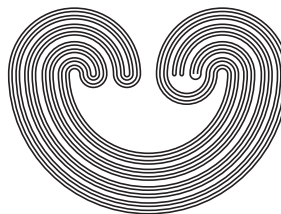


<http://topology.auburn.edu/tp/>

TOPOLOGY PROCEEDINGS



Volume 54, 2019

Pages 335–359

<http://topology.nipissingu.ca/tp/>

ENTROPY OF INDUCED DENDRITE HOMEOMORPHISM $C(f) : C(D) \rightarrow C(D)$

by

PALOMA HERNÁNDEZ AND HÉCTOR MÉNDEZ

Electronically published on May 28, 2019

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers.

See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.

Topology Proceedings

Web: <http://topology.auburn.edu/tp/>

Mail: Topology Proceedings

Department of Mathematics & Statistics

Auburn University, Alabama 36849, USA

E-mail: topolog@auburn.edu

ISSN: (Online) 2331-1290, (Print) 0146-4124

COPYRIGHT © by Topology Proceedings. All rights reserved.



ENTROPY OF INDUCED DENDRITE HOMEOMORPHISM $C(f) : C(D) \rightarrow C(D)$

PALOMA HERNÁNDEZ AND HÉCTOR MÉNDEZ

ABSTRACT. Let $f : D \rightarrow D$ be a dendrite homeomorphism. Let $C(D)$ denote the hyperspace of all subcontinua of D endowed with the Hausdorff metric. Let $C(f) : C(D) \rightarrow C(D)$ be the induced homeomorphism in hyperspace $C(D)$. We show in this paper that the topological entropy of $C(f)$ has only two possible values: 0 or ∞ . Also we show that the entropy of $C(f)$ is ∞ if and only if there exists a point $x \in D$ such that x is not an element of the minimal subdendrite of D that contains the union $\alpha(x, f) \cup \omega(x, f)$.

1. INTRODUCTION AND SOME DEFINITIONS

A *continuum* is a nonempty compact and connected metric space.

Let $X = (X, d)$ be a continuum. Let 2^X be the collection of all nonempty compact subsets of X endowed with the Hausdorff metric H_d induced by metric d . Each nonempty subset of 2^X , with the corresponding restriction of H_d , is a *hyperspace*.

If Y is a continuum and $Y \subset X$, then Y is a *subcontinuum* of X . Let $C(X)$ denote the hyperspace of all subcontinua of X . Hyperspaces 2^X and $C(X)$ are continua as well; see [15].

A continuum X is an *arc* if it is homeomorphic to the unit interval $[0, 1] \subset \mathbb{R}$, a *simple closed curve* provided that it is homeomorphic to the circle $S^1 = \{x^2 + y^2 = 1\} \subset \mathbb{R}^2$, a *graph* if it can be written as the union of finitely many arcs any two of which either are disjoint or intersect only in one or both of their end points, a *tree* if it is a graph which contains no

2010 *Mathematics Subject Classification.* Primary: 37B40, 37B45. Secondary: 54B20.

Key words and phrases. dendrite homeomorphism, hyperspace of subcontinua, induced hyperspace homeomorphism, omega limit set, topological entropy.

©2019 Topology Proceedings.

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers. See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.