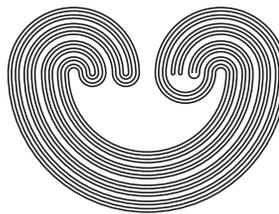


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FINITE GRAPHS HAVE UNIQUE n -FOLD PSEUDO-HYPERSPACE SUSPENSION

by

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ABSTRACT. Let X be a metric continuum. Let n be a positive integer, let $C_n(X)$ be the space of all nonempty closed subsets of X with at most n components, and let $F_1(X)$ be the space of singletons of X . The n -fold pseudo-hyperspace suspension of X is the quotient space $C_n(X)/F_1(X)$ and it is denoted by $PHS_n(X)$. In this paper we prove that if X is a finite graph and Y is a continuum such that $PHS_n(X)$ is homeomorphic to $PHS_n(Y)$, then X is homeomorphic to Y . This answers a question by Juan C. Macías.

1. INTRODUCTION

A *continuum* is a compact connected metric space. For a continuum X , consider the following set:

$$2^X = \{A \subset X : A \text{ is a nonempty closed subset of } X\}.$$

Let n be a positive integer; the n -fold hyperspace of X , denoted by $C_n(X)$, is the set:

$$\{A \in 2^X : A \text{ has at most } n \text{ components}\};$$

the n -fold symmetric product of X , denoted by $F_n(X)$, is the set:

$$\{A \subset X : A \text{ has at most } n \text{ points}\}.$$

These sets are topologized with the Hausdorff metric which is defined as

$$\mathcal{H}(A, B) = \inf\{\varepsilon > 0 : A \subset \mathcal{V}_\varepsilon(B) \text{ and } B \subset \mathcal{V}_\varepsilon(A)\},$$

where $\mathcal{V}_\varepsilon(A) = \{x \in X : d(x, A) < \varepsilon\}$.

Sam B. Nadler, Jr., [21] introduced the hyperspace suspension of a continuum, $HS(X)$, as the quotient space $C_1(X)/F_1(X)$. Later Sergio

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