

LOGIC SEMINAR

Guest Speaker: Krzysztof Krupinski
University of Wroclaw, Poland

Date: Tuesday, April 9, 2024

Time: 2:00 PM

Location: 125 Hayes-Healy Bldg

Zoom URL: NA

Lecture Title:

On some applications of model theory and topological dynamics to additive combinatorics

Abstract

I will discuss a few interactions of model theory and topological dynamics with applications to additive combinatorics. I will discuss type-definable components of definable groups, which lead to model-theoretic descriptions of Bohr compactifications of groups and rings, and also to so-called locally compact models of approximate subgroups and subrings which in turn are crucial to get structural or even classification results about approximate subgroups and subrings. I will discuss my result that each approximate subring has a locally compact model, and mention some structural applications. In contrast to approximate subrings, not every approximate subgroup has a locally compact model. However, Ehud Hrushovski showed that instead it has such a model in a certain generalized sense (with morphisms replaced by quasi-homomorphisms). In order to do that, he introduced and developed local logics and definability patterns. In my recent paper with Anand Pillay, we gave a shorter and simpler construction of a generalized locally compact model, based on topological dynamics methods in a model-theoretic context. I will briefly discuss it, if time permits.

