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Trends of quantum correlation in many-body systems under closed and open dynamics

Quantum correlations have been shown to be useful resources for a variety of quantum information and computational tasks. Generation of quantum correlations in composite systems requires interactions between its subparts and hence strongly interacting systems, such as quantum spin chains, form natural resources of creating quantum correlations. I will discuss about our recent results which extend the idea of localizable entanglement in a multipartite domain and will show that such multipartite entanglement measure can characterize the critical phenomena of an one-dimensional (1D) quantum spin model. I will also report that quantum correlation measure can correctly identify a new phase present in an 1D Fermi gas on a lattice with the introduction of an alternating chemical potential. I will then talk about the trends of quantum correlations in such system, under closed and open dynamics. Finally, I will show that bipartite entanglement can be frozen over time with a proper choice of the many-body substrate, which is in contact with the environment via a repetitive interaction.