ICTS Skype Seminar

Title : Random field Ising model in the absence and presence of a uniform magnetic field: Ground states, Scaling properties and non-Porod behavior

Speaker : Manoj Kumar, Jawaharlal Nehru University, New Delhi

Date : Wednesday, 20 December 2017

Time : 3:00 PM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : We study the random field Ising model (RFIM) in the absence and presence of an external magnetic field h. A computationally efficient graph-cut method is used to study ground state (GS) morphologies of this model which enables us to obtain comprehensive numerical results on large-size systems. We obtain the critical properties from these morphologies and analyze them by computing correlation functions and structure factors. These quantities enable us to precisely evaluate characteristic properties, e.g., scaling functions, roughness exponents, fractal dimensions. In presence of an external field h, we study GS morphologies for three different disorder types: Gaussian, uniform and bimodal, and also compute the cluster-size distributions which are scale-free at criticality. We found that the corresponding scaling function is universal for all disorder types and independent of h.