

## ASYMPTOTICALLY ALMOST AUTOMORPHIC SOLUTIONS OF DYNAMIC EQUATIONS ON TIME SCALES

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ABSTRACT. In the present work, we introduce the concept of asymptotically almost automorphic functions on time scales and study their main properties. We study nonautonomous dynamic equations on time scales given by  $x^\Delta(t) = A(t)x(t) + f(t)$  and  $x^\Delta(t) = A(t)x(t) + f(t, x(t))$ ,  $t \in \mathbb{T}$ , where  $\mathbb{T}$  is an invariant under translations time scale and  $A \in \mathcal{R}(\mathbb{T}, \mathbb{R}^{n \times n})$ . We give new criteria ensuring the existence of an asymptotically almost automorphic solution for both equations.

### 1. Introduction

The theory of time scales is a recent subject of research, which was introduced by Stefan Hilger (see [19]). The study of time scales and their associated properties have proved to be a fruitful area of research over the past years. See, for instance, [1], [2], [5], [12], [16], [20]–[22], [24], [26]–[28], [30], [31] and the references therein. This is in part due to the interesting mathematical theory that has resulted from these investigations and also, due to the worthwhile applications that have arisen from them. It plays an important role to model realistic problems such as economics, population, physics (specially quantum physics), technology, among others. See, for instance, [5], [12], [24], [31].

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