

JOURNEE NON-COMMUTATIVE FRANCO-NORVEGIENNE
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LAREMA, Université d'Angers

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Quantization of modules over symmetric groups

We investigate quantizations of monoidal categories of modules over (noncommutative) groups. They may be defined by elements of the group algebra, and over the complex numbers we apply the character ring for finding these explicitly. We apply this to an example: the symmetric group S^3 .

Olav Arnfinn Laudal

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Non-commutative algebraic geometry applied to invariant theory

The quest for well-defined mathematical models in physics.

I shall explain why I think the concept of non-commutative deformation of families of representations is essential for studying moduli spaces for *swarms* of representations of associative algebras. Then I shall sketch some non-trivial examples, in mathematics (classifying orbits of Lie group and Lie-algebra actions), and in physics, (understanding the harmonic oscillator). If time permits, I shall give an overview of a general theory the purpose of which is to unify some of the methods in mathematics, including Invariant Theory, and in physics, including Quantum Field Theory.

Volodya Roubtsov

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**Non-abelian Poisson structures:
from non-Commutative ODEs to non-commutative
algebraic geometry and back**

We study some general non-abelian quadratic Poisson brackets. The study was motivated by some top-like integrable systems on associative algebras. We give and interpret the compatibility condition of linear and quadratic non-abelian Poisson structures using Hochschild cohomology of infinitesimal associative bialgebras. We give a full classification of such structures in the case of the free associative algebra with 2 generators. Relations with double Poisson structure of M. Van den Bergh and H_0 structures of W. Crawley-Boevey are discussed. This a joint work in progress with Sasha Odesskii and Volodya Sokolov.