), first introduced in 2008 by M. Hota, demonstrates the method of extracting energy locally (on a system of spins on a lattice) using quantum vacuum fluctuation. However, due to passivity condition, it is not possible to extract energy via any such local protocol. The QET protocol requires entanglement in the ground state of the many-body Hamiltonian as a resource, shared between distant parties (who are in possession of some of the spins), for example Alice and Bob. Alice first measures her subsystem, which causes injection of energy locally. Alice then classically communicates the measurement result to Bob. Bob, upon receiving the measurement outcome, devises a strategy to extract maximum energy locally. A trade-off relation between QET and Quantum Information Teleportation (QIT) has been discussed in the literature in the recent times in the context of non-interacting systems. In this non-interacting scenario, the second law of information thermodynamics plays an important role to achieve an operational upper bound on the energy extracted via QET. Given this background, I will try to discuss about our ongoing effort to extend this idea in the case of interacting Kitaev spin chain.

[Joint (ongoing) work with Sanam Khan]

Everyone is invited to attend