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ASYMPTOTICALLY ALMOST AUTOMORPHIC SOLUTIONS FOR SOME INTEGRO-DYNAMIC EQUATIONS WITH NONLOCAL INITIAL CONDITIONS ON TIME SCALES

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Abstract. In this paper, we explore further results concerning asymptotically almost automorphic functions on time scales. We apply these results to study a class of semilinear integro-dynamic equations with non local condition. Under suitable conditions on the data of the problem, we establish the existence of asymptotically almost automorphic solution to this problem on time scales.

Keywords. Time scales; Asymptotically almost automorphic functions; Resolvent operators; Integro-dynamic equation, non local initial conditions.
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1. Introduction

Initiated by Stefan Hilger in his Ph.D thesis [11] in 1988, in order to unify continuous and discrete analysis, the theory of dynamic equations on time scales continues to attract the attention of researchers. In recent years, one can find in the literature many papers devoted to dynamic equations on time scales [5], [6], [16], [17], [18], [19], [20], [21], [28], [29] and the references therein. In [20], C. Lizama and J. M. Mesquita introduced the notion of almost automorphic functions on time scales and proved, under sufficient conditions, the existence of almost automorphic solutions for nonautonomous dynamic equations. In [24], G. Mophou et *al* introduced the notion of almost automorphic functions of order n on time scales. In their paper, the authors investigated the fundamental properties of such functions and applied the results to study the existence, uniqueness and stability of almost automorphic solution of order one of a semilinear dynamic system with finite delay. In [23] A. Milcé and J.-C. Mado explored further properties of such functions and applied them to sturdy the existence and uniqueness of almost automorphic solution for the following semilinear dynamic equation on the euclidian space $\mathbb{R}^n$:

$$u^{\Delta}(t) = A(t)u(t) + f\left(t, u(t), \int_0^t \varphi(s, u(s))\Delta s\right), \quad t \in \mathbb{T}$$