

Hook theorem for various types of identities

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Hook theorem is one of the key result of the classical PI-theory (the theory of polynomial identities of algebras) in the case of varieties of algebras over a field of characteristic zero. This well known result is fundamental for applications of technique of the classic representation theory of the symmetric group to study identities, and has essential connections with many important facts of PI-theory.

The theorem describes the form of Young diagrams associated with the multilinear part of the relatively free algebra of varieties. It is also well known that these parameters are also connected with structure characteristics of carriers of varieties, and define a growth of varieties of associative PI-algebras over a field of characteristic zero.

We will discuss the versions of the hook theorem for various type of identities. Particularly, we will represent some versions of the hook theorem for identities, which involve some additional structures (such as gradings, involutions, etc.). We also will discuss some possible consequences and applications of this theorem.

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