Hook theorem and its applications.

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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. It describes the form of Young diagrams associated with the multilinear part of the relatively free algebra of varieties, which are also connected with structure characteristics of carriers of varieties. We will discuss the versions of the hook theorem for various type of identities, inclusively, identities which involve some additional structures (such as gradings, involutions, etc.), and some consequences and applications of this theorem.