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COINCIDENCE THEORY IN LOCALLY CONVEX SPACES FOR MAPS WITH UPPER SEMICONTINUOUS SELECTIONS

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Abstract. In this paper we establish coincidence results between selecting type classes and our arguments are based on a fixed point result on admissible convex sets in a Hausdorff topological vector space.

Keywords. Coincidence points, set–valued maps, selections.

AMS (MOS) subject classification: 47H10, 54H25

1 Introduction

In this paper we present some collectively coincidence results between two different classes of set–valued maps, one class is Wu type maps and the other class is a selecting type class. In addition we assume compactness on one of the classes. To establish our coincidences results we will use a selection theorem [1, 14] and a fixed point result for the admissible maps of Gorniewicz [4, 7]. Our results are motivated in part from ideas in [9, 10].

Now we describe the maps considered in this paper. Let H be the Čech homology functor with compact carriers and coefficients in the field of rational numbers K from the category of Hausdorff topological spaces and continuous maps to the category of graded vector spaces and linear maps of degree zero. Thus $H(X) = \{H_q(X)\}$ (here X is a Hausdorff topological space) is a graded vector space, $H_q(X)$ being the q–dimensional Čech homology group with compact carriers of X. For a continuous map $f : X \to X$, $H(f)$ is the induced linear map $f_\star = \{f_{\star\, q}\}$ where $f_{\star\, q} : H_q(X) \to H_q(X)$. A space X is acyclic if X is nonempty, $H_q(X) = 0$ for every $q \geq 1$, and $H_0(X) \approx K$.

Let X, Y and Γ be Hausdorff topological spaces. A continuous single valued map $p : \Gamma \to X$ is called a Vietoris map (written $p : \Gamma \Rightarrow X$) if the following two conditions are satisfied:
(i). for each $x \in X$, the set $p^{-1}(x)$ is acyclic
(ii). p is a perfect map i.e. p is closed and for every $x \in X$ the set $p^{-1}(x)$ is nonempty and compact.