PROBABILITY SEMINAR SERIES

TOPIC: Stability of Phase Transitions Under Discretization

SPEAKER: Roberto Fernández, Utrecht University

TIME: 11:00am-12:00pm, Tuesday, March 22, 2016

VENUE: Room 264, Geography Building, Zhongbei Campus

ABSTRACT OF THE TALK

When simulating a continuous model it is assumed that increasingly refined discretizations lead to more faithful lattice versions. Mathematically, this fact is not automatically guaranteed. I will discuss a number of issues related to what is understood by discretization, and will present some general approach that covers point processes and many important models in statistical mechanics. The approach includes a novel criterion for the stability of phase diagrams that may lead to a purely probabilistic alternative to Pirogov-Sinai theory.

BIOGRAPHY

Roberto Fernández is a Chair Professor in Stochastics at Utrecht University. His main research is mathematical statistical mechanics (classical and quantum). In this field Professor Fernandez has worked on rigorous determination of critical exponents, non-Gibbs phenomena, uniqueness criteria, convergence of cluster expansions and quantum phase diagrams. He has also works in the theory of stochastic processes, with emphasis in chains with long memory. Other topics include perfect simulation algorithms, cutoff and escape behavior in Markov processes and applications of stochastic processes to biological processes and language acquisition.