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by

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DYNAMICS ON LOCALLY COMPACT HAUSDORFF SPACES

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Abstract. Given a metric space X, it is natural to ask, "Which subsets of X arise as sets of periodic points of continuous self-maps on X?" Since most of the metric spaces have to contain a copy of ω^2, the following results of this paper partially answer this question.

(1) A subset S of ω^2 occurs as the set of periodic points for some continuous self-map on ω^2 if and only if $\overline{S} \setminus S$ is either empty or infinite.
(2) A subset S of ω^2 occurs as the set of periodic points for some self-homeomorphism on ω^2 if and only if $T \bigcap S^c$ is either empty or infinite for any (minimal) subset T of ω^2 which is invariant under all those homeomorphisms under which S is invariant.
(3) Every subset of $\mathbb{N}$ occurs as set of periods of periodic points for some self-homeomorphism on ω^2.

1. Introduction

There have been many papers characterizing the sets of periods of periodic points for various classes of self-maps, such as (i) continuous self-maps on the real line $\mathbb{R}$ (see [8]), (ii) polynomials on $\mathbb{C}$ (see [2]), (iii) toral automorphisms (see [13]), (iv) totally transitive maps on I (see [3]), (v) continuous self-maps of $\mathbb{R}^n$ (see [12]), (vi) additive cellular automata (see [16]), (vii) linear operators (see [1]), and (viii) degree one maps on S^1 (see [18]). Also, there have been some results giving partial information about the sets of periodic points for continuous self-maps on various sets (see

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