Stanford University
Departments of Mathematics and Statistics

Probability Seminar

*** Extra Seminar: Special Time ***

3:15pm, Monday, February 10, 2020
Sequoia Hall Room 200

Refreshments served afterward at 4pm in the Lounge.

Speaker: Omer Bobrowski, *Technion, Israel*

Title: Topological Phase Transitions in Random Geometric Complexes

Abstract:

Connectivity and percolation are two well studied phenomena in random graphs. In this talk we will discuss higher-dimensional analogues of connectivity and percolation that occur in random simplicial complexes. Simplicial complexes are a natural generalization of graphs, that consist of vertices, edges, triangles, tetrahedra, and higher-dimensional simplexes. We will mainly focus on random geometric complexes. These complexes are generated by taking the vertices to be a random point process, and adding simplexes according to their geometric configuration. Our generalized notions of connectivity and percolation use the language of homology–an algebraic-topological structure representing cycles of different dimensions. In this talk we will discuss recent results analyzing phase transitions related to these topological phenomena.