Ohad Feldheim (HUJI) and Eviatar Procaccia (Texas A&M) -

Double seminar

Abstract:

Ohad Feldheim: Convergence of a quantile admission processes

Abstract: Consider the following stochastic model for a growing set. At time 0 the model consists of the singleton S = {-infty}. At every subsequent time, two i.i.d. samples, distributed according to some distribution D on R, are suggested as candidates for S. If the smaller among the two is closer to at least a fraction of r of the current elements of S (in comparison with the larger one), then it is admitted into S. How will the distribution of the members of S evolve over time as a function of r and D?

This model was suggested by Alon, Feldman, Mansour, Oren and Tennenholtz as a model for the evolution of an exclusive social group. We'll show that the empirical distribution of the elements of S converges to a (not-necessarily deterministic) limit distribution for any r and D.

This we do by relating the process to a random walk in changing environment. The analysis of this random walk involves various classical exponential concentration inequalities as well as a new general inequality concerning mean and minimum of independent random variables. Joint work with Naomi Feldheim

Eviatar Procaccia: Stabilization of Diffusion Limited Aggregation in a Wedge

Abstract: We prove a discrete Beurling estimate for the harmonic measure in a wedge in $\mathbf{Z}^2$, and use it to show that Diffusion Limited Aggregation (DLA) in a wedge of angle smaller than $\pi/4$ stabilizes. This allows to consider the infinite DLA and questions about the number of arms, growth and dimension. I will present some conjectures and open problems.