

Nichols algebras and the classification of pointed Hopf algebras

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Nichols algebras were first considered by Nichols in his thesis on bialgebras of type one. Later they were rediscovered by Woronowicz. In Rosso's work they appear under the name of quantum symmetric algebras. In my lectures I will give an exposition of joint work with N. Andruskiewitsch on Nichols algebras with diagonal braiding and the closely related classification of pointed Hopf algebras with an abelian group of group-like elements. (A Hopf algebra is called pointed if all its simple comodules are one-dimensional). This is still work in progress, but we showed that the structure of these Hopf algebras in the case of finite dimension over the ground field or in the case of finite Gelfand-Kirillov dimension (plus some additional conditions) is essentially determined by a Cartan matrix of finite type.