

Abstract Submitted
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Global and short-range entanglement properties in excited, many-body localized spin chains COLIN WEST, TZU-CHIEH WEI, State Univ of NY- Stony Brook — Many-body localization is a manifestation of the violation of the eigenstate thermalization hypothesis. As one of many characteristic features, eigenstates in a many-body localized regime have been observed to obey an area law in the scaling of the entanglement entropy. Consequently, such states can be efficiently represented by matrix product states (MPS). Here, we use the SIMPS algorithm proposed by Yu, Pekker, and Clark to numerically access these excited states in spin chains with disorder, and study them from the perspective of their global and short range entanglement properties, as well as through other local observables. We compare the behavior across excited states as the strength of disorder varies.

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