Logic Seminar HUJ
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"The valuation difference rank of a difference field"

Abstract:

The theory of real places and convex valuations is a special chapter in valuation theory. An important invariant is the rank of a valuation, which has several equivalent characterizations: via the chain of ideals of the valuation ring, the chain of convex subgroups of the value group, or the chain of final segments of the value set of the value group.

In this talk, we explain how to extend these notions to valued fields with extra structure, giving a characterization completely analogous to the above, but taking into account the corresponding induced structure on the ideals, convex subgroups and final segments. For the case of an (ordered) difference field, we develop the notion of difference compatible valuations, introduce the difference rank, naturally relating it to the growth rate of the automorphism.

We analyze the difference rank in particular for isometries and ω-increasing automorphisms.

Joint work with M. Matusinski and F. Point.