Final Program

Fifteenth International Symposium on

Mathematical Theory of Networks and Systems

University of Notre Dame,
South Bend, Indiana, USA
August 12-16, 2002.

`www.nd.edu/~mtns/`

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WELCOME TO MTNS 2002

On behalf of the Organizing Committee of MTNS 2002 I welcome you to the 15th edition of MTNS, the International Symposium on the Mathematical Theory of Networks and Systems.

The symposium is organized every two years and traditionally covers areas involving a wide range of research directions in mathematical systems, networks and control theory. Mathematical methods which play a role in the areas mentioned above stem from a broad range of fields of pure and applied mathematics, including ordinary and partial differential equations, real and complex analysis, numerical analysis, probability theory and stochastic analysis, operator theory, linear and commutative algebra as well as algebraic and differential geometry. There are a wide range of applications ranging from problems in biology, communications and mathematical finance to problems in chemical engineering, aerospace engineering and robotics. One of the special features of MTNS 2002 will be 5 Mini-symposia, each consisting of a whole series of sessions. The Mini-sypomposia reflect areas where systems and control theory play a significant role.

MTNS 2002 features a total of 20 plenary and semi-plenary talks by some of the leading researchers in the area of systems and control theory. There will also be 90 sessions lasting 2 hours each. Members of the International Program Committee and Members from the Steering Committee were actively involved in the reviewing process and in the organization of sessions. I would like to express my sincere thank to all the members of these committees. I would also like to thank the Staff of the Department of Mathematics and the Center for Continuing Education at Notre Dame for their great help in the organization. A special thanks goes to David Gilliam, who worked countless hours, day and night, to make the submission of abstracts and papers and the completion of the conference proceedings a reality.

MTNS 2002 received generous support from the National Science Foundation, The Institute for Mathematics and its Applications (IMA) in Minnesota and from various departments and colleges at the University of Notre Dame. This support made it possible that many young researchers received travel support to attend MTNS 2002.

We hope you will find the 15th edition of MTNS interesting and rewarding.

Joachim Rosenthal
MTNS 2002 Symposium Chair

MTNS HISTORY

The fourteen previous MTNS meetings were held in:

1973 : College Park, Maryland, USA,	1987 : Phoenix, Arizona, USA,
1975 : Montreal,Canada,	1989 : Amsterdam, Netherlands,
1977 : Lubbock, Texas, USA,	1991 : Kobe, Japan,
1979 : Delft, Netherlands,	1993 : Regensburg, Germany,
1981 : Santa Monica, California, USA,	1996 : St. Louis, Missouri, USA,
1983 : Beer Sheva, Israel,	1998 : Padova, Italy,
1985 : Stockholm, Sweden,	2000 : Perpignan, France.

Special Events at MTNS 2002

- **Minisymposium on Biological Systems:**
  Organizers: Mark Alber and Raimund Ober.
  Sessions:
TUA2:	Patterns in Biology
TUM2:	Immunology 1: Introduction and Microscopy
TUP2:	Immunology 2: Microscopy and Biophysics
WA1:	Immunology 3: Structure and Kinetics
WM1:	Immunology 4: Diffusion and Modelling
WP1:	Immunology 5: Cellular Aspects
THA1:	Complex Networks and Biological Applications 1
THM1:	Complex Networks and Biological Applications 2
THP1:	Complex Networks and Biological Applications 3
FA1:	Genetic Networks

- **Minisymposium on Communication Systems:**
  Organizers: David Forney and Brian Marcus.
  Sessions:
MA1:	Minicourse on "Capacity of Multidimensional Codes"
MM1:	Capacity of Multi-Dimensional Codes Part II
MP1:	The Interaction of Control, Information and Communication
TUA1:	Design and Analysis of Block Codes, Part I
TUM1:	Design and Analysis of Block Codes, Part II
TUP1:	Convolutional Codes
WA2:	Computer Networks
WM2:	Control and Communications
WP2:	Cryptography

