

## NONOSCILLATIONS IN ODD ORDER DIFFERENCE SYSTEMS OF MIXED TYPE

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The aim of this note is to discuss the existence of nonoscillations for the difference system of mixed type

$$\Delta x(n) = \sum_{i=1}^{\ell} P_i x(n-i) + \sum_{j=1}^m Q_j x(n+j), \quad n = 0, 1, 2, \dots,$$

in terms of some matrix measures involving the matrices  $P_i$  and  $Q_j$  ( $i = 1, \dots, \ell, j = 1, \dots, m$ ). Those measures are formulated in basis upon arbitrary logarithmic norms of matrices.

### 1. Introduction

The main goal of this work is to study the existence of nonoscillations in the regard of the difference system

$$\Delta x(n) = \sum_{i=1}^{\ell} P_i x(n-i) + \sum_{j=1}^m Q_j x(n+j), \quad n = 0, 1, 2, \dots, \quad (1)$$

where  $x(n) \in \mathbb{R}^d$ ,  $\Delta x(n) = x(n+1) - x(n)$  is the usual difference operator,  $\ell, m \in \mathbb{N}$ , and for  $i = 1, \dots, \ell$  and  $j = 1, \dots, m$  the  $P_i$  and the  $Q_j$  are given  $d \times d$  real matrices. By a solution of this equation we mean any sequence  $x(n)$ , of points in  $\mathbb{R}^d$ , with  $n = -\ell, \dots, 0, 1, \dots$ , which satisfy (1).

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