Topology of one dimensional quantum systems out of equilibrium

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We study the topological properties of one dimensional systems undergoing unitary time evolution. We show that symmetries possessed both by the initial wavefunction and by the Hamiltonian at all times may not be present in the time-dependent wavefunction – a phenomenon which we dub "dynamically-induced symmetry breaking". This leads to the possibility of a time-varying bulk index after quenching within non-interacting gapped topological phases. The consequences are observable experimentally through particle transport measurements [1].

[1] M. McGinley and N. R. Cooper, arXiv:1804.05756