Seminário de Álgebra
IMECC – UNICAMP, 16 de agosto de 2018

Specht property for the graded Jordan algebra of upper triangular matrices of order 2

Manuela da Silva Souza – UFBA/pós-doc Unicamp *

Abstract

Let A be an algebra with non-trivial polynomial identity (or simply PI-algebra) and denote by $\mathrm{Id}(A)$ the T-ideal of all its polynomial identities. In general the description of a T-ideal is a hard problem. The ideal $\mathrm{Id}(A)$ of an algebra A satisfies the Specht property if $\mathrm{Id}(A)$ itself and all T-ideals containing $\mathrm{Id}(A)$ are finitely generated as T-ideals. Kemer proved that every associative algebra over a field of characteristic 0 satisfies the Specht property. For associative algebras graded by a finite group the result remains valid. Different from the associative case, for non-associative algebras there is no general result in this direction not even when the characteristic of the field is 0. In the case of graded Lie or Jordan algebras we have experimental results, such that in [3] in which the authors proved the Specht property of $\mathrm{Id}^G(sl_2)$, the T_G-ideal of the G-graded Lie algebra of 2×2 traceless matrices graded by any group G (non trivial), or in [5] in which a similar result was achieved for B_n, the finite dimensional Jordan algebra of a non-degenerate symmetric bilinear form graded by $\mathbb{Z}_2$.

In this talk we use the finite basis property for sets to show the Specht property for the graded Jordan algebra of upper triangular matrices of order 2. This is joint work with L. Centrone and F. Martino ([1]).

References

[1] L. Centrone, F. Martino and M. da S. Souza, *Specht property for some varieties of Jordan algebras of almost polynomial growth* (submitted for publication).

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*e-mail: manuela.souza@ufba.br