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A characterization of zero topological entropy for a class of triangular mappings ☆

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Abstract

Sharkovskiĭ and Kolyada (1991) stated the problem of characterization triangular mappings having zero topological entropy. It is known that, even under some additional assumptions, this aim has not been reached. We solve this problem in the class of triangular mappings with basis map having closed set of periodic points.

Keywords: ECIT-89: European Conference on Iteration Theory held in Batschuns, Austria, 1989; Discrete dynamical system; Triangular mappings; Topological entropy; Chaos; Recurrent and uniformly recurrent points

1. Introduction and notation

Let $I = [0, 1]$ be the compact unit interval of the real line. We consider *triangular mappings* on the unit square, i.e., continuous transformations from I^2 into itself of the form $F : (x, y) \to (f(x), g(x, y))$. In this setting, the maps f and g are, respectively, called the *basis* and the *fiber* map of F. For every $x \in I$, the maps g_x defined by $g_x(y) = g(x, y)$ form a system of one-dimensional mappings depending continuously on x. For more details, see, for instance, [1,3,4,12,13].

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