Max-Planck-Institut für Physik komplexer Systeme

International Winter School on

Nonlinear Time Series Analysis

Dresden • February 11 -20, 1998

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Program

Wednesday 11

09:00 - 09:15	Opening address
09:15 - 10:30	**Holger Kantz** *Dynamical systems*
10:30 - 11:00	Coffee
11:00 - 12:30	**Danny Kaplan** *Stochastic processes*
12:30 - 14:00	Lunch
14:00 - 14:30	Computer matters
14:30 - 15:30	Participants and tutors introduce themselves
15:30 - 16:00	Coffee
16:00 - 17:30	Participants and tutors introduce themselves
17:30 - 18:15	Setup of posters by participants
19:00 -	Supper

Thursday 12

09:00 - 10:30	**Thomas Schreiber** *Phase space, basics of embedding*
10:30 - 11:00	Coffee
11:00 - 12:30	**Danny Kaplan** *Linear methods*
12:30 - 14:00	Lunch
14:00 - 15:30	Computer lab I
15:30 - 16:00	Coffee
16:00 - 16:30	Presentation by participants I
16:45 - 18:15	**Celso Grebogi** *Controlling chaos*
19:00 - 20:30	Supper
20:30 -	Poster session I

Friday 13

09:00 - 10:30	**Holger Kantz** *Lyapunov exponents*
10:30 - 11:00	COFFEE
11:00 - 12:30	**Thomas Schreiber** *Dimensions*
12:30 - 14:00	LUNCH
14:00 - 15:30	Computer lab II
15:30 - 16:00	COFFEE
16:00 - 16:30	Presentation by participants II
16:45 - 18:15	**Celso Grebogi** *Chaotic advection in open flows*
19:00 -	SUPPER

Saturday 14 - free

Sunday 15 - Excursions

Monday 16

09:00 - 10:30	**Danny Kaplan** *Modeling, prediction*
10:30 - 11:00	COFFEE
11:00 - 12:30	**Thomas Schreiber** *Noise reduction*
12:30 - 14:00	LUNCH
14:00 - 15:30	Computer lab III
15:30 - 16:00	COFFEE
16:00 - 16:30	Presentation by participants III
16:45 - 18:15	**Lenny Smith** *Atmospheric data*
19:00 -	SUPPER

Tuesday 17

09:00 - 10:30	**James Theiler** *Surrogate data*
10:30 - 11:00	Coffee
11:00 - 12:30	**Danny Kaplan** *Nonstationarity, 1/f noise*
12:30 - 14:00	Lunch
14:00 - 15:30	Computer lab IV
15:30 - 16:00	Coffee
16:00 - 16:30	Presentation by participants IV
16:45 - 18:15	**Peter Grassberger** *Synchronisation*
19:30 -	Conference Dinner in "Sophienkeller"

Wednesday 18

09:00 - 10:30	**Jim Yorke** *Embedding theory I*
10:30 - 11:00	Coffee
11:00 - 12:30	**Danny Kaplan** *Signal classification*
12:30 - 14:00	Lunch
14:00 - 15:30	Computer lab V
15:30 - 16:00	Coffee
16:00 - 16:30	Presentation by participants V
16:45 - 18:15	**Klaus Lehnertz** *Epilepsy prediction*
19:00 - 20:00	Supper
20:00 -	Poster Session II

Thursday 19

09:00 - 10:30	**Jim Yorke** *Embedding theory II*
10:30 - 11:00	Coffee
11:00 - 11:45	**James Theiler** *Spatio-temporal chaos*
11:45 - 12:30	**Holger Kantz** *High-dimensional chaos*
12:30 - 14:00	Lunch
14:00 - 15:30	Computer lab VI
15:30 - 16:00	Coffee
16:00 - 16:30	Presentation by participants VI
16:45 - 18:15	**Thomas Schreiber** *Fetal ECG extraction*
19:00 -	Supper

Friday 20

09:00 - 10:30	**Holger Kantz** *Entropy, symbolic dynamics*
10:30 - 11:00	Coffee
11:00 - 12:30	**Freddy Christiansen** *Periodic orbit theory*
12:30 - 14:00	Lunch
14:00 - 15:30	Computer lab VII
15:30 - 16:00	Coffee
16:00 - 16:30	Presentation by participants VII
16:45 - 18:15	Concluding remarks
19:00 -	Supper

