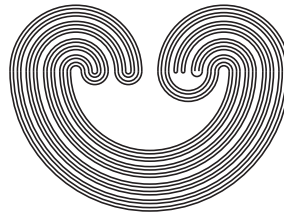


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GENERAL PROPERTIES OF THE HYPERSPACE OF CONVERGENT SEQUENCES

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AND ROBERTO PICHARDO-MENDOZA

ABSTRACT. Given a Hausdorff space X , the symbol $\mathcal{S}_c(X)$ denotes the topological space which results of endowing the set of all infinite convergent sequences in X with the Vietoris topology. This hyperspace was introduced in [5].

In this paper we present answers to some questions posed in that article, namely, we show that if X is either metrizable or second countable, then X is pathwise connected as long as $\mathcal{S}_c(X)$ is so, and we exhibit a dendroid X for which $\mathcal{S}_c(X)$ is not pathwise connected. Continuing with negative examples, we present a normal (resp. Fréchet-Urysohn) space whose hyperspace of converging sequences is not normal (resp. Fréchet-Urysohn).

By proving that the hypothesis X is connected implies that $\mathcal{S}_c(X)$ is connected we generalize one of the results from the article mentioned above. Moreover, it is proved here that the reverse implication holds whenever $\mathcal{S}_c(X) \neq \emptyset$ and similiar results are obtained when we replace *connected* with *locally connected*.

A section is included where the weight, the character and the density of $\mathcal{S}_c(X)$ are compared with the corresponding cardinal functions of X . Then we turn our attention to the study of the topological dimension of the hyperspace of convergent sequences of compact metrizable spaces. Finally, we characterize the continuous functions from $\mathcal{S}_c(X)$ to $\mathcal{S}_c(Y)$ which are inducible.

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Key words and phrases. Hyperspace of nontrivial convergent sequences, connectedness, dimension, local connectedness, path connectedness, weight, character, density, inducible map.

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