- **Minisymposium on Control and Computation:**
  Organizers: Paul van Dooren, Uwe Helmke and Volker Mehrmann
  Sessions:
WA4:	Model Reduction
WM4:	Control and Computation
WP4:	Large-Scale Computations in Control
THA4:	Fully Nonlinear, Three-Dimensional, Surface Water Waves in Arbitrary Depth
THM4:	Robust Control and Linear Matrix Inequalities
THP4:	Computational Methods for Structured Matrices and Applications
FA4:	Stability and Numerics
FM4:	Nonlinear Surface Water Waves: Theory, Computation and Experiment

- **Minisymposium on Financial Systems:**
  Organizers: Hans Schumacher and Michael Taksar.
  Sessions: THA3:   Systems and Control Theory in Finance and Insurance 1
                   THM3:   Systems and Control Theory in Finance and Insurance 2

- **Minisymposium on Multidimensional Systems:**
  Organizers: Krzysztof Galkowski, Eric Rogers and Victor Vinnikov.
  Sessions: TUA3:   Minicourse A: Multidimensional Systems
                   TUM3:   Multidimensional Systems 1
                   TUP3:   Multidimensional Systems 2
                   WA3:   Minicourse B: Multidimensional Systems
                   WM3:   Multidimensional Systems 3
                   WP3:   Multidimensional Systems 4
                   THA5:   Multidimensional Systems 5

- **Workshop on Open Problems in Systems Theory:**
  Organizer: Vincent Blondel
  Time: Monday and Tuesday, August 12, 13 from 20:00–22:00 in Room 102 De Bartolo Hall.

- **Panel Discussion on "Future Directions of Research and Teaching on Mathematical Control and Systems Theory":**
  Organizer: Biswa Datta
  Time: Wednesday Evening August 14, from 20:00–22:00 in Room 102 De Bartolo Hall.

Plenary Speakers:

Anthony Bloch (University of Michigan),

William Helton (University of California),

Bruce Hajek (University of Illinois),

Gilbert Strang (MIT),

Eduardo Sontag (Rutgers University).

Special Topic Invited Speaker:

Albert-Laszlo Barabasi (University of Notre Dame),

Roger Brockett (Harvard University),

Raffaello D'Andrea (Cornell University),

Matthias Heinkenschloss (Rice University),

Knut Hueper (University of Wuerzburg),

Karl Kunisch (Graz University),

Hans-Andrea Loeliger (ETH),

Robert J. McEliece (Cal Tech),

Wolfgang Runggaldier, (University of Padova),

Arjan van der Schaft (University of Twente),

Olof Staffans (Abo Akademi University),

Allen Tannenbaum (Georgia Tech),

Sjoerd Verduyn Lunel (University of Leiden),

Jan Willems (University of Groningen),

Jeffrey Wood (University of Southampton).

General Information

Registration Desk: The Registration desk is located in McKenna Hall, also called Center for Continuing Education (CCE). It will be open Sunday afternoon August 11, and staff will be available throughout the conference week during business hours.

Shuttle Bus: There will be continuous loops from the two conference hotels (Comfort Suites and Inn at Saint Mary's) to the conference center (CCE) housed in McKenna Hall during the times:

Sunday,	August 11	noon - 9:30 pm
Monday,	August 12	7 am - 10:30 pm
Tuesday,	August 13	7 am - 10:30 pm
Wednesday,	August 14	7 am - 10:30 pm
Thursday,	August 15	7 am - 10:30 pm
Friday,	August 16	7 am - 9 pm

Computer Access: Every participant receives his own login name and his own password. It will allow her/him to access the Notre Dame computer system from a machine in De Bartolo Hall.

Recreational Activities: The registration package will include information on possibilities to use the recreational facilities at Notre Dame like e.g. the swimming pools and the golf course.

