



Radboud University Nijmegen

The Art of Modeling Dynamic Systems

IV

Table 12-1. Summary of the Hierarchy of Dynamic Systems.

Constraints	Description
Absolute	Constant state '
Analytic integrals	Solvable dynamic system
Approximate analytic integrals	Amenable to perturbation theory
Quasi-deterministic; smooth but erratic trajectory	Chaotic dynamic system
Rigorously defined only by averages over time or state space	Turbulent/stochastic
12-2. A few examples of the	types of dynamic systems.
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	Absolute Analytic integrals Approximate analytic integrals Quasi-deterministic; smooth but erratic trajectory Rigorously defined only by averages over time or state space 12-2. A few examples of the

Zero Images, gravity models, structures

I Gear trains, 2-body problem, physical pendulum

II Satellite orbits, lunar and planetary theories

III Climatology, Lorenz equations, discrete logistic equation

Quantum mechanics, turbulent flow, statistical mechanics

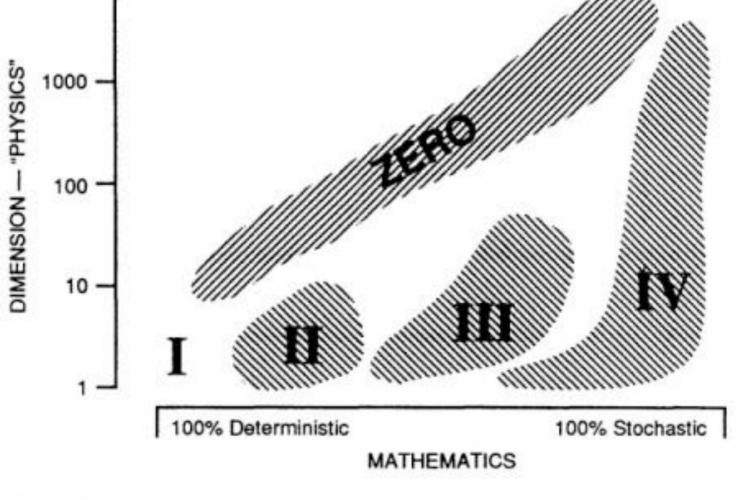
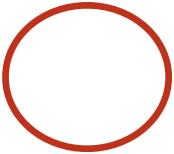
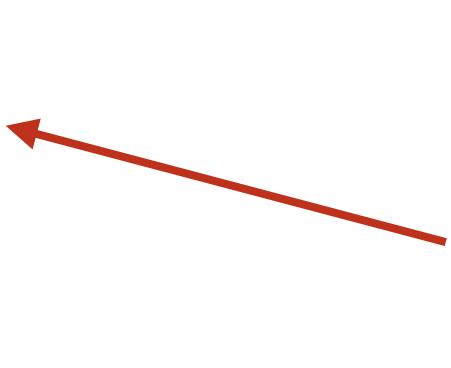


Figure 12-1. Schematic representation of the Hierarchy of Dynamic Systems.







Deterministic Chaos

Deterministic Chaos

A Classification Scheme for Dynamic Systems

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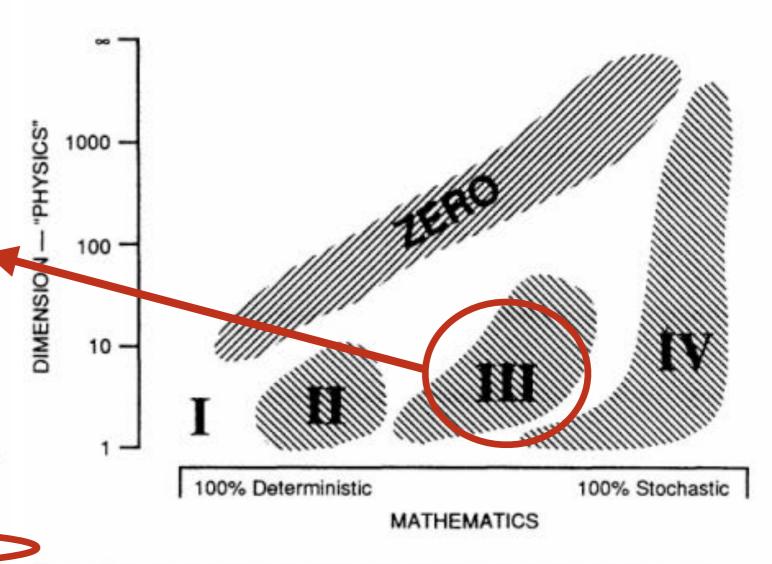


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