

Model Theory of Fields
(Interaction between Model Theory and Field Theory)
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The difference rank of a valued difference field
(joint work with M. Matusinski and F. Point).

Abstract:

There are several equivalent characterizations of the valuation rank of an ordered field (endowed with its natural valuation). We extend the theory to the case of a difference field (respectively of an ordered difference field) and introduce the notion of difference rank. We characterize the difference rank as the quotient modulo the equivalence relation naturally induced by the automorphism (which encodes its growth rate). In analogy to the theory of convex valuations, we prove that any linearly ordered set can be realized as the difference rank of an ordered difference field.