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Eigenvalues for Iterative Systems of Nonlinear Boundary Value Problems on Time Scales

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Abstract: Values of $\lambda_1, \ldots, \lambda_n$ are determined for which there exist positive solutions of the iterative system of dynamic equations, $u_i^{\Delta\Delta}(t) + \lambda_i a_i(t) f_i(u_{i+1}(\sigma(t))) = 0$, $1 \leq i \leq n$, $u_{n+1}(t) = u_1(t)$, for $t \in [0,1]_{\mathbb{T}}$, and satisfying the boundary conditions, $u_i(0) = 0 = u_i(\sigma^2(1))$, $1 \leq i \leq n$, where $\mathbb{T}$ is a time scale. A Guo-Krasnosel'skii fixed point theorem is applied.

Keywords: *time scales; boundary value problem; iterative system of dynamic equations; nonlinear; eigenvalue.*

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