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ON THE UNICOHERENCE OF $F_n(X)$ AND $SF_m^n(X)$ OF CONTINUA

ENRIQUE CASTAÑEDA-ALVARADO AND JAVIER SÁNCHEZ-MARTÍNEZ

Abstract. A *continuum* means a compact, connected, nondegenerate metric space. Given a continuum X and $n \in \mathbb{N}$, $F_n(X)$ denotes the hyperspace of all subsets of X with at most n points equipped with the Hausdorff metric. This hyperspace is called the n^{th}-symmetric product of X. If $m, n \in \mathbb{N}$ and $m < n$, we consider $SF_m^n(X)$ as the quotient space $F_n(X)/F_m(X)$ obtained by shrinking $F_m(X)$ to a point in $F_n(X)$, topologized with the quotient topology. In this paper, using inverse limits, we answer negatively a question of Janusz J. Charatonik (see E. Castañeda, *A unicoherent continuum whose second symmetric product is not unicoherent*, Topology Proc. **23** (1998), Spring, 61–67) about the unicoherence of the second symmetric products of λ-dendroids. We also analyze the unicoherence of $SF_m^n(X)$.

1. Introduction

A *continuum* means a compact, connected, and nondegenerate metric space. The symbols $\mathbb{N}$ and $\mathbb{C}$ will denote the set of positive integers and complex numbers, respectively. Also I will be the unit interval $[0, 1]$. Consider the following hyperspaces of a continuum X:

$$2^X = \{A \subset X : A \text{ is closed and nonempty}\}, \text{and for } n \in \mathbb{N}$$

$$C_n(X) = \left\{A \in 2^X : A \text{ has at most } n \text{ components}\right\},$$

$$F_n(X) = \left\{A \in 2^X : A \text{ has at most } n \text{ points}\right\}.$$

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