khalide Jbilou

An inexact Newton block Arnoldi method for discrete-time algebraic Riccati equations

50
rue F Buisson
LMPA
Universit du Littoral
62228
Calais
France
jbilou@lmpa.univ-littoral.fr
Abderrahman Bouhamidi

The discrete-time algebraic Riccati equations (DARE) arise in the solution of discrete-time linear-quadratic control problems. In this talk, we present a method for solving DAREs for large and sparse systems. The inexact Newton method is used which requires the solution of a symmetric Stein matrix equation at each iteration. Because of the size of the matrices, the Stein matrix equation is solved inexactly by the block Arnoldi algorithm. We give some new matrix identities that will allow us to derive new theoretical convergence results for the obtained inexact Newton-Hewer sequences. A couple of numerical examples is also given.