Poster Session

No.	Author	Title
1	Luis Antonio Aguirre	*Modeling and analysis of nonlinear systems and time series using discrete models*
2	Volker Ahlers	*Synchronization and nonlinear dynamics of chaotic external cavity semiconductor lasers*
3	Jochen Arnhold	*Analysis of temporal stability of dynamical systems using correlation- and crosscorrelation integrals*
4	Dorjsuren Battogtokh	*Spatiotemporal bubbling in reaction diffusion systems*
5	Asa Ben-Hur	*Computing with dissipative dynamical systems*
6	Aldo Casaleggio	*Epicardial single cells markedly change their dynamic during ventricular fibrillation*
7	Ki H. Chon	*Accurate detection of nonlinear dynamics in short time series from stochastically noise driven maps via nonlinear autoregressive model*
8	Steffen Döbert	*Time series analysis of 3 GHz superconducting accelerating cavities at the S-DALINAC*
9	Amr El-Zant	*Time series of astronomical gamma ray bursts and flares from blazers*
10	Astrid Franz	*Dimension estimates for invariant sets of non-injective maps*
11	Ansgar Freking	*Generation and prediction of time series by a neural network*
12	Andreas Galka	*Testing for nonlinearity in short time series from medicine and ecology*
13	Stefan Güttler	*Geometric failure prediction for induction motors*
14	Pavel Hasal	*Chaotic patterns in coupled cells and reaction-diffusion systems*
15	Siegfried Häußler	*Analyzing the dynamics of hand tremor time series*
16	James Heald	*Chaotic noise reduction - Bayesian perspectives*
17	Tilmann Heil	*Semiconductor lasers subject to optical feedback dynamics and experimental evidence*
18	Dirk Holste	*Information measures from experimental data for analyzing DNA sequences*
19	Ines Katzorke	*Modelling and analysis of production systems*
20	Eugene Khatsko	*Chaotic regimes of AFMR in quasi-two-dimensional antiferomagnet*
21	Matthew Lee	*Modeling without prejudice with the use of group method of data handling (GMDH) type algorithms*
22	Karen Leighly	*Evidence for nonlinear variability in X-rays from active galactic nuclei*

Poster Session

No.	Author	Title
23	Patrick McSharry	*Combating uncertainty*
24	Ulrike Meyer	*Local regularities and predictability of time series*
25	Ronald Pott	*Entrainment of projection neurons of the lateral Amygdala in the Theta frequency range*
26	Rodrigo Quian Quiroga	*Chaos analysis of EEG data*
27	Balaji Rajagopalan	*Nonparametric techniques - applications to hydro climate time series modeling*
28	Maurice Rossi	*Reconstruction in hydrodynamics for coupled wakes*
29	Haidar Sabbagh	*Control of chaos in biological and excitable systems*
30	Rainer Sachs	*Predictability of time series*
31	Frank Schmüser	*Parturbation theory for a coupled map lattice*
32	Georg Schneider	*Simulation and fault diagnosis of a pendulum mill*
33	Silke Siegert	*Determination of the Fokker-Planck equation for noisy data sets*
34	Thilo Simon	*Analysis of dynamical perturbations in high precision machine tools*
35	Gabriele Stabile	*What one can say about the future behavior of data set strongly affected by the noise?*
36	Kleomenis Tsiganis	*Short time LCN's and correlation dimensions in a 3D Hamiltonian system*
37	Pablo Fabian Verdes	*Forecasting chaos from small data sets vs. local methods*
38	Guido Widman	*Prediction of epileptic seizures by nonlinear time series analysis of brain electrical activity: In vitro experiments and theoretical considerations*
39	Si Wu	*Neural network method for chaotic time series prediction*

Computer labs:

- I: Danny Kaplan, Rainer Hegger: *Visualization, basic stuff, MatLab*
- II: Rainer Hegger, Eckehard Olbrich: *Dimensions, Maximal Lyapunov exponent*
- III: Rainer Hegger, Eckehard Olbrich: *Modelling, Prediction*
- IV: Marcus Richter: *Noise reduction*
- V: Andreas Schmitz: *Surrogate data*
- VI:
- VII:

Presentation by participants:

- I: *Astrophysics, X-rays*
- II: *Mathematical and theoretical approaches*
- III: *Laser systems*
- IV: *Neural networks*
- V: *Hydrodynamics and climate*
- VI: *Spatially extended systems*
- VII: *Applications in engineering*

After dinner activities:
computer rooms, discussion and lecture rooms are available for continued work