Mikhalev, A. A.

Subalgebras of free Lie p-superalgebras. (Russian) Zbl 0646.17008

Mat. Zametki 43, No. 2, 178-191 (1988).

A Lie superalgebra $L = L_0 + L_1$ over a field F of positive characteristic p is called a p-superalgebra if L_0 is a restricted Lie algebra (= p-algebra) and

$$[y, x^p] = [[...[y, x], ...(p - times)...], x]$$

where $y \in L$, $x \in L_0$. Such superalgebras naturally arise in studying Lie superalgebras over fields of positive characteristic. The author finds a natural linear basis in a free Lie p- superalgebra, proves that any homogeneous subalgebra in such a superalgebra is itself free and shows that a homogeneous subalgebra of finite codimension in a finitely generated Lie superalgebra is finitely generated, with precise formula for the number of free generators in the free case.

This is applied to proving an analogue of G. P. Kukin's theorem on intersection of finitely generated subalgebras in free Lie algebras for free Lie superalgebras over fields of positive characteristic. The case of zero characteristic remains open.

Reviewer: Yu.A.Bakhturin

MSC:

17B70	Graded Lie (super)algebras
17B05	Structure theory for Lie algebras and superalgebras
17A70	Superalgebras

Keywords:

Lie superalgebra; restricted Lie algebra; linear basis; free Lie p- superalgebra; homogeneous subalgebra; free generators; positive characteristic