

GENERATING FUNCTIONS OF ORTHOGONAL POLYNOMIALS AND
SZEGÖ-JACOBI PARAMETERS

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Abstract: In this paper, we present a more direct way to compute the Szegő-Jacobi parameters from a generating function than that in [5] and [6]. Our study is motivated by the notions of one-mode interacting Fock spaces defined in [1] and Segal-Bargmann transform associated with non-Gaussian probability measures introduced in [2]. Moreover, we examine the relationships between the representations of orthogonal polynomials in terms of differential or difference operators and our generating functions. The connections provide practical criteria to determine when functions of a certain form are orthogonal polynomials.

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Key words and phrases: Interacting Fock space, probability measure, orthogonal polynomial, Szegő-Jacobi parameters, pre-generating function, generating function, multiplicative renormalization, differential and difference operators.

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