Topological **M**ethods in **N**onlinear **A**nalysis
Volume 59, No. 1, 2022, 261–275
DOI: 10.12775/TMNA.2021.029

A CHARACTERIZATION OF NONAUTONOMOUS ATTRACTORS VIA STONE–ČECH COMPACTIFICATION

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Abstract. The present paper deals with the notions of past attractors and repellers for nonautonomous dynamical systems. This uses the topological method of extending functions in order to describe the nonautonomous attractors by means of the prolongational limit sets in the extended phase space. Essentially, for a given nonautonomous dynamical system (θ, φ) with base set $P = \mathbb{T}$, where $\mathbb{T}$ is the time $\mathbb{Z}$ or $\mathbb{R}$, and with base flow θ as the addition, the limit sets $\omega^{-}(0)$ and $\omega^{+}(0)$ in the Stone–Čech compactification $\beta\mathbb{T}$ determine respectively the past and the future of the conduction system.

1. Introduction

Nonautonomous attractors and repellers came up among the main concepts of nonautonomous dynamical systems (as reference source we mention Flandoli and Schmalfuss [7] and Kloeden *et al.* [9]–[12]). They are nonautonomous generalization of Conley's notions of attractors and repellers and enable the definition of a nonautonomous attractor-repeller pair and nonautonomous Morse decompositions (Rasmussen [13]). In this context, due to the difference at which time

2020 *Mathematics Subject Classification.* 37B55, 37C70.
Key words and phrases. Nonautonomous dynamical system; past attractor; Stone–Čech compactification.
This work was supported by CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico, Brasil (grant no. 303011/2019-0).