

ICTS Condensed Matter/QFT Seminar

Title : Duality and bosonization of (2+1)d Majorana fermions

Speaker : Ashvin Vishwanath, Harvard University, USA

Date : Wednesday, March 15, 2017

Time : 11:00 AM

Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore

Abstract : Majorana fermions, neutral fermions that are their own antiparticles, have been of great interest recently in condensed matter physics. While the physics of weakly interacting Majorana fermions is readily described, the effect of strong interactions requires the development of additional nonperturbative tools. A particularly useful tool in other contexts has been duality, which relates weak and strong coupling behaviors of two theories. For Dirac fermions, a dual description can be constructed using a flux attachment procedure. This procedure however, cannot obviously be generalized to the case of neutral Majorana fermions, which call for a different approach. In this talk, I will discuss an alternate construction of a dual bosonic description of Majorana fermions in (2+1)d, and point out how some strong coupling phases can be described in terms of the new variables.