Social Events:

- Sunday 18:00-21:00: There is a Welcoming Party in the Center for Continuing Education.

- Thursday 19:00-22:00: Banquet Dinner

- Friday 18:00-20:00: Farewell Party.

Notre Dame Tourism: The University offers a regular schedule of campus tours. Call the Eck Visitors' Center at (574) 631-5726 for more information.

Next to De Bartolo Hall is the Snite Museum of Art with a good collection of Fine Art. Admission is free.

Schedule of Events

Sunday August 11, 2002

18:00—21:00 Welcoming Reception

Center for Continuing Education

Monday August 12, 2002

8:00-8:30 *Room*: 101

Welcoming Remarks

Panos J Antsaklis,
Director, Center for Applied Mathematics
Steven Buechler,
Chair, Department of Mathematics
Jeffrey C Kantor,
Vice President

8:30-9:30 *Room*: 101 Plenary Talk

Bruce Hajek,
A Basket of System Theoretic Problems in Communications

9:30-10:30 *Room*: 101 Invited Talk

Roger Brockett,
Optimal System Identification for NMR Applications

9:30-10:30 *Room*: 102 Invited Talk

Hans-Andrea Loeliger,
Factor Graphs, Least Squares and Kalman Filtering

9:30-10:30 *Room*: 136 Invited Talk

Sjoerd Verduyn Lunel,
Control and Stabilization of Systems with Time Delays

Morning:

Room: 102, Session: MA1

Chair: Shmuel Friedland, Brian Marcus
Title: **Capacity of Multi-Dimensional Codes Part I**
11:00-13:00 **Minicourse on "Capacity of Multidimensional Codes"**,
Shmuel Friedland

Room: 126, Session: MA2

Chair: Michael D. Lemmon
Title: **Control Applications**
11:00-11:20 **Cancer Treatment Using Multiple Chemotherapeutic Agents Subject to Drug Resistance**, *John Westman, Bruce Fabijonas, Daniel Kern, Floyd Hanson*
11:25-11:45 **Selection of Decentralized Control Configurations Based on Disturbance Rejection for Plants with Real Integrators**, *Henning Schmidt*
11:50-12:10 **Synergetic Control of the Unstable Two-Mass System**, *Alexander Kolesnikov*
12:15-12:35 **Synergetic Control for Electromechanical Systems**, *Andrey Popov, Anatoly Kolesnikov, Gennady Veselov, Alexander Kolesnikov, Roger Dougal*
12:40-13:00 **Modeling of Out-of-Plane Hygroinstability of Multi-Ply Paperboard**, *Gianantonio Bortolin, Per-Olof Gutman*

Room: 136, Session: MA4

Chair: Bill Helton, Andre Ran, Leiba Rodman
Title: **Matrix and Operator Equations I**
11:00-11:30 **Noncanonical Almost Periodic Factorization and Toeplitz Operators with Almost Periodic Symbols**, *Leiba Rodman, I. M. Spitkovsky, H. J. Woerdeman*

11:30-12:00 **Symmetric Nonsquare Factorization of Selfadjoint Rational Matrix Functions and Algebraic Riccati Inequalities**, *A. C. M. Ran, Mark A. Petersen*

12:00-12:30 **Extremal Problems of Interpolation Theory**, *L. A. Sakhnovich*

12:30-13:00 **Convex Invertible Cones, Nevalinna-Pick Interpolation and the Set of Lyapunov Solutions**, *Izchak Lewkowicz, Nir Cohen*

Room: 208, Session: MA5

Chair: Lorenzo Farina, Maria Elena Valcher
Title: **Positive Systems**

11:00-11:30 **Positive Systems in the State Space Approach: Main Issues and Recent Results**, *Lorenzo Farina*

11:30-12:00 **Positive Systems in the Behavioral Approach: Main Issues and Recent Results**, *Maria Elena Valcher*

