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Matrix Chebyshev polynomials and continued fractions. (English) [Zbl 1025.42015]

Summary: In the first part we expose the notion of continued fractions in the matrix case. In this paper we are interested in their connection with matrix orthogonal polynomials. In the second part matrix continued fractions are used to develop the notion of matrix Chebyshev polynomials. In the case of Hermitian coefficients in the recurrence formula, we give the explicit formula for the Stieltjes transform, the support of the orthogonality measure and its density. As a corollary we get the extension of the matrix version of the Blumenthal theorem proved in [J. Approximation Theory 84, No. 1, 96-118 (1996; Zbl 0861.42016)]. The third part contains examples of matrix orthogonal polynomials.

MSC:
42C05 Orthogonal functions and polynomials, general theory of nontrigonometric harmonic analysis
33C45 Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)

Keywords:
matrix orthogonal polynomials; matrix Chebyshev polynomials; Blumenthal theorem

Full Text: DOI

References:

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