Department of Mathematics, BGU

Colloquium

On *Tuesday, November ,8 2022*

At *14:30 − 15:30*

In *Math 101-*

Itay Glazer (Northwestern University)

will talk about

Word maps and word measures: probability and geometry

Abstract: Given a word w in a free group F_r on a set of r elements (e.g. the commutator word w=xyx^(-1)y^(-1)), and a group G, one can associate a word map w:G^r−>G. For g in G, it is natural to ask whether the equation w(x1,...,xr)=g has a solution in G^r, and to estimate the "size" of this solution set, in a suitable sense. When G is finite, or more generally a compact group, this becomes a probabilistic problem of analyzing the distribution of w(x_1,...,x_r), for Haar-random elements x_1,...,x_r in G. When G is an algebraic group, such as SLn(C), it is natural to study the geometry of the fibers of w. Such problems have been extensively studied in the last few decades, in various settings such as finite simple groups, compact p-adic groups, compact Lie groups, simple algebraic groups, and arithmetic groups. Analogous problems have been studied for Lie algebra word maps as well. In this talk, I will mention some of these results, and explain the tight connections between the probabilistic and algebraic approaches.

Based on joint works with Yotam Hendel and Nir Avni.