

Department of Mathematics, BGU

BGU Probability and Ergodic Theory
(PET) seminar

On Thursday, January ,22 2026

At 11:10 – 12:00

In 101-

Amit Levinson-Sela (BGU)

will talk about

Redundant generation of groups acting on trees

Abstract:

Redundant generation of groups acting on trees

Gaussian elimination iteratively applies row operations to move from some n -tuple S generating an m -dimensional vector subspace $V \subseteq \mathbb{F}^k$ ($n > m$) to another generating tuple, S' , which contains m distinguished vectors that are guaranteed to generate V . Thus one can always read the dimension off of a row-equivalent generating tuple, regardless of the starting point. It is natural to generalize this from vector spaces to groups: given a generating set S of size n for a group G with $\text{rank}(G) = m$, $n > m$, can one apply Nielsen transformations to arrive at a generating set S' which admits a generating proper subset of size m ? A generating set S for which we can do so is called redundant. For $G = \text{PSL}_2(\mathbb{Q}_p)$ (which acts on its Bruhat-Tits tree), we prove redundancy for large classes of generating sets. In order to do so we will characterize the obstacles to S generating a dense subgroup of G , describe “typical” dense subgroups, and demonstrate a method to find such subgroups via Nielsen transformations.