Dynamics Days '94

WEDNESDAY, JANUARY 5, 1994–CONFERENCE BEGINS
8:45 opening remarks–**E. Dowell** (Dean, School of Engineering, Duke University)

Chairman: R. BEHRINGER
9:00-9:45 **H. Swinney*** (U of Texas) *Anomalous Diffusion and Levy Flights*
9:45-10:05 **D. del-Castillo-Negrete** (U of Texas) *Transition to Chaos in an Area Preserving Non-Twist Map*
10:05-10:25 **G. Metcalfe** (Northwestern U) *Lobe Transport near Reattachment Points*

10:25-11:10 Poster Session 1

Chairman: D. SCHAEFFER
11:10-11:30 **K. Coughlin** (U of Montreal) *Numerical Simulation of Turbulent Bursts*
11:30-11:50 **D. Gauthier** (Duke U) *Controlling Chaos in Fast Dynamical Systems*
11:50-12:10   Umbanhawer
11:50-1:10 lunch

Chairman: L. HOWLE
1:10-1:55 **D. Koditschek*** (U of Michigan) *Toward a Systems Theory for Coupled Oscillators in Robotics*
1:55-2:15 **I. Schwartz** (Naval Res. Lab) *Anti-Phase Switching in Globally Coupled Dynamical Systems*
2:15-2:35 **I. Kevrekidis** (Princeton U) *Catalysis on Microstructured Surfaces*

2:35-3:20 Poster Sesssion 2

Chairman: E. KOSTELICH
3:20-4:05 **S. Morris*** (U of Toronto) *Spiral Defect Chaos in Gas Convection Experiments*
4:05-4:50 **S. Edwards*** (Haverford Col.) *(Forbidden) Symmetries in Nonlinear Surface Waves*
4:50-5:10 **W. van de Water** (Eindoven U of Technology) *Averaging Dynamics in the Faraday Experiment*
5:10-5:30 **K. Pyragas** (Semiconductor Physics Inst.) *Continuous Control of Chaos*
Lituania
5:30-7:30 dinner

Chairman: H. GREENSIDE
7:30-8:15 **M. Golubitsky*** (U of Houston) *Symmetry and Chaos: Patterns on Average*
8:15-9:00 **J. Gollub*** (Haverford Col) *Characterization of Chaotic Spatiotemporal Patterns*

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THURSDAY, JANUARY 6

Chairman: J. SOCOLAR
8:30-9:15 **T. Powell*** (UC Davis) *Modelling Biology and the Ocean*
9:15-10:00 **B. Shaw*** (Lamont-Doherty Earth Obs.) *Modelling earthquakes*
10:00-10:20 **S. Pepke** (UC Santa Barbara) *Predictability in Self-Organizing Earthquake Dault Models*

10:20-11:05 Poster session 3

Chairman L. VIRGIN
11:05-11:50 **C. Castillo-Chavez*** (Cornell U) *Complex Pair-Formation Models with Simple Dynamics and Their Connections to Epidemiology*
11:50-12:10 **M. Ding** (Florida Atlantic U) *Controlling Chaos in a Temporally Irregular Environment*
12:10-12:30 **B. Yacobson** (NC State U) *Diffusion-Mediated Dynamics of Stressed Surfaces: Loopholes to Fracture*

12:30-1:30 Lunch

chairman: R. PALMER
1:30-2:15 **M. Mitchell*** (Santa Fe Inst.) *Cellular Automata to Perform Computations : Mechanisms and Impediments*
2:15-3:00 **G. Grinstein*** (IBM) *Coherent Periodic Oscillations*
3:00-3:20 **W. Chin** (U of Maryland) *Bifurcations to Chaos in Forced Impact Oscillators*

3:20-4:05 Poster Session 4

Chairman: J. GUCKENHEIMER
4:05-4:50 **N. Packard*** (The Prediction Co.) *Evolutionary Activity: An Order Parameter for Evolutionary Processes*
4:50-5:10 **A. Tamasevicius** (Semiconductor Physics Institute) *An Analogue Technique for Estimating Fractal Dimensions from Dynamical Poincare Maps*
5:10-5:30 **A. Shil'nikov** (Research Institute for Applied Mathematics and Cybernetics) *Normal Forms and Lorenz Attractors*
5:30-5:50 **D. Sherwell** (U of Witwatersrand) *The Dynamical System Relating the Digits of Irrational Numbers*

