

ICTS Seminar

Title : How to systematically mix symmetry and topology in a condensed matter system

Speaker : Naren Manjunath, University of Maryland College Park

Date : Friday, January 24, 2020

Time : 11:30 AM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Symmetry-enriched topological order (SET order) refers to the topological phases that arise when a symmetry is imposed on a topologically ordered phase of matter (a system of anyons). Many well-studied condensed matter systems such as the fractional quantum Hall states have anyonic excitations and come with a symmetry as part of their definition. Therefore it is appropriate to study them as SET phases. In this talk, we will introduce the mathematical object underlying SET phases and use it to understand the two features which give rise to the classification of such phases: the nature of symmetry fractionalization in the SET, and the properties of symmetry defects. We will consider different symmetries (such as charge conservation and lattice symmetries) as well as different anyon models (e.g. the bosonic Laughlin states and the toric code), and illustrate the predictions of the theory in these cases.