12:00-12:30 **Feedback Stabilisation with Positive Control of Dissipative Compartmental Systems**, *Georges Bastin, A. Provost*

12:30-13:00 **Feedback Control for a Chemostat with two Organisms**, *Patrick De Leenheer, Hal Smith*

Room: 209, Session: MA6

Chair: Augusto Ferrante, Michele Pavon
Title: **Control of Quantum Mechanical Systems**

11:00-11:30 **Sufficient Conditions for Controllability of Finite Level Quantum Systems via Structure Theory of Semisimple Lie Algebras**, *Claudio Altafini*

11:30-12:00 **Geometric Control of Quantum Mechanical Systems in a Noisy Environment**, *Domenico D'Alessandro*

12:00-12:30 **Control of Quantum Systems Using Model-based Feedback Strategies**, *Augusto Ferrante, Michele Pavon, Giorgio Raccanelli*

12:30-13:00 **Quantum Control of Dissipative Systems**, *Sonia G. Schirmer, A. I. Solomon*

Room: 210, Session: MA7

Chair: Peter Bauer
Title: **Adaptive Control**

11:00-11:20 **Gap Metric Robustness of Adaptive Controllers**, *Mark French*

11:20-11:40 **Adaptive Predictive Control with Controllers of Restricted Structure**, *Michael Grimble, Peter Martin*

11:40-12:00 **Output Adaptive Model Reference Control of Linear Continuous State-Delay Plant**, *Boris Mirkin, Per-Olof Gutman*

12:00-12:20 **A Comparison Between Robust Adaptive Controllers w.r.t a Non–singular Transient Cost**, *Ahmad Sanei, Mark French*

12:20-12:40 **A Manifold Structure on the set of Functional Observers**, *Jochen Trumpf, Uwe Helmke*

14:00-15:00 **On the Capacity of 2-D Constrained Codes and Consequences for Full-Surface Data Channels**, *William Weeks*

Middle:

Room: 102, Session: MM1

Chair: Shmuel Friedland, Brian Marcus
Title: **Capacity of Multi-Dimensional Codes Part II**

14:00-15:00 **On the Capacity of 2-D Constrained Codes and Consequences for Full-Surface Data Channels**, *William Weeks*

15:00-16:00 **Counting Independent Sets in The Grid, And Similar Questions**, *Neil Calkin*

Room: 126, Session: MM2

Chair: Wei Lin
Title: **Nonlinear Systems and Control 1**

14:00-14:20 **Estimating Generalized Gradients of Value Function in Optimal Control Problems for Differential-Difference Inclusions**, *Leonid Minchenko, Aleksey Volosevich*

14:20-14:40 **Interconnected Systems of Fliess Operators**, *W. Steven Gray, Yaqin Li*

14:40-15:00 **Controllability Analysis of A Two Degree of Freedom Nonlinear Attitude Control System**, *Jinglai Shen, Amit K. Sanyal, N. Harris McClamroch*

15:00-15:20 **Sliding Mode Idle Speed Ignition Control Strategies for Automotive Engines**, *Manjit Singh Srai, H. Sindano, N. E. Gough, A. C. Cole*

15:20-15:40 **Truncation and Approximation Errors in the Max-Plus Algorithm for H-infinity Control**, *William McEneaney*

15:40-16:00 **Solution of Second Order Linearization**, *Rajagopalan Devanathan*

Room: 129, Session: MM3

Chair: Giorgio Picci, Augusto Ferrante
Title: **Stochastic Systems 1**

14:00-14:30 **Canonical Correlations Between Input and Output Processes of Linear Stochastic Models**, *Katrien De Cock, Bart De Moor*

14:30-15:00 **A Regularized Cepstrum and Covariance Matching Method for ARMA(n,m) Design**, *Per Enquist*

