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Error bounds for linear complementarity problems of S -Nekrasov matrices and B - S -Nekrasov matrices

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Abstract

An error bound involving a parameter, which doesn't always work, for the linear complementarity problem (LCP) when the involved matrices are S -Nekrasov matrices is provided by M. García-Esnaola and J.M. Peña (Numerical Algorithms, 67:655-667, 2014). In this paper, a new error bound for the LCP of S -Nekrasov matrices is presented, which depends only on the entries of the involved S -Nekrasov matrices. Based on the obtained results, we also give an error bound for the LCP of B - S -Nekrasov matrices.

Keywords: Linear complementarity problems, Error bounds, S -Nekrasov matrices, B - S -Nekrasov matrices.

2010 MSC: 15A48, 65G50, 90C31, 90C33

1. Introduction

The linear complementarity problem (LCP) is to find a vector $x \in \mathbb{R}^n$ such that

$$x \geq 0, Mx + q \geq 0, (Mx + q)^T x = 0 \quad (1)$$

or to show that no such vector x exists, where $M = [m_{ij}] \in \mathbb{R}^{n \times n}$ and $q \in \mathbb{R}^n$. We denote the problem (1) by $\text{LCP}(M, q)$. Many problems such as Nash equilibrium point of a bimatrix game, the contact problem and the

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