ALGEBRAS OF THE SECOND LEVEL

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The notion of the level of an algebra was introduced in [2]. The algebra under consideration has the level n if there is a chain of n nontrivial degenerations that starts at the given algebra and there is no such a chain of length $n+1$. Roughly speaking, the level estimates the complexity of the multiplication of the given algebra. At this moment there are no many results about the levels of algebras. Anticommutative algebras of the first level were classified in [2]; all the algebras of the first level were classified in [5]; associative, Lie, Jordan, Leibniz and nilpotent algebras of the level two were classified in [1,4].

The talk is based on a joint work [3] with Ivan Kaygorodov. Some tools for a systematic classification of algebras of small levels will be presented. The first idea of our method is to consider separately algebras of different generating types. As an application of our methods, we will give a classification of all algebras of the level two.

The work was supported by the Russian Federation Presidents grant number MK-1378.2017.1.

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