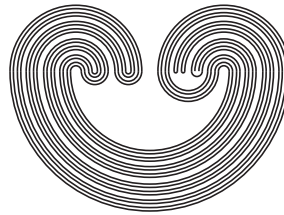


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ON EVENTUAL COLORING NUMBERS

by

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ON EVENTUAL COLORING NUMBERS

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ABSTRACT. In [6], for each natural number p we defined eventual colorings within p of homeomorphisms which are generalizations of colorings of fixed-point free homeomorphisms, and we investigated the eventual coloring number $C(f, p)$ of a fixed-point free homeomorphism $f : X \rightarrow X$ with zero-dimensional set of periodic points. In [6], we constructed two indices $\varphi_n(k)$ and $\tau_n(k)$ for evaluating the eventual coloring number $C(f, p)$. The purpose of this paper is to construct a new index $\psi_n(k)$ which is more appropriate than the indices $\varphi_n(k)$ and $\tau_n(k)$.

1. INTRODUCTION

In this paper, we assume that all spaces are separable metric spaces and all maps are continuous functions. Let \mathbb{N} be the set of all natural numbers, i.e., $\mathbb{N} = \{1, 2, 3, \dots\}$. For a separable metric space X , $\dim X$ denotes the covering dimension of X . For each map $f : X \rightarrow X$, let $P(f)$ be the set of all periodic points of f , i.e.,

$$P(f) = \{x \in X \mid f^j(x) = x \text{ for some } j \in \mathbb{N}\}.$$

For a subset K of X , $\text{cl}(K)$, $\text{int}(K)$ and $\text{bd}(K)$ denote the closure, interior and the boundary of K in X , respectively. Let \mathcal{C} be a family of subsets of X . For each $x \in X$, $\text{ord}_x(\mathcal{C})$ denotes the number of elements of \mathcal{C} which contain x , i.e.,

$$\text{ord}_x(\mathcal{C}) = |\{C \in \mathcal{C} \mid x \in C\}|.$$

By a *swelling* of a family $\{A_s\}_{s \in S}$ of subsets of a space X , we mean any family $\{B_s\}_{s \in S}$ of subsets of X such that $A_s \subset B_s$ ($s \in S$) and for every

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