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A SUSPENSION FLOW OVER THE FULL SHIFT WITH TWO DISTINCT MEASURES OF MAXIMAL ENTROPY

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ABSTRACT. We give an explicit construction of a suspension flow with continuous roof function over a full shift which has two distinct measures of maximal entropy. This is a special case of our results on measures of maximal entropy for suspension flows over the full shift presented in *Measures of maximal entropy for suspension flows over the full shift* (available at arXiv:1708.00550v1 [math.DS]).

1. INTRODUCTION

In this note, we explicitly construct a continuous roof function $\rho : \Sigma \mapsto (0, \infty)$, where Σ is the full shift on four symbols, so that the suspension flow has two measures of maximal entropy (MMEs). This contrasts with the case of a suspension flow with Hölder continuous roof function in which case the MME is unique [6].

While it will be no surprise to experts in this area that examples of suspension flows with multiple MMEs exist for roof functions beyond Hölder regularity, it is instructive to have concrete examples of this phenomenon. To the best of our knowledge, no such examples appear in the literature. Examples of suspension flows with no MME are provided in [3] and [7] in the case when the base is non-compact or the roof function has zeroes. In our setting, existence of at least one MME is guaranteed since we have an expansive flow on a compact space.

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