Recurrence relations for multiple orthogonal polynomials of classical weights by a generating function

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Abstract

The multiple orthogonal polynomials(multiple OPS) are historically much related to simultaneous Padé approximantions. Nowadays it is tried to find many properties of multiple OPS considering as a natural extension of ordinary orthogonal polynomials[3,4]. For example, differential equations for classical multiple OPS such as Jacobi-Piñeiro polynomials, multiple Bessel polynomial, multiple Laguerre I and II polynomials, and multiple Hermite polynmials are given[1].

For the multiple Hermite polynomials, the multiple Laguerre I and multiple Laguerre II polynomials, the author found the generating functions by Cauchy integral formula in order to get properties such as recurrence relations and differential equations. See [2] and references therein for details.

In this presentation we introduce a method to find a generating function for classical multiple OPS including Jacobi-Piñeiro polynomials and the multiple Bessel polynomials, and then obtain new recurrence relations.

References

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