Probability Abstracts

Eviatar Procaccia:

Title:

Extremal points and sensitivity of the harmonic measure.

Abstract:

How sensitive is the harmonic measure of a point with respect to removal of another point for some arbitrary possibly non connected set in Z^d? We show that in dimension 2 there is a uniform multiplicative bound and in higher dimensions it is unbounded. Using the uniform bound, one can give sharp exponential lower bound for the harmonic measure of a point as a function of the cardinality of the set in Z^2.

Based on joint work with Yam Bernet, Gady Kozma, Zhenhao Cai and Yuan Zhang\

Arthur Blanc-Renaudie:

Title :

Scaling limit of critical hypercube percolation.

Abstract:

We study the connected components in critical percolation on the Hamming hypercube $\{0,1\}^m$. We show that their sizes, properly rescaled, converge in distribution, and that, considered as rescaled metric measure spaces with the graph distance, they converge in distribution with respect to the Gromov--Hausdorff--Prokhorov topology. The corresponding limits are as in critical Erdős--Rényi random graphs.

Based on joint work with Nicolas Broutin and Asaf Nachmias.

Oren Yakir:

Title: Random Weierstrass zeta-functions

Abstract:

In electrostatic terminology, an electric field of a stationary point process is a vector field whose distributional divergence is equal to the counting measure of the point process minus the Lebesgue measure. In this talk we will give a simple answer to the following question: When does a planar stationary point process generate a stationary electric field?

The talk is based on joint work with Mikhail Sodin and Aron Wennman.

Gidi Amir:

Title: Harmonic functions on groups with gradient in c0

Abstract:

An harmonic function on a graph is a function whose value at every vertex is the (weighted) average of its values at it's neighbours. The space of harmonic functions on a (Cayley graph of the) group carries many connections to the geometric and algebraic properties of the group, but is in general a complicated object and not well-understood.

One direction that was extensively and successfully pursued is the study of bounded harmonic functions, which were connected to the notion of the Poisson boundary and to the behavior of random walks on the group.

In this talk we will mainly focus on the question of which groups support a non-constant harmonic function whose gradient approaches 0 at infinity, Part of the motivation comes from a question of Gromov whether there exist amenable groups that support a non-constant harmonic function whose gradient is in lp (still widely open). In particular, we will show (roughly) how to construct an harmonic function with gradient in c0 on the 5-dimensional lamplighter, and why this is not possible on several other families of groups.

All notions will be defined in the talk.

Based on joint work with Gady Kozma and Maria Gerasimova.