15:00-15:30 **On Some Interpolation Problems**, *Gyorgy Michaletzky, A. Gombani*

15:30-16:00 **Non-regular Processes and Singular Kalman Filtering**, *Augusto Ferrante, Stefano Pinzoni, Giorgio Picci*

Room: 136, Session: MM4

Chair: I. Gohberg, M.A. Kaashoek
Title: **State Space Methods for Problems in Operator Theory**

14:00-14:30 **State Space Methods, Reproducing Kernel Spaces and Applications**, *Harry Dym*

14:30-15:00 **A Beurling–Lax Type Theorem in the Unit Ball**, *Daniel Alpay, Aad Dijksma, Jim Rovnyak*

15:00-15:30 **A Naimark Dilation Perspective on Positive Real Interpolation**, *A. Frazho*

15:30-16:00 **State Space Method, Explicit Solutions of Scattering Problems, and Nonlinear Integrable Equations**, *Alexander L. Sakhnovich*

Room: 208, Session: MM5

Chair: Xiaochang Wang
Title: **Output Feedback Control of Linear Systems**

14:00-14:30 **Counterexamples to Pole Placement by Real Static Output Feedback**, *Alex Eremenko, A. Gabrielov*

14:30-15:00 **Numerical Homotopy Algorithms for Satellite Trajectory Control by Pole Placement**, *Jan Verschelde, Yusong Wang*

15:00-15:30 **Numerical Schubert Calculus by the Pieri Homotopy Algorithm**, *Tien-Yien Li, Xiaoshen Wang, Mengnien Wu*

15:30-16:00 **On Minimal Order Decentralized Output Feedback Pole Assignment Problems**, *Xiaochang Wang*

Room: 209, Session: MM6

Chair: Yutaka Yamamoto
Title: **Optimization and Optimal Control**

14:00-14:20 **A Jacobi-like Method for the Indefinite Generalized Hermitian Eigenvalue Problem**, *Christian Mehl*

14:20-14:40 **Disturbed Discrete Time Linear-Quadratic Open-Loop Nash games**, *Gerhard Jank, Dirk Kremer*

14:40-15:00 **Linear Matrix Inequalities for Global Optimiztion of Rational Functions and H2 Optimal Model Reduction**, *Dorina Jibetean, Bernard Hanzon*

15:00-15:20 **Newton's Method for Optimization in Jordan Algebras**, *Sandra Ricardo, Uwe Helmke, Shintaro Yoshizawa*

15:20-15:40 **Non-symmetric Riccati Theory and Linear Quadratic Nash Games.**, *Dirk Kremer, Radu Stefan*

15:40-16:00 **Some New Results on Linear Quadratic Regulator Design for Lossless Systems**, *Maria Gabriella Xibilia, Luigi Fortuna, Giovanni Muscato*

Afternoon:

Room: 102, Session: MP1

Chair: Sandro Zampieri
Title: **The Interaction of Control, Information and Communication**

16:30-16:50 **Minimum Data Rates for Stabilising Linear Systems with Unknown Parameters**, *Girish Nair, Robin J. Evans, Björn Wittenmark*

16:50-17:10 **A Graphical Model Approach to Distributed Control**, *Sekhar Tatikonda*

17:10-17:30 **Quantized Stabilization of Single-input Nonlinear Affine Systems**, *Jialing Liu, Nicola Elia*

17:30-17:50 **Distributed Robust Controller for Complex Networks**, *Wing Shing Wong*

17:50-18:10 **Stabilizing Quantized Feedback with Minimal Information Flow: the Scalar Case**, *Fabio Fagnani, Sandro Zampieri*

18:10-18:30 **Systems of Dynamics and their Cohomological Invariants**, *Reuben Rabi, Sanjoy Mitter*

Room: 126, Session: MP2

Chair: Matthias Kawski
Title: **Nonlinear Systems and Control 2**

16:30-16:50 **Skorokhod-Neumann Boundary Conditions in Robust Queueing Service Models**, *Martin Day*

