

Positive solutions of p -type retarded functional differential equations

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The Ważewski topological method is used for criterion of positive solutions of the so called p -type retarded functional differential equations

$$y'(t) = f(t, y_t), \text{ where } y_t \in C[[-1, 0], R^n] \text{ is defined as } y_t(\vartheta) := y(p(t, \vartheta)), \quad -1 \leq \vartheta \leq 0,$$

$f : R \times C[[-1, 0], R^n] \rightarrow R^n$, is a continuous mapping and the function $p \in C[R \times [-1, 0], R]$ satisfies: 1) $p(t, 0) = t$, 2) $p(t, -1)$ is a nondecreasing function of t , and 3) there exists a $\sigma \geq -\infty$ such that $p(t, \vartheta)$ is an increasing function for ϑ for each $t \in (\sigma, \infty)$. Main aim is to establish necessary and sufficient conditions for existence of positive solution. The main result generalizes some previous results.

This is a joint work with Josef Diblík.

References

- [1] *J. Diblík, Z. Svoboda*: Positive solutions of p -type retarded functional differential equations. *Nonlinear Anal., Theory Methods Appl.* 71 (2006), 1831–1848.