

## OSCILLATION CRITERIA FOR SECOND ORDER STRONGLY SUPERLINEAR AND STRONGLY SUBLINEAR DYNAMIC INCLUSIONS

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**Abstract.** In this paper, we establish some oscillation criteria for strongly superlinear and strongly sublinear dynamic inclusions. Oscillation problems in differential and difference equations have become very attractive recently. These areas have started to be unified and extended for more powerful general theory, so called dynamic equations on time scales. Results in this paper even are new in continuous case.

**Keywords.** Oscillation; Dynamic inclusions; Time scales; Superlinear Inclusions, Sublinear inclusions.

**AMS (MOS) subject classification:** 34N05, 34K11, 34A60.

## 1 Introduction

This paper is concerned with some oscillatory behavior of solutions of second-order nonlinear dynamic inclusions of the form

$$(p(t)x^\Delta(t))^\Delta \in F(t, x^\sigma(t)) \quad \text{a.e.} \quad t \geq t_0, \quad (1)$$

subject to the following hypotheses:

(H1)  $p \in C_{rd}([t_0, \infty)_{\mathbb{T}}, \mathbb{R}^+)$  such that

$$A(t) := \int_t^\infty \frac{\Delta s}{p(s)} < \infty, \quad t \geq t_0.$$

(H2)  $F : [t_0, \infty)_{\mathbb{T}} \times \mathbb{R} \rightarrow 2^{\mathbb{R}} \setminus \emptyset$  is a multifunction with compact and convex values such that  $|F(\cdot, u)| = \sup\{|y| : y \in F(t, u)\}$  and  $F(t, u) > 0$  means  $y > 0$  for each  $y \in F(t, u)$ .