Recurrence relations for the coefficients of the Fourier series expansions with respect to q-classical orthogonal polynomials

S. Lewanowicz, E. Godoy, I. Area, A. Ronveaux and A. Zarzo

Numerical Algorithms 23 (2000), 31-50

Abstract

We propose an algorithm to construct recurrence relations for the coefficients of the Fourier series expansions with respect to the q-classical orthogonal polynomials $p_k(x;q)$. Examples dealing with inversion problems, connection between any two sequences of q-classical polynomials, linearization of $\vartheta_m(x)\, p_n(x;q)$, where $\vartheta_m(x)$ is x^m or $(x;q)_m$, and the expansion of the Hahn-Exton q-Bessel function in the little q-Jacobi polynomials are discussed in detail.