16:50-17:10 **Optimization Methods for Target Problems of Control**, *Alexander B. Kurzhanski, Pravin Varaiya*

17:10-17:30 **On Optimal Quadratic Lyapunov Functions for Polynomial Systems**, *Graziano Chesi, Alberto Tesi, Antonio Vicino*

17:30-17:50 **The Maximum Principle for an Optimal Solution to a Differential Inclusion with State Constraints**, *Aurelian Cernea*

17:50-18:10 **Synergetic Synthesis of Nonlinear Interconnected Control for Turbogenerators**, *Anatoly Kolesnikov, Andrew Kuzmenko*

18:10-18:30 **Stabilities and Controllabilities of Switched Systems (with Applications to the Quantum Systems)**, *Leonid Gurvits*

Room: 129, Session: MP3

Chair: Amarjit Budhiraja
Title: **Stochastic Control and its Applications**

16:30-17:00 **Nonlinear Filtering in Correlated Noise: a Wiener Chaos Approach**, *Sergey Lototsky*

17:00-17:30 **Stationary Solutions and Forward Equations for Controlled and Singular Martingale Problems**, *Richard H. Stockbridge*

17:30-18:00 **An Investment Model with Liquidity Risk**, *Hui Wang*

18:00-18:30 **Mean-Variance Portfolio Selection under Markov Regime: Discrete-time Models and Continuos-time Limits**, *George Yin, X. Y. Zhou*

Room: 136, Session: MP4

Chair: Harry Dym, Heinz Langer
Title: **Spaces with Indefinite Metrics and Inverse**

16 :30-17:00 **Regular and Singular Point-like Perturbations of some Differential Operators in Pontryagin Spaces**, *Aad Dijksma, Yuri Shondin*

17:00-17:30 **Applications of Spaces with Indefinite Metrics**, *Babak Hassibi*

17:30-18:00 **Sturm-Liouville Inverse Spectral Problems with Boundary Conditions Depending on the Spectral Parameter**, *Cornelis van der Mee, Vjacheslav Pivovarchik*

18:00-18:30 **Variational Principles for Block Operator Matrices**, *Christiane Tretter, Heinz Langer, Matthias Langer*

Room: 209, Session: MP5

Chair: Paul Fuhrmann
Title: **Algebraic Systems Theory**

16:30-16:50 **Further Results on Interconnection and Elimination for Delay-Differential Systems**, *Heide Gluesing-Luerssen*

16:50-17:10 **Reduction of Affine Systems on Polytopes**, *Jan H. van Schuppen, Luc C.G.J.M. Habets*

17:10-17:30 **State Feedback Stabilization with Guaranteed Transient Bounds**, *Fabian Wirth, Diederich Hinrichsen, Elmar Plischke*

17:30-17:50 **Reduction of the Number of Parameters for all Stabilizing Controllers**, *Kazuyoshi Mori*

17:50-18:10 **Structural Properties of LTI Singular Systems by Output Feedback**, *Runyi Yu, Dianhui Wang*

18:10-18:30 **On Fliess Models over a Commutative Ring**, *Vakhtang Lomadze*

Room: 210, Session: MP6

Chair: Daniel Liberzon
Title: **Hybrid Systems and Control**

16:30-17:00 **Nonlinear and Hybrid Control via RRTs**, *Michael Branicky, Michael M. Curtiss*

17:00-17:30 **Reachability Analysis of Hybrid Systems with Linear Dynamics**, *Mireille Broucke*

17:30-18:00 **Towards the Control of Linear Systems with Minimum Bit-Rate**, *Joao Hespanha, Antonio Ortega, Lavanya Vasudevan*

18:00-18:30 **Control of Hybrid Systems along Limit Cycles**, *Milos Zefran, Guobiao Song, Francesco Bullo*

