Department of Mathematics, BGU

Colloquium

On *Tuesday, November ,3 2015*

At *14:30 − 15:30*

In *Math 101-*

Kobi Peterzil (Hafia)

will talk about

Applications of model theory to diophantine geometry

Abstract: A family of problems in diophantine geometry has the following form: We fix a collection of "special" algebraic varieties where the 0-dimensional are called "special points". In general, fi V is a sepcial variety then the special points are Zariski dense in V, and one would like to prove the converse: If V is an irreducible algebraic variety and the special points are Zariski dense in V then V itsefl is special. Particular cases of the above are the Manin-Mumford conjecture, the Mordell-Lang conjecture, and others. In 1990's Hrushovski showed how model theoretic techniques could be applied to solve certain such problems. In 2008 Pila and Zannier developed a dffierent framework. which allows to apply model theory and especially the theory of o-minimal structures, in order to tackle questions of this nature over the complex numbers. Pila himsefl used these methods to prove some open cases of the Andre-Oort conjecture and since then there was an influx of articles which use similar techniques. At the heart of the

Pila-Zannier method lies a theorem of Pila and Wilkie on rational points on definable sets in o-minimal structures. In this survey-like talk I will describe the basic ingredients of the Pila-Zannier method and its applications, in one or two simple cases.