Abstract Submitted
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Ergodicity and symmetry breaking in disordered spin chains with non-Abelian on-site symmetry.[1] ABHISHODH PRAKASH, SRIRAM GANESHAN, LUKASZ FIDKOWSKI, TZU-CHIEH WEI, State Univ of NY- Stony Brook — We study the eigenstate phasesof disordered spin chains with on-site non-Abelian symmetry. We develop a general formalism based on standard results from group theory to construct local spin Hamiltonians invariant under any on-site symmetry. We then specialize to the case of the simplest non-Abelian group, S_3, and numerically study a particular two parameter spin-1 Hamiltonian. Within the accuracy of our numerical analysis, we observe three distinct regions in the two-parameter space of our Hamiltonian. These are distinguished by different behaviors of the entanglement scaling of eigenvectors, their violation or not of the eigenstate thermalization hypothesis (ETH), as well as the Edwards-Anderson like order parameter. These regions are consistent with three possible phases listed by Potter et al.[arxiv:1605.03601] namely thermal/ ergodic, many body localized (MBL) and quantum critical glass (QCG) phases. Nevertheless, we cannot rule out finite size quantum critical cone like effects, especially in the QCG-like region.

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