

EE/ACMS 80676: Stochastic Geometry for Wireless Networks

Instructor: Prof. Martin Haenggi, 274 Fitzpatrick, mhaenggi@nd.edu

CRN: TBD

Lecture: MW, 75min

Offered: Alternate Years

Textbook: Martin Haenggi, *Stochastic Geometry for Wireless Networks*, Cambridge University Press, 2012.

Description

This course gives an introduction to stochastic geometry and spatial statistics and discusses applications in wireless networking, such as interference characterization, connectivity, and coverage. In the first part, topics include the description of point processes and an introduction to commonly used models, Laplace and probability generating functionals, moment measures, theory of marked point processes, and Palm theory. The second part covers branching processes, bond and site percolation, random geometric graphs and continuum percolation, and connectivity and coverage problems.

Prerequisites: Basic knowledge of probability and stochastic processes, as acquired, for example, in courses such as EE 60573 or ACMS 60850.

Software: For the applications and homework, the statistical software R is used, in particular its spatial statistics package `spatstat`.