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Some properties about non-associative algebras

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Abstract

By a non-associative algebra we mean a vector space equipped with a bilinear map we call the *multiplication*. We do not assume anything on this multiplication beside its bilinearity (=distributivity) ; no unit, no associativity, no commutativity. Then, we consider the collection of all non-associative algebras satisfying a chosen set of equations. For example, all the algebras such that $xx = 0$. This forms a *variety* in the sense of Universal Algebra, and can also be seen as a *category*. We can easily imagine that choosing a specific set of equations will impose to the corresponding variety some behaviours. For example, if the multiplication is trivial, i.e. $xy = 0$, then we are just working with vector spaces. The goal of this talk is to see if the converse is possible. In other words, can we deduce equationnal consequences on the algebras from some global behaviours of the variety ?

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