20:00–22:00 *Room*: 102

Workshop on Open Problems in Systems Theory

Chairs: Vincent Blondel, Roger Brockett

Tuesday August 13, 2002

8:00-9:00 *Room*: 101 Plenary Talk

Gilbert Strang,
Filtering and Signal Processing

9:00-10:00 *Room*: 101 Invited Talk

Arjan van der Schaft,
Mathematical Theory of Network Models of Physical Systems

9:00-10:00 *Room*: 102 Invited Talk

Robert J. McEliece,
Belief Propagation on Partially Ordered Sets

9:00-10:00 *Room*: 129 Invited Talk

Jeff Wood,
Modules and Behaviors: Re-examining Oberst's Duality

Morning:

Room: 102, Session: TUA1

Chair: Heide Gluesing-Luerssen
Title: **Design and Analysis of Block Codes, Part I**

10:30-11:30 **Iterative Decoding and Design of Codes on Graphs**, *Pascal O. Vontobel*

11:30-12:00 **Codes for Networks**, *Ralf Koetter*

12:00-12:30 **Unitary Constellation Design with Application to Space-time Coding**, *Guangyue Han, Joachim Rosenthal*

Room: 126, Session: TUA2

Chair: Wijesuriya P. Dayawansa
Title: **Patterns in Biology**

10:30-11:00 **Visual Systems**, *Bijoy Gosh, A. Polpitiya*

11:00-11:30 **The Dynamics of Avian Kinesis**, *Lawrence Schovanec, Alan Barhorst, Sankar Chatterjee*

11:30-12:00 **Spiral Waves in the Heart**, *Clyde Martin, P. Marcus*

12:00-12:30 **Large Amplitude Travelling Waves in Coupled Oscillater Networks**, *Wijesura P. Dayawansa, Clyde Martin*

Room: 129, Session: TUA3

Chair: Victor Vinnikov, Joseph A. Ball
Title: **Minicourse A: Multidimensional Systems**

10:30-11:30 **Overdetermined Multidimensional Systems and Applications**, *Victor Vinnikov*

11:30-12:30 **Overdetermined Multidimensional Systems and Applications**, *Joseph A. Ball*

Room: 136, Session: TUA4

Chair: Lars Gruene, Fabian Wirth
Title: **Input-to-State Stability, Part I**

10:30-11:00 **Attractors, Input-to-State-Stability, and Control Sets**, *Fritz Colonius, W. Kliemann*

11:00-11:30 **Output-Input Stability of Nonlinear Systems and Input/Output Operators**, *Daniel Liberzon, Eduardo Sontag*

11:30-12:00 **A Parameter-Robust Observer as an Application of ISS Techniques**, *Madalena Chaves*

12:00-12:30 **Quantitative Aspects of the Input-to-state Stability Property**, *Lars Gruene*

Room: 208, Session: TUA5

Chair: Anders Rantzer
Title: **Linear Systems**

10:30-10:50 **A New Property of Laguerre Functions**, *Luigi Fortuna, Riccardo Caponetto, Mattia Frasca*

10:50-11:10 **Communication-Limited Stabilisability of Jump Markov Linear Systems**, *Girish Nair, Subhrakanti Dey, Robin Evans*

11:10-11:30 **Equivalence of Finite Pole Assignability of LTI Singular Systems by Output Feedback**, *Runyi Yu, Dianhui Wang*

11:30-11:50 **On Kalman Models over a Commutative Ring**, *Vakhtang Lomadze*

11:50-12:10 **On Rosenbrock Models over a Commutative Ring**, *Vakhtang Lomadze*

12:10-12:30 **Inclusion of Frequency Domain Behaviors**, *Stephen Prajna, Pablo A. Parrilo*

Room: 209, Session: TUA6

Chair: Viswanath Ramakrishna
Title: **Quantum Engineering I**

10:30-11:10 **A Numerical Approach to the Design of Strongly Modulating Pulses to Implement Precise Effective Hamiltonians for Quantum Information Processing,** *Timothy Havel, Nicolas Boulant, David G. Cory, Evan M. Fortunato, Marco A. Pravia, Grum Teklemariam*

