ICTS Skype Seminar

Title : The Fate of Bulk Boundary Correspondence in Out of Equilibrium Non-Interacting Topological Quantum Many-Body Systems

Speaker : Utso Bhattacharya, Indian Institute of Technology, Kanpur

Date : Tuesday, January 8, 2019

Time : 10:00 AM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : Recently, there has been a huge interest in the out of equilibrium dynamics of topological quantum many-body systems. Here, we explore the dynamics of the paradigmatic Haldane model with higher neighbor hoppings induced by global quantum quenches (sudden and slow) between topological and non-topological phases. We show that although the dynamical bulk Chern number remains invariant, the edge currents relax towards new equilibrium values, and that there is light-cone like spreading of the currents into the bulk. Whereas, in one dimensional non-interacting topological systems, 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 which leads to the possibility of a time-varying bulk index and the generation of charge and heat currents. We also investigate the effects of temperature on the topology of such systems.