
THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE
Geometric Functional Analysis and Probability Seminar

Room 208 ,Elaine and Bram Goldsmith Building
on Thursday, Aug 06, 2015 at 11:05

please note unusual room
Balázs Ráth Budapest University of Technology

Voter model percolation

Abstract:

The voter model on \mathbb{Z}^d is a particle system that serves as a rough model for changes of opinions among social agents or, alternatively, competition between biological species occupying space. When $d \geq 3$, the set of (extremal) stationary distributions is a family of measures μ_α , for α between 0 and 1. A configuration sampled from μ_α is a strongly correlated field of 0's and 1's on \mathbb{Z}^d in which the density of 1's is α .

We consider such a configuration as a site percolation model on \mathbb{Z}^d . We prove that if $d \geq 5$, the probability of existence of an infinite percolation cluster of 1's exhibits a phase transition in α . If the voter model is allowed to have sufficiently spread-out interactions, we prove the same result for $d \geq 3$.

These results partially settle a conjecture of Bricmont, Lebowitz and Maes (1987).
Joint work with Daniel Valesin (University of Groningen)