

Workshop: “On Stability Related Issues”  
October 15 - 16, 2009. Complexo  
Interdisciplinar da Universidade de Lisboa,  
Portugal.

Abstracts:

- Perna Juhlin (University of Notre Dame & Kurt Gödel Research Center).

Title: **Around semiminimal constructions.**

Abstract: This is a survey talk on the use of semiminimal constructions for understanding dependence in superstable theories of finite rank. We begin by defining some basic notions of geometric model theory. We then describe a way of studying modularity via semiminimal constructions in theories built from certain “irreducible sets”, and discuss our results.

- Enrique Casanovas (Universitat de Barcelona).

Title: **Tutorial on hyperimaginaries, Part I.**

- Anand Pillay (University of Leeds).

Title: **Differential equations and transcendence.**

Abstract: I will discuss various functional versions of Lindemann’s theorem that if  $x_1, \dots, x_n$  are algebraic numbers which are  $\mathbb{Q}$ -linearly independent then their exponentials  $\exp(x_1), \dots, \exp(x_n)$  are algebraically independent. The differential equations satisfied by the relevant exponential functions will play a central role in the functional cases. I will discuss both classical results due to Ax as well as some recent work with D. Bertrand.

- Prerna Juhlin (University of Notre Dame & Kurt Gödel Research Center).

**Title: Fine structure of dependence in superstable theories of finite rank.**

**Abstract:** One-based theories satisfy the property that if  $a$  depends on  $b$ , then the intersection of their algebraic closures is not equal to the algebraic closure of the empty set. Non-locally modular strongly minimal sets do not satisfy this property. It can be asked whether in a superstable theory of finite rank, an analogous property holds of sets arising in a more complicated manner using a level-construction with semiminimal sets, which are the "building blocks" of the theory. We call this analogous property the Level Dependence Property (LDP); it is equivalent to the Canonical Base Property (CBP) of Moosa and Pillay. We show that LDP holds under certain orthogonality conditions as well as under some assumptions on ranks.

In this talk I will describe how partitioning semiminimal constructions into levels aids in the fine structure analysis of dependence in superstable theories of finite rank. I will define some notions of stability theory before sketching proofs of some of our results.

- Enrique Casanovas (Universitat de Barcelona).

**Title: Tutorial on hyperimaginaries, Part II.**

- Anand Pillay (University of Leeds).

**Title: Generically stable measures in NIP theories.**

**Abstract:** This is joint work with E. Hrushovski and P. Simon and comes from a paper "Generically stable and smooth measures in NIP theories" (in preparation). Generically stable types are types which behave vis-à-vis nonforking, like types in stable theories (e.g. have totally indiscernible Morley sequences). But they do not exist in arbitrary NIP theories (such as o-minimal theories). However their measure analogues "generically stable measures", are ubiquitous in NIP theories. I will point out how the type theory generalizes to the measure context, and give examples, making key use of Keisler's "smooth measures". If I have time I will also discuss a weak version of compact domination related to the finite equivalence relation theorem.