Department of Mathematics, BGU

# Logic, Set Theory and Topology

**On** *Tuesday, June ,7 2016*

**At** *12:30 – 13:45*

**In** *Math 101-*

Nadav Meir (BGU)

will talk about

## Infinite products of ultrahomogeneous structures

Abstract: We will define the "lexicographic product" of two structures and show that fi both structures admit quantfiier elimination, then so does their product. As a corollary we get that nice (model theoretic) properties such as (ultra)homogeneity, stability, NIP and more are preserved under taking products.

It is clear how to iterate the product finitely many times, but we will introduce a new infinite product construction which, while not preserving quantfiier elimination, does preserve (ultra)homogeneity. As time allows, we will use this to give a negative answer to the last open question from a paper by A. Hasson, M. Kojman and A. Onshuus who asked "Is there a rigid elementarily indivisible* structure?''

As time allows, we will introduce an approach for using the lexicographic product to generalize a result by Lachlan and Shelah to the following: given a finite relational language L, denote by H(L) the class of countable ultrahomogeneous stable L-structures. For M in H(L), define the rank of M to be the maximum

value of CR(p,2) where p is a complete 1-type and CR(p,2) is the Shelah's complete rank. There is a unfiorm finite bound on the rank of M, where M ranges over H(L). The result was proven by Lachlan and Shelah for L binary and proven in general by Lachlan using the Classfiication Theorem for finite simple groups.

- A structure M is said to be elementarily indivisible structure fi for every colouring of its universe in two colours, there is a monochromatic elementary substructure N of M such that N is isomorphic to M.