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Title: Entanglement Hamiltonians in quantum many-body systems

Abstract: Understanding the structure of entanglement in quantum many-body systems, both in and out of equilibrium, has been a long-standing goal of the last two decades. It has been routinely characterized via the Renyi entanglement entropies, which provide information about the moments of the reduced density matrix. Despite their success as a measure of overall entanglement, they leave many questions about the precise structure of the reduced state unanswered. To fill this gap, one could study the entanglement Hamiltonian, which is nothing but the logarithm of the reduced density matrix. It turns out that, under simple assumptions about the underlying state, this operator has a remarkably universal structure. In particular, it is local and in various situations can be written as a simple deformation of the physical Hamiltonian. In this talk I will give a review of this topic, highlighting exact theoretical results as well as recent breakthroughs in experiments.