

A MULTISHIFT ALGORITHM FOR THE NUMERICAL SOLUTION OF ALGEBRAIC RICCATI EQUATIONS *

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Abstract. We study an algorithm for the numerical solution of algebraic matrix Riccati equations that arise in linear optimal control problems. The algorithm can be considered to be a multishift technique, which uses only orthogonal symplectic similarity transformations to compute a Lagrangian invariant subspace of the associated Hamiltonian matrix. We describe the details of this method and compare it with other numerical methods for the solution of the algebraic Riccati equation.

Key words. algebraic matrix Riccati equation, Hamiltonian matrix, Lagrangian invariant subspace.

AMS subject classifications. 65F15, 15A24, 93B40.

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