5:50-6:45 cash bar/reception

6:45-8:00 banquet

FRIDAY, JANUARY 7

Chairman: S. TEITSWORTH
8:30-9:15 **P. Hohenberg*** (AT&T Bell Labs) *Noise and Chaos in Nonequilibrium Patterns*
9:15-9:35 **J. Boissonade** (U of Bordeax I) *Dynamics of Turing Patterns–Monolayers Close to Onset*
9:35-9:55 **Z. Chen** (Bryn Mawr Col.) *Spatiotemporal Dynamics in the Transverse Patterns of a Laser*
9:55-10:15 **T. Shinbrot** (Northwestern U) *Using Horseshoes to Create Coherent Structures in Chaotic Fluid Flow*

10:15-11:00 Poster session 5

Chairman: H. SWINNEY
11:00-11:45 **J. Sethna*** (Cornell U) *Hysteresis and Hierarchies: Dynamics of Disorder-Driven First-Order Phase Transformations*
11:45-12:05 **Virginie Emsellem** (ENS) *An Experiment on Selection in Dendritic Growth*
12:05-12:25 **D. Raitt** (Northwestern U) *Domain Structures: Existence and Stability in a Fourth-Order Ginzburg-Landau Equation*

12:25-1:20 Lunch

Chairman: D. GAUTHIER
1:20-2:05 **Y. Couder*** (ENS) *The Self-Organization of Fibonacci Spirals in Plants*
2:05-2:25 **A. De Wit** (Stanford U) *Chaotic Turing-Hopf Mixed Mode*
2:25-2:45 **D. Auerbach** (U MD) *Controlling Chaos in Extended Systems*
2:45-3:05 **J. Sommerer** (Johns Hopkins U) *Blowout Bifurcations*

3:05-3:50 Poster Session 6

Chairman: P. HAFF
3:50-4:35 **B. Hallet*** (U of Washington) *Self-Oranization in Landscapes*
4:35-5:20 **B. Werner*** (Scripps) *Feedbacks in Models of Geomorphic Pattern Formation*
5:20-5:40 **P. Umbanhowar** (U of Texas) *Transition to Parametric Wave Patterns in a Vertically Oscillated Granular Layer*
5:40-6:00 **Y. Tu** (Cal Tech) *Rotating Thermal Convection*
6:00-6:20 **A. Hohl** (Georgia Tech) *Dynamical Hysteresis and Scaling Laws in Optical*

Bistability
6:20-6:40 **D. Egolf** (Duke U) *Variation of the Lyapunov Dimension Density near Two Nonequilibrium Phase Transitions*

SATURDAY, JANUARY 8

Chairman: P. THOMPSON
8:30-9:15 **S. Strogatz*** (MIT) *Superconducting Arrays as Integrable Systems*
9:15-9:35 **S. Kim** (Pohang U of Science and Technology) *Chaotic Dynamics in Small Josephson Junction Ladder Arrays*
9:35-9:55 **K. Wiesenfeld** (Georgia Tech) *Josephson Junction Arrays in Principle and Practice*
9:55-10:15 **Lisa Borland** (U of Stuttgart) *Determining the Dynamics of Stochastic Processes from Observations*

10:15-10:35 break

Chairman: K. WIESENFELD
10:35-11:20 **E. Ott*** (U MD) *Chaotic Flows and Magnetic Dynamos: Fractal Magnetic Fields and Sign-Singular Measures*
11:20-11:40 **M. Kirby** (Coloroda State U) *A Nonlinear Approach for Data Analysis and the Reduction of Dynamical Systems*
11:40-12:00 **P. Hammer** (Naval Surface Warefare Center) *Experimental Observation of On-Off Intermittency*
12:00-12-20 **T. Newell** (Phillips Laboratory) *Synchronizing Chaos by Occasional Proportional Feedback: The Case of Two Identical Diode Resonators*

