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SETS OF EVENTUAL PERIODS OF DYNAMICAL SYSTEMS

K. ALI AKBAR AND T. MUBEENA

Abstract. In this paper, we discuss sets of eventual periods and obtained a class of subsets of $\mathbb{N}_0 \times \mathbb{N}$ which occur as sets of eventual periods for various classes of self maps, such as (1) continuous self maps of an interval, (2) continuous self maps of the plane, and (3) linear operators on vector spaces.

1. Introduction

Dynamics is the study of eventual behaviour of orbits. The periodic orbits are the simplest kind of orbits. There have been a lot of papers that characterize the sets of periods for various classes of self maps, such as (a) continuous self maps of the real line $\mathbb{R}$ (see [4]), (b) polynomials on $\mathbb{C}$ (see [2]), (c) toral automorphisms (see [8]), (d) totally transitive maps on I (see [3]), (e) degree one maps on S^1 (see [10]), and (f) (i) linear operators on $\mathbb{C}^n$, (ii) linear operators on $\mathbb{R}^n$, (iii) linear operators on the Hilbert space l^2, and (iv) isometries of Hilbert spaces (see [1]). Refer to [6] for a nice survey about the sets of periods of dynamical systems. In this paper, we consider sets of eventual periods of (1) continuous self maps of the interval, (2) continuous self maps of the plane, and (3) linear operators on finite dimensional vector spaces. Therefore, it is natural to investigate the answer to the following general question:

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Key words and phrases. closed under lcm, dynamical systems, eventual periods, linear operators, period set, trajectory, types of orbits.

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