

Iterative Splitting Methods for Nonsymmetric Algebraic Riccati Equations

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The nonsymmetric algebraic Riccati equations may arise in many areas of scientific computing and engineering applications such as the total least squares (TLS) problems with or without symmetric constraints, the linear and nonlinear optimal controls, the transport theory, the Wiener-Hopf factorization of Markov chains and the computation of matrix sign function. In this talk, we will discuss the algebraic properties of the nonsymmetric algebraic Riccati equation and introduce some known and new splitting iterative methods for computing its minimal nonnegative solution. The monotone convergence and the asymptotic convergence rates of these iterative methods are shown and several numerical examples are used to illustrate their feasibility and effectiveness.