



Periodic BVP with ϕ -Laplacian and Impulses

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Abstract

The paper deals with the impulsive boundary value problem

$$\begin{aligned} \frac{d}{dt}[\phi(y'(t))] &= f(t, y(t), y'(t)), & y(0) &= y(T), & y'(0) &= y'(T), \\ y(t_i+) &= J_i(y(t_i)), & y'(t_i+) &= M_i(y'(t_i)), & i &= 1, \dots, m. \end{aligned}$$

The method of lower and upper solutions is directly applied to obtain the results for this problems whose right-hand sides either fulfil conditions of the sign type or satisfy one-sided growth conditions.

Key words: ϕ -Laplacian, impulses, lower and upper functions, periodic boundary value problem.

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0 Introduction

In this paper we study the existence of solutions to the following problem

$$\frac{d}{dt}[\phi(y'(t))] = f(t, y(t), y'(t)), \quad (0.1)$$

$$y(0) = y(T), \quad y'(0) = y'(T), \quad (0.2)$$

$$y(t_i+) = J_i(y(t_i)), \quad y'(t_i+) = M_i(y'(t_i)), \quad i = 1, \dots, m, \quad (0.3)$$