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Robust ergodicity of expanding transitive actions

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Abstract

In this talk, we present that every expanding transitive group (or semigroup) action of $C^{1+\alpha}$ conformal diffeomorphisms of a compact manifold is robustly ergodic with respect to the Lebesgue measure.

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1 Introduction

Ergodic theory is one of the parts of theory of dynamical systems. The theory deals with measure preserving actions of measurable maps on a measure space. A measure-preserving map is called ergodic if the measure of every invariant measurable set be either 0 or 1. For ergodicity of group (or semigroup) actions, the notion of measure-preserving map can be extended to *quasi-invariant* group (or semigroup) action. A group (or semigroup) action is quasi-invariant with respect to a measure μ if the puch-forward of μ, by the generators of action, be absolutely continuous with respect to μ.

Authors in [1] showed that every expanding minimal semigroup action of $C^{1+\alpha}$ conformal diffeomorphisms of a compact manifold is robustly ergodic with respect to Lebesgue measure. They used the tools of Lebesgue density point and Lebesgue number. We obtian the ergodicity of group (or semigroup) actions by weaker assumptions. We show that every expanding transitive group (or semigroup) action of $C^{1+\alpha}$ conformal diffeomorphisms of a compact manifold is robustly ergodic with respect to Lebesgue measure. We also present an example for showing different our work from [1]

Minimality and so transitivity, in general, does not imply ergodicity. See [2, 3].

1.1 Notations and definitions

Consider a collection of diffeomorphisms $\{f_1, f_2, \cdots, f_k\}$ on a compact manifold M. Let us denote by $\mathcal{F}$ (or $\mathcal{F}^+$) the group (or semigroup) action generated by $f_1, \cdots, f_k$.

Consider the group (or semigroup) action $\mathcal{F}$ (or $\mathcal{F}^+$). Let $\sum_k$ (or $\sum_k^+$) be the space of two-sided (or one-sided) infinite sequences of elements of the set $\{1, \cdots, k\}$. For $\omega =$

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