IMUB Institut de Matemàtica

Advanced Course

Equationality and Chain Conditions

4, 11 and 18 November 2016

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A complete first-order theory is equational if every definable set is a Boolean combination of instances of equations, that is, of formulae such that the family of finite intersections of instances has the descending chain condition. Equationality, as introduced by Srour and later studied together with Pillay, is a strengthening of stability. Typical examples of equational theories are the theory of an equivalence relation with infinite many infinite classes, completions of the theory of modules over a fixed ring, algebraically closed fields of some fixed characteristic, as well as differentially closed fields of characteristic 0 and separably closed fields of finite imperfection degree. So far, the only known "natural" example of a stable non-equational theory is the free non-abelian finitely generated group, as recently shown by Sela. Proving that a particular stable theory is equational is nonetheless far from obvious, in general.

We will exhibit some of the properties of equational theories, as well as illustrate why some of the aforementioned examples are equational. We will furthermore present a recent result, in joint work with Martin Ziegler, on the equationality of the theory of proper pairs of algebraically closed fields. In characteristic 0, we show that definable sets are Boolean combination of certain definable sets, which are Kolchin-closed in the corresponding expansion DCF_0.

Place: IMUB Seminar Room

Time:

Friday, November 4	10:00 - 12:00
Friday, November 11	10:00 - 12:00
Friday, November 18	10:00 - 12:00

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