Mekler constructions in NIP and n-dependent theories (joint work with Artem Chernikov)

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Abstract

Given a so called nice graph (no triangles, no squares, for any choice of two distinct vertices there is a third vertex which is connected to one and not the other), Mekler considered the 2-nilpotent subgroup generated by the vertices of the graph in which two elements given by vertices commute if and only if there is an edge between them. These groups form an interesting collection of examples from a model theoretic point of view. It was shown that such a group is stable if and only if the corresponding graph is stable and Baudisch generalized this fact to the simple theory context. In a joint work with Chernikov, we were able to verify this result for NIP and possibly n-dependent theories. This leads to the existence of groups which are $(n+1)$-dependent but not n-dependent, providing the first algebraic objects witnessing the strictness of these hierarchy (work in progress).