

A characterization of non-matrix varieties for Jordan and alternative algebras

Vinicius Bittencourt*

*Instituto de Matemática e Estatística - Universidade de São
Paulo

Resumo

A variety \mathcal{M} of associative algebras (over a field F) is called “non-matrix” if $F_2 \notin \mathcal{M}$, where F_2 is the usual matrix algebra of second order. Concerning this definition, other equivalent characterizations for a non-matrix variety were obtained, for instance, by considering algebraic (Cekanu, 1979) and nilpotent (Mishchenko et al., 2012) elements.

However, the theory of varieties of algebras is not restricted to the class of associative algebras. In addition to the Lie algebras, among many classes of non associative algebras, we highlight the alternative and Jordan algebras. These classes of algebras have many connexions and applications to several areas of Mathematics and Physics and have a well-developed structural theory, as in the class of associative algebras.

The concept “non-matrix variety” can be reformulated for alternative or Jordan algebras and our work is to adapt, extend or generalize some results, as mentioned above, for non-matrix varieties in these classes of algebras.