

# ON PERTURBATION ESTIMATES FOR THE EXTREME SOLUTION OF A MATRIX EQUATION\*

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*Dedicated to Professor Milko Petkov*

## Abstract

Some perturbation estimates for the unique positive definite solution of a nonlinear matrix equation connected to the interpolation theory are derived. The considered estimations are modification of some existing one. They are obtained by similar transformations of the matrix coefficients with a positive definite matrix. The theoretical results are illustrated by several numerical examples.

MSC: 65F10; 15A24

**keywords:** nonlinear matrix equation, perturbation estimates.

## 1 Introduction

In this paper we derive new perturbation estimates for the matrix equation

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

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