

Title: Determining a local Hamiltonian from a single eigenstate

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Abstract: <p>I'll ask whether the knowledge of a single eigenstate of a local lattice Hamiltonian is sufficient to uniquely determine the Hamiltonian. I'll present evidence that the answer is yes for generic local Hamiltonians, given either the ground state or an excited state. In fact, knowing only the correlation functions of local observables with respect to the eigenstate appears generically sufficient to exactly recover both the eigenstate and the Hamiltonian, with efficient numerical algorithms. I may also comment on the extension of these ideas to the continuum, pose questions about the behavior of generic local spin systems, or discuss the question of what happens if you don't know a preferred factorization of the Hilbert space.</p>

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