Floris, Paul G. A.
Addition formula for $q$-disk polynomials. (English) Zbl 0891.33009

Summary: Explicit models are constructed for irreducible $*$-representations of the quantised universal enveloping algebra $U_q(\mathfrak{gl}(n))$. The irreducible decomposition of these modules with respect to the subalgebra $U_q(\mathfrak{gl}(n-1))$ is given, and the corresponding spherical and associated spherical elements are determined in terms of little $q$-Jacobi polynomials. This leads to a proof of an addition theorem for the spherical elements, the so-called $q$-disk polynomials.

MSC:
33D45 Basic orthogonal polynomials and functions (Askey-Wilson polynomials, etc.)
33D80 Connections of basic hypergeometric functions with quantum groups, Chevalley groups, $p$-adic groups, Hecke algebras, and related topics
81R50 Quantum groups and related algebraic methods applied to problems in quantum theory
17B37 Quantum groups (quantized enveloping algebras) and related deformations
16W30 Hopf algebras (associative rings and algebras) (MSC2000)

Keywords: $q$-Jacobi polynomials; $q$-disk polynomials; addition formula

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