

q -Weyl coefficients for $U_q(3)$ and q -Racah coefficients for $SU_q(2)$

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Using the projection operator method we obtain a general analytical formula for a transformation matrices relating the canonical T , U and V bases of $U_q(3)$ irreducible representation (q is not equal to a root of unity). The elements of these transformation matrices are the q -analogs of the classical $U(3)$ Weyl coefficients. We explicitly proved that these coefficients can be presented in the terms of the q -Racah coefficients of the $SU_q(2)$. Using the resummation procedure of finite q -factorials sums we obtain also the q -analogs of all known general analytical expressions for the $6j$ -symbols (and the Racah coefficients) of the quantum algebra $SU_q(2)$ starting from one such formula. Symmetry properties of these coefficients are discussed. This results is formulated in this way: the general formulas for the q - $6j$ -symbols (q -Racah coefficients) of the quantum algebra $SU_q(2)$ can be obtained from the general formulas of the usual $6j$ -symbols (Racah coefficients) by change of all factorials onto q -factorials; the symmetry relations of the q - $6j$ -symbols coincide with the symmetry relations of the usual $6j$ -symbols.