

Algèbres non commutatives, théorie des représentations et fonctions
spéciales
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Non-commutative algebras, representation theory and special functions
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Tridiagonal pairs and $U_q(\mathfrak{sl}_2)$

We will discuss a linear algebraic object called a tridiagonal pair.

Roughly speaking, this is a pair of diagonalizable linear maps on a finite-dimensional vector space, that each act on the eigenspaces of the other one in a (block) tridiagonal fashion.

We will describe the basic features of a tridiagonal pair, including the tridiagonal relations and the tetrahedron diagram.

We will then use a tridiagonal pair to construct two modules for the quantum affine algebra $U_q(\widehat{\mathfrak{sl}}_2)$.

This talk is based on joint work with Tatsuhiro Ito and Kenichiro Tanabe.