



The University of Chicago
Department of Statistics

Seminar Series

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“Spatial Epidemics: Critical Behavior”

MONDAY, October 9, 2006 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

At each site of the integer lattice in d dimensions is a population of size N . A spatial epidemic evolves according to the following rules: (1) An infected individual i at site x may infect susceptible individuals j only at neighboring sites. (2) The probability that i infects j is $p = p_N$. (3) Infected individuals remain infected for one unit of time. There are two variants of the model: (A) In the SIS variant, infected individuals, upon recovery, become once again susceptible. (B) In the SIR variant, infected individuals recover and then are immune from further infection for the duration of the epidemic. We will discuss the progression of the epidemics at criticality, that is, when the infection probability is $p_N = 1/(2dN)$. In particular, we will answer the following question: If at time 0 there are N^α infectious individuals at site 0 and none elsewhere, how far will the epidemic spread before dying out?