We provide an iterated function system on any compact connected \(m\)-dimensional manifold with just three diffeomorphisms which are \(C^1\)-robustly minimal. This improves the main result of [Ghane et al., 2010].

Keywords: Robust minimal systems; iterated function systems.

1. Introduction

Let \(M\) be a compact connected \(m\)-dimensional manifold. We denote by \(\text{Diff}^1(M)\) the space of all \(C^1\)-diffeomorphisms from \(M\) to itself endowed with \(C^1\)-topology. For a collection of diffeomorphisms \(L = \{f_1, \ldots, f_n\} \subset \text{Diff}^1(M)\), the iterated function system (abbrevatively IFS) \(G(M; f_1, \ldots, f_n)\) on \(M\) generated by \(L\) is given by iterates \(f_{i_1} \circ \cdots \circ f_{i_k}\) with \(i_j \in \{1, \ldots, n\}\).

Recall that an IFS \(G(M; f_1, \ldots, f_n)\) is called minimal if each closed subset \(X \subset M\) such that \(f_i(X) \subset X\), for all \(i\), is empty or coincide with \(M\).

Gorodetski and Il’yashenko [2000] provided an example of a robust minimal iterated function system on the circle with two generators. For a collection of diffeomorphisms \(L = \{f_1, \ldots, f_n\} \subset \text{Diff}^1(M)\), the iterated function system (abbrevatively IFS) \(G(M; f_1, \ldots, f_n)\) on \(M\) generated by \(L\) is given by iterates \(f_{i_1} \circ \cdots \circ f_{i_k}\) with \(i_j \in \{1, \ldots, n\}\).

In this note, we provide a \(C^1\)-robustly minimal IFS on any compact connected \(m\)-dimensional manifold with only three generators which improves the main result of [Ghane et al., 2010].

We provide an iterated function system on any compact connected \(m\)-dimensional manifold with just three diffeomorphisms which are \(C^1\)-robustly minimal. This improves the main result of [Ghane et al., 2010].

Keywords: Robust minimal systems; iterated function systems.