

OSCILLATIONS OF SYSTEMS OF NEUTRAL DIFFERENTIAL EQUATIONS

I. GYÖRI

*Computing Centre of the Szeged University of Medicine Pecs n. 4/a
6720 Szeged, Hungary*

G. LADAS

*Department of Mathematics, University of Rhode Island
Kingston, Rhode Island 02881, USA*

Abstract. We obtained sufficient conditions for the oscillation of all solutions of the system of neutral delay differential equations

$$\frac{d}{dt}[x(t) - Px(t - \tau)] + \sum_{k=1}^m Q_k x(t - \sigma_k) = 0,$$

where P is an $n \times n$ diagonal matrix with diagonal entries p_1, p_2, \dots, p_n such that

$$0 \leq p_i \leq 1 \quad \text{for } i = 1, 2, \dots, n,$$

the delays τ and σ_k for $k = 1, 2, \dots, m$ are nonnegative and for each $k = 1, 2, \dots, n$ the entries $q_{ij}^{(k)}$ of the $n \times n$ matrix Q_k are real numbers. Our results can be extended to systems with the Q_k 's continuous $n \times n$ matrices.

1. Introduction. Recently, Ladas and Sficas [7] obtained sufficient conditions for the oscillation of all solutions of the neutral delay differential equation (NDDE)

$$\frac{d}{dt}[x(t) - px(t - \tau)] + qx(t - \sigma) = 0, \tag{1}$$

where

$$0 \leq p \leq 1, \quad q > 0 \quad \text{and} \quad \tau, \sigma \geq 0. \tag{2}$$

Our aim in this paper is to extend some of the results obtained in [7] to systems of NDDEs of the form

$$\frac{d}{dt}[x(t) - Px(t - \tau)] + \sum_{k=1}^m Q_k x(t - \sigma_k) = 0, \tag{3}$$

Received September 30, 1987.

AMS(MOS) Subject Classifications: 34K15.