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Admissible varieties of algebras.

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Abstract:

We consider the subvarieties of the variety of noncommutative Jordan algebras that admit structure theories similar to those of alternative and Jordan algebras. In the case of finite dimensional algebras examples of such varieties were considered in 1960-70-s by R.Schafer, R. Block, A. Theby and the author. Now we are trying to extend certain results on nilpotency and solvability of infinite dimensional algebras. A homogeneous variety V of noncommutative Jordan algebras we call "n-admissible" if any anticommutative algebra from V is nilpotent of index n . If any anticommutative algebra from V is locally nilpotent, we call V "locally admissible". For instance, the variety of Jordan algebras is 2-admissible, the variety of associative algebras is 3-admissible, the variety of alternative algebras is 4-admissible. We prove, in particular, that in a locally admissible variety

- Any nil algebra A of bounded degree is locally nilpotent.
- If the algebra A in the previous statement belongs to an admissible variety over a field of characteristic 0, then A is solvable.
- The nil radical of a finitely generated PI-algebra A from an admissible variety is nilpotent.
- Any finitely generated coalgebra in an admissible variety is finite dimensional.