

Algèbres non commutatives, théorie des représentations et fonctions
spéciales
23 mai - 10 juin 2022

Non-commutative algebras, representation theory and special functions
May 23 - June 10, 2022

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Askey-Wilson algebra and centralizers of $U_q(\mathfrak{sl}_2)$

In this talk, I will consider the centralizer of the diagonal embedding of the quantum algebra $U_q(\mathfrak{sl}_2)$ in the tensor product of any three of its finite irreducible (spin) representations, in the spirit of a generalized Schur-Weyl duality. It is known that the generators of this centralizer obey the relations of the Askey-Wilson algebra, which has been introduced in the framework of orthogonal polynomials. I will present a quotient of the Askey-Wilson algebra that we conjecture to be isomorphic to the centralizer of $U_q(\mathfrak{sl}_2)$ for any choice of three spin representations. The conjecture is verified in several cases, mainly when considering three identical spins. This leads in particular to explicit isomorphisms between quotients of the braid group algebra such as the Temperley-Lieb and Birman-Murakami-Wenzl algebras, and quotients of the Askey-Wilson algebra.