

PERTURBATION ESTIMATES FOR THE MAXIMAL SOLUTION OF A NONLINEAR MATRIX EQUATION*

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Abstract

In this paper a nonlinear matrix equation is considered. Perturbation estimations for the maximal solution of the considered equation are obtained. The results are illustrated by the use of numerical examples.

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1 Introduction

We consider the nonlinear matrix equation

$$X + \sum_{i=1}^m A_i^* X^{-1} A_i = Q, \quad (1)$$

where A_i , $i = 1, 2, \dots, m$, Q , are $n \times n$ complex matrices with Q Hermitian positive definite, and A^* is the conjugate transpose of a matrix A .

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