

Department of Mathematics, BGU

Logic, Set Theory and Topology

On Tuesday, June ,14 2016

At 12:30 – 13:45

In Math 101-

Nadav Meir (BGU)

will talk about

Infinite products of ultrahomogeneous structures - continued

Abstract: We will define the “lexicographic product” of two structures and show that if both structures admit quantifier 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 quantifier 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 uniform 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 Classification Theorem for finite simple groups.

- A structure M is said to be elementarily indivisible structure if 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 .