Nonlinear Dynamics and Systems Theory, 9(1)(2009) 23–36



Nontrivial Solutions of Boundary Value Problems of Second-Order Dynamic Equations on an Isolated Time Scale

H. Berger*

Department of Mathematics, Simpson College Indianola, IA 50125, U.S.A.

Received: February 29, 2008; Revised: December 26, 2008

Abstract: We will use Clark's theorem to show the existence of multiple solutions to the self-adjoint dynamic boundary value problem

$$(p(t)u^{\Delta}(t))^{\nabla} + q(t)u(t) + \lambda h(t, u(t)) = 0, \quad t \in [a, b]_{\mathbb{T}},$$
$$u(\rho(a)) = u(\sigma(b)) = 0,$$

where λ is a sufficiently large positive parameter and \mathbb{T} is an isolated time scale. Examples of our results will be given.

Keywords: Clark's theorem; isolated time scales; critical point theory.

Mathematics Subject Classification (2000): 39A10, 34B10.