Nichols algebras

Abstract:
Let *V* be a vector space and *c* an automorphism of the two-fold tensor product of *V* such that *c* satisfies the braid relation on the three-fold tensor product of *V*. Then the tensor algebra *TV* of *V* admits the structure of a graded braided bialgebra, where the elements of *V* are primitive.

The smallest graded braided bialgebra quotient of *TV* containing *V* is called the Nichols algebra of *V*. The simplest examples are the tensor (*c*=id), the symmetric (*c*=flip) and the exterior algebras of *V* (*c*= - flip). Nichols algebras play a fundamental role in the classification of (pointed) Hopf algebras and appear naturally also in conformal field theory. Nichols algebras have an extremely rich internal structure with relationships to Lie theory, Kac-Moody algebras, quantum groups, tensor categories, simplicial arrangements and representation theory of finite-dimensional algebras.

In the talk an introduction to the subject will be given and some main achievements and recent developments will be discussed.