Seminar
IMECC, UNICAMP
29 September 2016, Campinas, Brazil

Varieties of superalgebras with superinvolution

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Keywords: Polynomial identity, superinvolution, growth.
2010 Mathematics Subject Classification: 16R10, 16R50.

Let A be an associative algebra over a field F of characteristic zero and let $c_n(A)$ be its sequence of codimensions. If $\mathcal{V}$ is a variety of algebras, the growth of $\mathcal{V}$ is defined as the growth of the sequence of codimensions of any algebra A generating $\mathcal{V}$, i.e., $\mathcal{V} = \mathrm{var}(A)$. A variety $\mathcal{V}$ has polynomial growth if its sequence of codimensions $c_n(\mathcal{V})$, $n = 1, 2, \ldots$, is polynomially bounded and $\mathcal{V}$ has almost polynomial growth if $c_n(\mathcal{V})$, $n = 1, 2, \ldots$, is not polynomially bounded but any proper subvariety of $\mathcal{V}$ has polynomial growth.

A celebrated theorem of Kemer (see [3]) characterizes the varieties of polynomial growth as follows. Let G be the infinite dimensional Grassmann algebra over F and UT_2 be the algebra of 2×2 upper triangular matrices over F. Then a variety of algebras $\mathcal{V}$ has polynomial growth if and only if $G, UT_2 \notin \mathcal{V}$.

I shall discuss an analogous result in the setting of superalgebras with superinvolution. If A is a finite dimensional superalgebra with superinvolution $*$ over a field of characteristic zero and $c_n^*(A)$ is its sequence of corresponding $*$-codimensions, then such a sequence is polynomially bounded if and only if the variety generated by A does not contain three explicitly described superalgebras with superinvolution (see [1]). As a consequence these algebras are the only finite dimensional superalgebras with superinvolution generating varieties of almost polynomial growth.

I shall present the classification of the subvarieties of such varieties by giving a complete list of generating finite dimensional superalgebras with superinvolution (see [2]).

References

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