

Department of Mathematics, BGU

Logic, Set Theory and Topology

On *Tuesday, November 28 2017*

At *12:15 – 13:30*

In *Math 101-*

Michael Wan (BGU)

will talk about

Steps towards a model theory of almost complex geometry

Abstract: Zilber showed that a compact complex manifold M , equipped with the structure generated by the collection of all complex analytic subsets of each M^n , is well-behaved from a logical perspective, forming a *Zariski geometry* in the sense of Hrushovski and Zilber. This has led to fruitful model-theoretic developments, including a classification of definable groups, the isolation of the canonical base property, and a theory of generic automorphisms.

Motivated by this example, we will examine the possibility of emulating this theory in the setting of an *almost* complex manifold, a real manifold equipped with a smoothly-varying complex vector space structure on each tangent space. In particular, we will define the notion of a *pseudoanalytic* subset of an almost complex manifold. We develop some rudimentary almost complex analytic geometry, including an identity principle for almost complex maps, and an analysis of the singular part of a pseudoanalytic subset under some algebraic conditions.

The lack of a true algebraic theory means that geometric methods, including pseudoholomorphic curves and almost complex connections, have to pick up the slack. These results hint at routes towards an almost complex analogue of Zilber's theorem.