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Nichols algebras

Nichols algebras are graded algebras with intricate combinatorial properties that appear as fundamental invariants of Hopf algebras. There is a Nichols algebra for each solution of the quantum Yang-Baxter equation. I will overview the definition, some basic properties and open questions on Nichols algebras. Then I will discuss several classes of Nichols algebras, including:

- 1) Finite-dimensional Nichols algebras of diagonal type: their classification by Heckenberger, the theory of Weyl groupoids, the relation with Lie superalgebras, the determination of the defining ideal by Angiono.
- 2) Nichols algebras of modules over quantized enveloping algebras with Gelfand-Kirillov dimension, classified by Ufer.
- 3) Finite-dimensional Nichols algebras over non-abelian groups.
- 4) Nichols algebras over abelian groups with Gelfand-Kirillov dimension, including joint work by Angiono, Heckenberger and myself.