

The discrete algebraic Riccati equation and Hermitian block Toeplitz matrices

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In the lecture we shall discuss the representation of the full set of solutions of the discrete algebraic Riccati equation in terms of two solutions, the difference of which is invertible. It turns out that if two such solutions exist, then all solutions can be described in terms of one of these solutions and the solution of a Stein equation. A complete parametrization is available in that case, which relies on the theory of indefinite inner product spaces. Under some additional hypotheses we show that there are two solutions which differ by an invertible matrix. If time permits we shall discuss a special case connected to invertible Hermitian block Toeplitz matrices.

The talk is based on joint work with L. Lerer.