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EVOLUTION OF A STRANGE ATTRACTOR TO A FUNCTION OF A BILATERAL SHIFT

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Abstract. This paper graphically illustrates how a strange attractor can evolve to a function of a bilateral shift.

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1 Introduction

This paper illustrates how a strange attractor of a time one map of a Twist IDE can evolve to a function of a bilateral shift by reducing the damping on the twist form. See Figures 1-5, containing Plates 1-10 of Sec. 3. By viewing Plates 10-1, reversing the sequence of figures, the effect of damping on a bilateral shift is illustrated.

Based on the examples in this paper, the following conjecture is presented:

Conjecture 1 *Damping of a bilateral shift cannot remove its complexity, hence the complexity of strange attractors formed by including a damping factor to its twist form retains the complexity, and unpredictability, of a bilateral shift.*

2 The Twist IDE

This section explains the twist IDE.

Two forms make up the twist IDE: A twist form and an harmonic oscillator clock (HOC) [1] form. The HOC form supplies a periodic driving force to the twist form. The HOC form is

$$\mathbf{S}_h(\mathbf{Z}) = \exp(h \cdot 2 \cdot \pi \mathbf{B})\mathbf{Z} \tag{1}$$

where

$$\mathbf{Z} = \begin{pmatrix} z \\ w \end{pmatrix},$$