Department of Mathematics, BGU

Algebraic Geometry and Number Theory

On *Wednesday, April ,29 2015*

At *15:00 − 16:30*

In *Math 101-*

Mark Shusterman (Tel Aviv University)

will talk about

Free profinite subgroups and Galois representations

Abstract: The talk is going to be about the work carried out as part of my MSc thesis. Motivated by recent arithmetic results, we will consider new and improved results on the freeness of subgroups of free profinite groups: 1.The Intermediate Subgroup Theorem - A subgroup (of infinite index) in a nonabelian finitely generated free profinite group, is contained in a free profinite group of infinite rank. .2 The Verbal Subgroup Theorem - A subgroup containing the normal closure of a (finite) word in the elements of a basis for a free profinite group, is free profinite. These results shed light on several theorems in Field Arithmetic and may be combined with the twisted wreath product approach of Haran, an observation on the action of compact groups, and a rank counting argument to

prove a generalization of a result of Bary-Soroker, Fehm, and Wiese on the profinite freeness of subgroups arising from Galois representations. If time permits, we discuss applications of the tools developed to abstract/geometric group theory, and to torsion points on abelian varieties.

Please Note the Unusual Time!