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Title: Abstract aspects of quadratic forms

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Abstract: The relationship between Galois groups of fields with orderings and quadratic forms, established by the works of Artin-Schreier (1920's) and Witt (late 1930's) are reinforced by a seminal paper of John Milnor (1971) through the definition of a (mod 2) k -theory graded ring that "interpolates" the graded Witt ring and the cohomology ring of fields: the three graded rings constructions determine functors from the category of fields where 2 is invertible that, almost three decades later, are proved to be naturally isomorphic by the work of Voevodsky with co-authors.

Since the 1980's, have appeared many abstract approaches to the algebraic theory of quadratic forms over fields that are essentially equivalent (or dually equivalent): between them we emphasize the (first-order) theory of special groups developed by Dickmann-Miraglia.

In the present work we consider three categories which are endowed with a underlying functor into the category of "pointed" groups of exponent 2: the category of pre-special groups, a category formed by certain pointed graded rings and a category given by some pairs of profinite 2-groups and a clopen subgroup of index at most 2 and with arrows the continuous homomorphisms compatible with this additional data. We establish precise (and canonical) functorial relationship between them and explore some of its model-theoretical aspects.