

Boundedness of k -dimensional system of nonlinear difference equations of neutral type

Migda M., Schmeidel E., Zdanowicz M.

Affiliation

Poznan University of Technology, Poland
malgorzata.migda@put.poznan.pl

University of Bialystok, Poland
eschmeidel@math.uwb.edu.pl

University of Bialystok, Poland
mzdan@math.uwb.edu.pl

The k -dimensional system of neutral type nonlinear difference equations with delays in the following form

$$\begin{cases} \Delta \left(x_i(n) + p_i(n) x_i(n - \tau_i) \right) = a_i(n) f_i(x_{i+1}(n - \sigma_i)) + g_i(n) \\ \Delta \left(x_k(n) + p_k(n) x_k(n - \tau_k) \right) = a_k(n) f_k(x_1(n - \sigma_k)) + g_k(n), \end{cases}$$

where $i = 1, \dots, k - 1$, is considered. The aim of this paper is to present sufficient conditions for the existence of nonoscillatory bounded solutions of the above system with various $(p_i(n))$, $i = 1, \dots, k$, $k \geq 2$.

[1] Thandapani E., Karunakaran R., Arockiasamy I.M., Bounded nonoscillatory solutions of neutral type difference systems, *Electron. J. Qual. Theory Differ Equ.*, *Spec. Ed. I*, 25, (2009), 1–8.

[2] Migda M., Schmeidel E., Zdanowicz M., Existence of nonoscillatory bounded solutions of three dimensional system of neutral difference equations, *submitted*.