Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On *Thursday, November ,28 2024*

At *11:10 – 12:00*

In *101-*

Yinon Spinka (TAU)

will talk about

On the local convergence of random Lipschitz functions on regular trees

Abstract: A Lipschitz function on a graph G is a function f:V->Z from the vertex set of the graph to the integers which changes by at most 1 along any edge of the graph. Given a finite connected graph G, and fixing the value of the function to be 0 on at least one vertex, we may sample such a Lipschitz function unfiormly at random. What can we say about the typical height at a vertex? This depends heavily on G. For example, when G is a path of length n, and the height at one of the endpoints is fixed to be ,0 this model corresponds to a simple random walk with unfiorm increments in ,{1,0,1-} and hence the height at the opposite endpoint of the path is typically of order sqrt(n). In this talk, we consider the case when G is a d-regular tree of depth n, and the height at the leaves is fixed to .0 Peled, Samotij and Yehudayoff showed that the height at the root of the

tree is tight as n grows, having doubly exponentially decaying tails. We study the question of whether the distribution of the height at the root converges as n tends to infinity. It turns out that the answer depends on d, with a phase transition occurring between d=7 and d=8. We explain the reasons for this and outline some details of the proof. Joint with Nathaniel Butler, Kesav Krishnan and Gourab Ray.