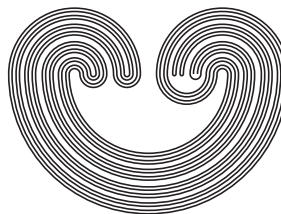


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## THE INVERSE LIMIT NONAUTONOMOUS DISCRETE DYNAMICAL SYSTEM, I

by

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## THE INVERSE LIMIT NONAUTONOMOUS DISCRETE DYNAMICAL SYSTEM, I

GERARDO ACOSTA AND MANUEL SANCHIS

**ABSTRACT.** In this paper, the first dedicated by the authors to this topic, we introduce the notion of the inverse limit nonautonomous discrete dynamical system (inverse limit NDS) of an inverse sequence  $(X_n, h_{\infty, n})_n$  of nonautonomous discrete dynamical systems, which generalizes the notions of the inverse limit dynamical system and of the natural extension of an autonomous discrete dynamical system  $(X, f)$ , using the shift map of  $f$  (see François Blanchard, et al. [J. Reine Angew. Math. 547 (2002), pp. 51–68]. Then we start a systematic study of the inverse limit NDS, by considering both set-theoretical and topological properties.

### 1. INTRODUCTION

A *map* is a continuous function. An *autonomous discrete dynamical system* (ADS) is a pair  $(X, f)$  where  $X$  is a topological space and  $f: X \rightarrow X$  is a map. A *nonautonomous discrete dynamical system* (NDS) is a pair  $(X, f_\infty)$ , where  $X$  is a topological space and  $f_\infty = (f_n)_n$  is a sequence so that, for each  $n \in \mathbb{N}$ ,  $f_n: X \rightarrow X$  is a map. When  $f: X \rightarrow X$  is a map and  $f_\infty$  is the constant sequence  $(f, f, \dots, f, \dots)$ , the pair  $(X, f_\infty)$  is the ADS  $(X, f)$ . Hence, any ADS is an NDS. NDSs were introduced in 1996

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