The Topology
of Chaos
Chapter 1:
Overview

Robert
Gilmore

Overview-01
Overview-02
Overview-03
Overview-04
Overview-05
Overview-06
Overview-07

The Topology of Chaos
Chapter 1: Overview

Robert Gilmore

Physics Department
Drexel University
Philadelphia, PA 19104
robert.gilmore@drexel.edu

Physics and Topology Workshop
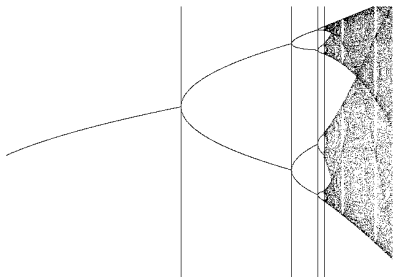Drexel University, Philadelphia, PA   19104

September 2, 2008

J. R. Tredicce

Can you explain my data?

I dare you to explain my data!
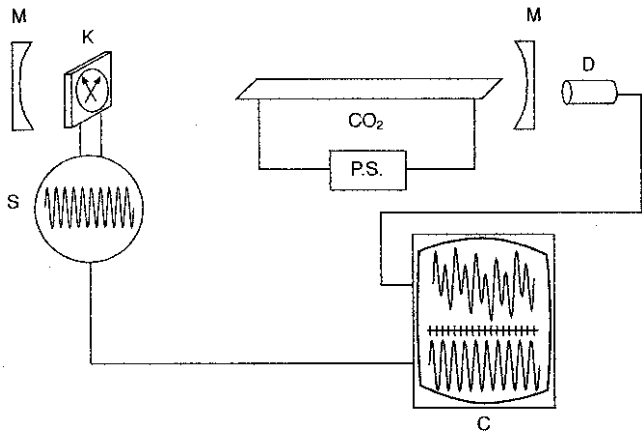
Where is Tredicce coming from?

Feigenbaum: $\alpha = \ \ 4.66920 \ 16091 \ .....$
$\delta = -2.50290 \ 78750 \ .....$

LSA Experimental Arrangement

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Original Objectives

Construct a simple, algorithmic procedure for:

- Classifying strange attractors
- Extracting classification information

from experimental signals.

Result

There is now a classification theory.

1. It is topological
2. It has a hierarchy of 4 levels
3. Each is discrete
4. There is rigidity and degrees of freedom
5. It is applicable to R^3 only — for now

The 4 Levels of Structure

- **Basis Sets of Orbits**
- **Branched Manifolds**
- **Bounding Tori**
- **Extrinsic Embeddings**

Organization

LINKS OF PERIODIC ORBITS

organize

BOUNDING TORI

organize

BRANCHED MANIFOLDS

organize

LINKS OF PERIODIC ORBITS