CONFERENCE CONCLUDES

*Invited Speaker

Dynamics Days '94

ARIZMENDI, Constancio M.	Invasion percolation interface roughening in porous media
BAXTER, William	Surface of a spinning bucket of sand
BERGMANN, Michael J.	Solitary-wave dynamics in extrinsic semiconductors under voltage bias
BLEICH, Michael	Relazation oscillations in model sand piles
BRAIMAN, Yehuda (Yuri)	Stabilization of chaotic and neutral dynamics by means of weak periodic perturbations
CASEY, Michael	Computation dynamics in discrete time recurrent nueral networks
CENYS, Antanas	Model for chaos-chaos intermittency
CHERNIKOV, Alexander A.	Diffusion in coupled web maps
DANKOWICZ, Harry	Looking for chaos: an alternative to Melnikov's method
DAS, Pranab. K.	A bifurcation analysis of the four-dimensional generalized Hopfield neural network
DIONNE, Beniot	Time-periodic, spatially-periodic planforms in euclidean equivariant PDE
EGOLF, David A.	Dynamical complexity versus spatial disorder for two nonequilibrium phase transitions
FILATRELLA, Giovanni	Soliton dynamics in two-dimentional Josephson tunnel junctions
FOSTER, Andrew H.	Experimental study of cardiac conduction using nonlinear dynamics and chaos theory
FUNKE, Michael	Controlling low-dimentional chaos: determination and stablization of unstable periodic orbits

GARCIA, Edelfredo

Deterministic cluster growth; The ARM method: a nonlinear dynamics approach for solving acid-base equilibrium problems; The box-scanning method: a surveillance test for self-similarity

GARICA-PELAYO, Ricardo

Analytical treatment of the Lorentz gas

GILLS, Zelda

Control of chaos in a laser cavity with internal reflections

GLASSER, Benjamin J.

Time-dependent flows in fluidized beds

GROSU, Ioan

Controlling a hard duffing oscillator

GUNARATNE, Gemunu

Pattern formation in the presence of symmetries

GUZDAR, Parvez N.

2D nonlinear dynamics of four driven vortices

HART, Darlene

Nonlinear dynamics in an optical fiber

HASTINGS, Harold M.

A proof of the Williams conjecture (classification of subshifts of finite type)

HSU, Guan-Hsong

Toward optimal implementation of chaotic noise reduction algorithms

HUTH, John M.

Convection in electrochemical deposition

JIRSA, Viktor

A non-linear biophysical coupling for bistable coordination

JOHNSON, Mark E.

Computation and visualization of invariant manifolds

KADTKE, James B.

Chaotic vortex capture phenomena in extended systems

KAPLAN, Harvey

Cessation of Type I intermittency leads to multistable periodic island hierarckies

KHIBNIK, Alexander I.

Continuation techniqus and interactive software for bifurcation analysis of OED's and iterated maps

KOLODNER, Dalil	Comoving time averages of erratic traveling wave patterns
KOOK, Hyungtae	Periodic doubling in area-perserving maps
LAI, Ying-Cheng	Extremely sensitive dependence on parameters in spatio-temporal chaotic dynamical systems; Crisis in chaotic scattering
LANDSBURG, Adam S.	New types of waves in systems with O(2) symmetry
LOPEZ-PENA, Ramon	Recognition of temporal sequences of patterns using state-dependent synopses
LUDWIG, Francis	Adaptation of multiresolution feature analysis to three-dimensional atmospheric wind fields
LUSTFELD, Haus	Transition to intermittency in a one dimensional map
McCORMICK, William	New types of stationary and spatic temporal patterns in a reaction diffusion system
METCALFE, Guy	Lobe transport near reattachment points
MEZIC, Igor	Birkhoff's ergodic theorem and statistical properties of chaotic dynamical systems
MOLTENO, Tim	Fast O(N) dimension estimation
MONTAKHAB, Afshin	Mode-locking and hysteresis in the globally coupled model of charge-density waves
MULDOON, Mark	Delay reconstruction for spatially extended systems
NICOL, Matthew J.	Symmetry of the asymptotic dynamics of maps commuting with compact Lie groups
NUNEZ, Noemi	Scalar tensor theories and chaos in cosmology
OERTER, Robert N.	The statistics of wavefunctions in quontum chaos

