

PLENARY LECTURES

Planar diagram algebras

Georgia Benkart

Planar diagram algebras arise in the representation theory of low-rank Lie algebras, Lie superalgebras and quantum groups. They arise in statistical mechanics and have played a prominent role in Jones' work on subfactors of von Neumann algebras and on invariants of knots and links. This talk will focus on planar diagram algebras, some introduced in our recent joint work with Halverson, and on their combinatorial connections with various well-studied sequences of numbers such as the Catalan and Motzkin numbers.

Cheng Kac superalgebras

Consuelo Martínez Lopez

Cheng-Kac superconformal algebra $CK(6)$ was found by S. J. Cheng and V. Kac in 1997 and independently by Grozman, Leites and Shchepochkina in 2001. Its existence obliged to reformulated the previous conjecture by V. Kac and van de Leur about the structure of superconformal algebras. In 2001 they appear in a more general context in the classification of simple Jordan superalgebras in prime characteristic in the case of non-semisimple even part.

We will explain what is know about those superalgebras and related structures. We will pay also special attention to the case of prime characteristic, explaining some results obtained jointly with E. Barreiro and A. Elduque.

Geometry of algebraic quasigroups

Shahn Majid

Building on recent work we use a Hopf-algebra like theory of "Hopf coquasigroups" to study quasigroups such as S^7 . As well as tangent and cotangent bundles we now look at further aspects of the geometry such as metrics and other bundles, using algebraic methods previously developed for quantum groups.

On speciality of Malcev algebras

Ivan Shestakov

A Malcev algebra is called special if it can be embedded into a commutator algebra of a certain alternative algebra. We will give some new results related with the problem of speciality of Malcev algebras.

Jordan superalgebras

Efim Zelmanov

I will try to give a broad survey of the theory of Jordan superalgebras and their connections.