

Department of Mathematics, BGU

Logic, Set Theory and Topology

On Tuesday, June ,6 2017

At 12:15 – 13:30

In Math 101-

Assaf Hasson (BGU)

will talk about

Strongly dependent henselian fields and ordered abelian groups

Abstract: The strong non-independence property was introduced by Shelah in order to capture, within the class of theories without the independence property (aka dependent theories), an analogue of the class of super-stable theories. Shelah conjectured (roughly) that any infinite field with the strong non-independence property (aka strongly dependent) is either real closed, algebraically closed or supports a definable (henselian) valuation. The conjecture was solved (Johnson) in the very special case of dp-minimal fields, and otherwise remains wide open. In fact, most experts believe the conjecture (replacing “algebraically closed” with “separably closed”) to be true of all fields without the independence property, and the algebraic division line between the two classes of fields remains unclear.

In the talk we will show that strongly dependent ordered abelian groups do have a simple algebraic characterisation, and suggest the interpretability of ordered abelian groups which are not strongly dependent as a new (not yet fully satisfactory) conjectural division line.

If time allows we will draw from the classification of strongly dependent ordered abelian groups some conclusions concerning strongly dependent henselian fields (e.g., if K is strongly dependent then any henselian valuation v – not necessarily definable – on K has strongly dependent residue field and value group).

The talk will aim to be, more or less, self-contained and little use (if any) will be made of technical model theoretic terms.

Based (mostly) on joint work with Yatir Halevi.