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The paper gives extensions of earlier results of the authors by presenting a collection of algorithms with which any of the conversions between the differential/difference equation, the hypergeometric representation, and the recurrence equation of a given orthogonal polynomial is possible. An algorithm for computing recurrence relations for connection coefficients is given. Zeilberger's algorithm and further versions of this algorithm are important tools in this work.

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Keywords : Jacobi polynomials; Gegenbauer polynomials; Bessel polynomials; Laguerre polynomials; Hermite polynomials; Hahn polynomials; Krawchouk polynomials; Meixner polynomials; Charlier polynomials; Zeilberger's algorithm; Petkovsek's algorithm; recurrence relations; hypergeometric function

Classification:

- 65D20 Computation of special functions
- 42C05 General theory of orthogonal functions and polynomials
- 33C25 Orthogonal polynomials and functions
- 33C45 Orthogonal polynomials and functions of hypergeometric type