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**Representations of orthogonal polynomials. (English summary)**

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| References: 0 | Reference Citations: 0 | Review Citations: 0 |
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Summary: “Zeilberger’s algorithm provides a method to compute recurrence and differential equations from given hypergeometric series representations, and an adaptation of Almquist and Zeilberger computes recurrence and differential equations for hyperexponential integrals. Further versions of this algorithm allow the computation of recurrence and differential equations from Rodrigues-type formulas and from generating functions. In particular, these algorithms can be used to compute the differential/difference and recurrence equations for the classical continuous and discrete orthogonal polynomials from their hypergeometric representations, and from their Rodrigues representations and generating functions.

“In recent work, we used an explicit formula for the recurrence equation of families of classical continuous and discrete orthogonal polynomials, in terms of the coefficients of their differential/difference equations, to give an algorithm to identify the polynomial system from a given recurrence equation.

“In this article we extend these results by presenting a collection of algorithms with which any of the conversions between the differential/difference equation, the hypergeometric representation, and the recurrence equation is possible.

“The main technique is again to use explicit formulas for structural identities of the given polynomial systems.”