Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On *Thursday, June ,11 2026*

At *11:10 – 12:00*

In *101-*

Ilan Hirshberg

will talk about

Long and thin covers and crossed product C*-algebras

Abstract: Nuclear dimension, introduced by Winter and Zacharias, is an invariant for C*-algebras which generalizes covering dimension for compact Hausdorff spaces, and plays an important role in structure theory for amenable C*-algebras. It is usually mainly interesting to show that it is finite, as opposed to computing its actual value. Given an action of a group G on a locally compact Hausdorff space X, one forms the crossed product C*-algebra C_0(X) \rtimes G; this construction has been heavily studied in the field.

I will discuss joint work with Jianchao Wu, in which we find bounds on the nuclear dimension of nuclear dimension of the crossed product for a large class

of group actions, including arbitrary actions of finitely generated virtually nilpotent groups on finite dimensional spaces and certain boundary actions of hyperbolic groups. This involves introducing a notion of "long and thin covers" which serves as the appropriate generalization of Rokhlin-type towers for non-free actions. As another application of the result, we generalize a result of Joseph and construct a family of profinite actions of wreath products of finite abelian groups by Z^d which are allosteric (that is, are minimal and topologically free, but not essentially free, meaning that fixed points sets are meager but have non-zero measure with respect to the unique invariant measure), and show that the resulting crossed product are well behaved from the perspective of structure and classfiication of C*-algebras.

As the paper is rather long, in the talk I will just give an overview of some of the definitions and techniques, intended for people from dynamical systems who are not experts in C*-algebras.