

Existence results for periodic solutions of integro-dynamic equations on time scales

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Abstract:

Using topological degree method and Schaefer's fixed point theorem, we deduce the existence of periodic solutions of nonlinear system of integro-dynamic equations on periodic time scales. Furthermore, we provide several applications to scalar equations, where we develop a time scale analogue of Lyapunov's direct method. Therefore, we improve and generalize the corresponding results in [T. A. Burton, P. W. Eloe, and M. N. Islam, Nonlinear integro-differential equations and a priori bounds on periodic solutions, *Annali di Matematica pura ed applicata*, Vol. CLXI (1992) 271-283].