A NOTE ON DIMENSIONAL ENTROPY
FOR AMENABLE GROUP ACTIONS

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ABSTRACT. In this short note, for countably infinite amenable group actions, we provide topological proofs for the following results: Bowen topological entropy (dimensional entropy) of the whole space equals the usual topological entropy along tempered Følner sequences; the Hausdorff dimension of an amenable subshift (for certain metric associated to some Følner sequence) equals its topological entropy. This answers questions by Zheng and Chen [10] and Simpson [9].

1. Introduction

Let (X, G) be a G-action topological dynamical system, where X is a compact Hausdorff space and G a topological group. Throughout this paper, G is always assumed to be a countably infinite amenable group, i.e. there exists a sequence of nonempty finite subsets $\{F_n\}$ of G (a *Følner sequence*) such that

$$\lim_{n \to +\infty} \frac{|F_n \bigtriangleup gF_n|}{|F_n|} = 0, \quad \text{for all } g \in G.$$