Abstract

# Szegő-Kreĭn orthogonal matrix functions and the band method from operator theory

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The band method is an abstract algebraic scheme in operator theory developed in the late eighties and early nineties, starting with pioneering work of H. Dym and I. Gohberg. This method allows one to deal with matrix-valued versions of classical interpolation problems, such as those of Schur, Carathéodory-Toeplitz and Nehari, from one point of view. In the present lectures we will look at the classical theory of Szegő-Kreĭn matrix polynomials and Kreĭn orthogonal entire matrix functions through the eyes provided by the band method. This will lead to an abstract theorem, which underlines the importance of matrix polynomial equations and equations of entire matrix functions in concrete cases. We will review the results for the concrete cases from this point of view. Also some new results will be discussed to illustrate the scope of the abstract theory.