

Department of Mathematics, BGU

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# BGU Probability and Ergodic Theory (PET) seminar

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*On Thursday, February, 1 2024*

*At 11:10 – 12:00*

*In 101-*

Yair Glasner (BGU)

will talk about

## **Finer Topologies and Stronger Rigidity for some Higher Rank Lattices**

Abstract: (A joint work with Waltraud Lederle) In order to avoid technicalities I will focus on one specific example for a higher  $\mathbb{Q}$ -rank lattice: the group  $\Gamma = \mathrm{SL}_3(\mathbb{Z})$ . This group exhibits strong rigidity properties, some of which are naturally expressed in topological terms. For example, one of the earliest rigidity results, the congruence subgroup property which was established independently by Mennicke and Bass-Milnor-Serre, can be expressed as an equality between two group topologies on  $\Gamma$ : The profinite and the congruence topologies. Margulis' celebrated normal subgroup theorem can be thought of as the statement that even the normal topology coincides with these two. Here the normal topology is defined by taking all infinite normal subgroups as a basis of identity neighborhoods for a topology

on  $\Gamma$ . Together with Waltraud Lederle we introduce an a-priori much finer topology on  $\Gamma$  called the boomerang topology and show that in fact even this topology coincides with the congruence topology. As a result we obtain a generalization of a rigidity theorem for probability measure preserving actions due to Nevo-Stuck-Zimmer.