

Non-Equilibrium Properties of Topological Materials

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We will give an overview of the dynamics of exemplary one and two dimensional topological materials out of equilibrium. Firstly using out-of-time order correlators we show that topologically protected edge states can cause dynamical scarring which prevents the scrambling of information. We also see a dynamical analogue of the bulk-boundary correspondence in the Loschmidt echo following quenches. We will also review some results for string order parameters, entanglement entropy, and dynamical quantum phase transitions; considering in what way these are connected - or not. Generalisations to materials with large topological indices and higher order topology will also be demonstrated. Finally we will discuss the concept of dynamical order in this context.