Algorithms for construction of recurrence relations for the coefficients of expansions in series of classical orthogonal polynomials

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ABSTRACT

Let $\{P_k(x)\}$ be any sequence of classical orthogonal polynomials, i.e.,

(i) very classical orthogonal polynomials, or

(ii) classical orthogonal polynomials of a discrete variable, or

(iii) q-classical orthogonal polynomials in the Hahn sense.

Maple implementation is given of an algorithmic approach to the problem of constructing recurrence relations for the coefficients of the Fourier series expansions with respect to the polynomials $\{P_k(x)\}$.