

GeSAMT VI

Münster-Düsseldorf Gemeinsames Seminar Algebra und Modelltheorie

Freitag den 12.11. und Samstag den 13.11. in Düsseldorf

10:30–11:10 | Beginning and tea in lecture hall 5F

Friday, 12.11.

Talks in lecture hall 5F

11:10–12:25 | Pablo Cubides Kovacsics (Düsseldorf)

Beautiful pairs and pro-definability

I will report on a joint work with Martin Hils and Jinhe Ye in which we introduce a general notion of beautiful pairs which encompasses classical results of Poizat in the stable case and of Poizat-Baisalov in the o-minimal case. We obtain an Ax-Kochen-Ershov type result, showing that beautiful pairs of certain classes of henselian valued fields are essentially controlled by the corresponding beautiful pairs of the value group and residue field.

As an application, we infer strict pro-definability of various spaces of definable types. For simplicity, the talk will mainly focus on the case of algebraically closed non-trivially valued fields, where the associated spaces of definable types have a concrete geometric interpretation, e.g., the stable completion introduced by Hrushovski-Loeser, and a model theoretic analogue of the Huber analytification of an algebraic variety.

Lunch

Talks in seminar room 25.22.U1-34

14:35 – 15:50 | Anna-Maria Ammer (Münster)

First-order theory of free generalized n -gons

We extend the results of Hyttinen and Paolini on free projective planes to free generalized n -gons. We show that the theory of free generalized n -gons corresponds to the theory of open generalized n -gons and is complete. We further characterize the elementary substructure relation and show that the theory of open generalized n -gons does not have a prime model.

Longer coffee break

16:30 – 17:45 | Philip Dittmann (Dresden)

Existential rank and essential dimension of definable sets

Several natural measures of complexity can be attached to an existentially definable (“diophantine”) subset of a field. One of these is the minimal number of existential quantifiers required to define it, while others are of a more geometric nature. I shall define these measures and discuss interesting interactions and behaviours, some of which depend on properties of the field (e.g. imperfection and ampleness). We shall see for instance that the set of n -tuples of field elements consisting of n squares is usually definable with a single quantifier, but not always. I will also discuss connections with Hilbert’s 10th Problem and a number of open questions. This is joint work with Nicolas Daans and Arno Fehm.

GeSAMT VI

Saturday, 13.11.

Talks in lecture hall 5G

09:25 – 10:40 | Tingxiang Zou (Münster)

Generalized measurable H -structures

Starting from a sufficiently saturated first-order structure M whose theory T has SU-rank 1, we can expand it with a dense codense algebraically independent set H and the resulting structure (M, H) , called an H -structure, is super-simple of SU-rank ω . In this talk we will show that if we assume that in addition T is measurable, then (M, H) is generalized measurable. This is achieved by a detailed analysis of definable sets in H -structures. In particular we also show that SU-rank is definable in (M, H) whenever M has SU-rank 1. This is joint work with Alex Berenstein and Darío García.

Coffee break

11:10 – 12:25 | Nadja Valentin (Düsseldorf)

Non-degenerate n -linear forms and n -dependence

In a joint work with Chernikov we have shown that the structure of non-degenerate bilinear forms on an NIP field are 2-dependent. One of the main ingredients is a composition lemma, which issues that NIP formulas remain 2-dependent when precomposed with binary functions. In this talk, we will discuss possible generalizations of non-degeneracy for n -linear forms and the decomposition lemma, present the structure of non-degenerate n -linear forms and draw the connection to n -dependent structures. (joint work with Chernikov)

Lunch break

14:35 – 15:50 | Jan Dobrowolski (Münster)

Neostability in positive logic

I will start with a brief overview of the results by I. Ben-Yaacov on simplicity in positive logic from the early 2000s, and then I will discuss a joint work with M. Kamsma on NSOP1 positive theories and a work in progress with R. Mennuni on NIP and NTP2 positive theories. I will aim to explain the differences in nature of the difficulties in generalising first-order neostability arising in the two projects.

Final coffee