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Lower Bounds of the Topological Entropy of Maps of Y^*

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We give the best lower bound of the topological entropy of a continuous map f of the space $\mathbf{Y} = \{z \in \mathbf{C} \mid z^3 \in [0, 1]\}$ into itself, with $f(0) = 0$, as a function of its set of periods.

1. INTRODUCTION

Let $\mathbf{Y}$ be the space $\{z \in \mathbf{C} \mid z^3 \in [0, 1]\}$. Let us consider the family $\mathscr{Y}$ of continuous maps of $\mathbf{Y}$ into itself with 0 as a fixed point. A characterization of the set of periods of periodic orbits of $f \in \mathscr{Y}$, based upon the knowledge of the behaviour of certain periodic orbits, was given in [ALM].

Knowing the behaviour of those periodic orbits, we can apply the standard techniques of [BGMY] to calculate the best lower bounds of topological entropy for $f \in \mathscr{Y}$, depending on the set of periods of f. Thus our work goes in the fifth of the six directions suggested in [ALM].

Henceforth we assume known for the reader the notation and terminology of [ALM, BGMY], which we shall use freely throughout the paper.

We must consider three orderings of some subsets of $\mathbf{N}$.

- The *Šarkovskiĭ ordering* of $\mathbf{N}$ is

$$3, 5, 7, \ldots, 2 \cdot 3, 2 \cdot 5, 2 \cdot 7, \ldots, 2^2 \cdot 3, 2^2 \cdot 5, 2^2 \cdot 7, \ldots, \ldots, 2^3, 2^2, 2, 1.$$

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