PANDO, Carlos L.   New instabilities in the CO_2 laser; Critical
                                 exponents in a multidimensional laser system

PATTANAYAK, Arjendu K.   Semiclassical dynamics of fluctuations:
                                 Ostensible quantum chaos

PAYNE, Lorna   Unstable output velocity behavior of radio-
                                 emission plasma

PELSTER, Axel   Systematic elimination of irrelevant modes in
                                 nonlinear delay systems

PERALTA-FABI, Ramon   A stochastic (Markovian) approach to
                                 avalanches: Real piles and a cellular
                                 automation

PETROVICHEV, Boris A.   Stochastic dynamics of a charged particle in
                                 an inhomogeneous magnetic field and in a
                                 field of a wave packet

PLATT, Nathan   Effects of additive noise on on-off
                                 intermittency

PRITCHARD, Dean   Generalized redundancies for time series
                                 analysis

RAPPEL, Wouter-Jan   Phase dynamics near a parity breaking
                                 instability

REDDY, C. Chenna   Transition to low dimensional chaos in plasma
                                 current: experimental observation from
                                 Aditya Tokamak

PAK, Hyak   Effects of ambient gases on granular
                                 materials under vertical vibration

ROGERS, Jeffery   Frequency plateaus in nonlinear oscillater
                                 chains

ROY, Rajarshi   Experimental synchronization of chaotic
                                 lasers; Control of chaos in a laser cavity
                                 with internal reflections

SALVINO, Liming   Many vecter fields approach

SCHREIBER, Sebastian J.	Radio dependent predator-prey models
SCOTTI, Antonio	Ergodicity conditions: interval consistency
SEN, Tanaji	Collective behavior of an ensemble of forced duffing oscillators near the 1:1 resonance
SETHIA, Gautam	Transition to low dimensional chaos in plasma current: experimental observation from Aditya Tokamak
SEUNGHWAN, Kim	Bifurcation analysis of single plaquette Josephson Junction arrays
SHERWELL, David	The dynamical systems relating the digits of irrational numbers
SHINBROT, Troy	Synchronization in coupled map lattices
SO, Paul T. M.	Experiments on quantum chaos with and without time reversability
SOCOLAR, Joshua	Controlling chaos in fast dynamical systems
STARRETT, John	Control of a chaotic prametically driven pendulum; Controlling chaos in the tent map
STONE, Emily	Decomposing intermittent data: principal components an archetypal analysis
STUPAKOV, Gennady	Nonadiabatic interaction of low-energy particle with high amplitude electromagnetic wave
SUBBARAO, D.	The concept of auxiliary invariant torus
SUKOW, David W.	Controlling chaos under 100 nS
SWINNEY, Harry	New types of stationary and spatic temporal patterns in a reaction diffusion system
THEILER, James	FT vs ARMA: a comparison of two approaches for generating data to test for nonlinearity
THORNBURG, Scott	Experimental synchronization of chaotic lasers

TREVINO Cesar   Dynamical behavior of closed convective
                                  loopes in square geometry

TRIANDAF, Ioana   Controlling unstable states in reaction-
                                  diffusion systems modelled by time series

ULBIKAS, Juras   Nonlinear dynamics of EEG under radiation of
                                  millimeter waves

UMBANHOWAR, Paul   Ultrasonic doppler velocimetry in turbulent
                                  Couette-Taylor flow

UMENO, Ken   Koualeuskaya-Painleve Machine

VALLETTE, Douglas P.   Spatiotemporal dynamics of rimming flows:
                                  experiments

van de Water, Willem   Universal shape of turbulent structure
                                  functions

VARGAS, Carlos A.   Onset and decay of oscillations in a salt-
                                  water system

WEISS, Jeffrey   Punctuated hamiltonian dynamics for forced 2D
                                  turbulence

WILLIAMS, Quinton   Noise an nonlinear interactions in an Prbium
                                  doped fiber ring laser

ZERTUCHE, Federico   Associative memory in a neural network with
                                  state-dependent synopses