

GeSAMT VIII

28/01/2023



Lipschitz-Saal

Mathematical Institute

Endenicher Allee 60, Bonn

11:45-12:45 Daniel Hoffmann (Münster / Dresden / Warsaw)

A bit of model theory of finite group actions

The content of the talk is based on a joint paper with Piotr Kowalski, "PAC structures as invariants of finite group actions" - a preprint is available on the personal websites of the authors. Apparently, the notion of a PAC structure is closely related to group actions by automorphisms on structures. For example, in the case of ACFA, the subfield of invariants is a pseudofinite field and encodes some properties of the whole difference field. As we study group actions of finite groups, this relation between the whole structure equipped with a group action and its substructure of invariants should be more evident. We work with structures equipped with a group action of a finite group, which are substructures of some saturated stable overstructure. Our first main result says when a structure with a group action is existentially closed - and this is encoded by the properties of the substructure of invariants. The second result gives a condition for the existence of a model companion of discussed substructures with finite group action. Then we list examples of model companions obtained by applying our general technique.

14:45-15:45 Alessandro Codenotti (Münster)

Some examples of tame dynamical systems answering questions of Glasner and Megrelishvili

Glasner and Megrelishvili have recently introduced two measures of complexity for tame dynamical systems. The first is a division of those systems into three classes: tame, tame₁ and tame₂, while the second is a countable ordinal called the beta-rank of the system. They asked whether there is an action on a dendrite that fails to be tame₁ and whether, for every countable ordinal alpha, there is a tame dynamical system of beta-rank alpha. They also asked whether there exists a tame rigid system which is not HNS and whether there exists a minimal tame rigid system which is not equicontinuous. We give a positive answer to those four questions by constructing various examples of tame systems.

16:00-17:00 Francesco Gallinaro (Freiburg)

Quasiminimality of Complex Powers

A conjecture due to Zilber predicts that the complex exponential field is quasiminimal: that is, that all subsets of the complex numbers that are definable in the language of rings expanded by a symbol for the complex exponential function are countable or cocountable. Zilber showed that this conjecture would follow from Schanuel's Conjecture and an existential closedness-type property asserting that certain systems of exponential-polynomial equations can be solved in the complex numbers; later on, Bays and Kirby were able to remove the dependence on Schanuel's Conjecture, shifting all the focus to the existence of solutions. In this talk, I will discuss recent work about the quasiminimality of a reduct of the complex exponential field, that is, the complex numbers expanded by multivalued power functions. This is joint work with Jonathan Kirby.