11:10-11:50 **System Theoretic Aspects of NMR Spectroscopy** , *Raimund J. Ober*

11:50-12:10 **Local and Global Control of Population Transfer in Quantum Systems**, *Vladimir Malinovsky*

12:10-12:30 **Hartree-Fock Models in Electronic Structure Computations**, *Gabriel Turinici*

Room: 210, Session: TUA7

Chair: Stephen Campbell, Ramine Nikoukhah
Title: **Robust Estimation, Identification, and Detection**

10:30-11:00 **A Survey of Input-Output Methods in Robust Estimation**, *Babak Hassibi*

11:00-11:30 **Robust Least-Squares Filtering with a Relative Entropy Constraint**, *Bernard Levy, Ramine Nikoukhah*

11:30-12:00 **Bounding the Solution Set of Uncertain Linear Equations: a Convex Relaxation Approach**, *Giuseppe Calafiore, Laurent El Ghaoui*

12:00-12:30 **The Design of Auxiliary Signals for Robust Active Failure Detection in Uncertain Systems**, *Stephen Campbell, Ramine Nikoukhah*

Middle:

Room: 102, Session: TUM1

Chair: Daniel Costello
Title: **Design and Analysis of Block Codes, Part II**

14:00-14:30 **On a Few Classes of Optimal and Near-optimal Polynomial Codes**, *Nuh Aydin*

14:30-15:00 **Building Low-Density Parity-Check Codes with Affine Permutation Matrices**, *Michael O'Sullivan, Marcus Greferath, Roxana Smarandache*

15:00-15:30 **On Plotkin and Elias Bounds for Codes over Frobenius Rings under the Homogeneous Weight**, *Marcus Greferath*

15:30-16:00 **Four and Six-Dimensional Signal Constellations from Algebraic Lattices**, *Carmelo Interlando, Michele Elia*

Room: 126, Session: TUM2

Chair: Raimund Ober
Title: **Immunology 1: Introduction and Microscopy**

14:00-14:40 **Introduction to Workshop and Overview**, *Raimund Ober*

14:40-15:20 **T Cell Receptor MHC Interactions: An Overview**, *E. Sally Ward*

15:20-16:00 **Image Formation and Deconvolution for 3 Dimensional Microscopy of Cell Samples**, *Jose Angel Conchello*

Room: 129, Session: TUM3

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multidimensional Systems 1**

14:00-15:00 **2D Linear Control Systems - From Theory to Experiment to Theory**, *Eric Rogers, Tarek Al-Towlem, James Radcliffe, Paul Lewin, Krzysztof Galkowski, David Owens*

15:00-15:30 **Stability Analysis of 2D Dynamics in Roessers Model**, *Tatsushi Ooba, Yasuyuki Funahashi*

15:30-16:00 **Algebraic Algorithm for 2D Stability Test Based on a Lyapunov Equation**, *Minoru Yamada, Li Xu, Osami Saito*

Room: 208, Session: TUM4

Chair: Joseph A. Ball, Hugo Woerdeman
Title: **Recent Developments on Interpolation and Completion Problems**

14:00-14:20 **Feedback Control for Multidimensional Systems and Interpolation Problems for Multivariable Functions**, *Joseph A. Ball, Tanit Malakorn*

14:20-14:40 **On the Caratheodory-Fejer Interpolation Problem for Generalized Schur Functions**, *Vladimir Bolotnikov*

14:40-15:00 **Abstract Interpolation in Scattering Setting**, *Alexander Kheifets*

15:00-15:20 **A Convex Optimization Approach to Generalized Moment Problems**, *Anders Lindquist, C. I. Byrnes*

15:20-15:40 **Extremal Properties of Outer Factors**, *Scott McCullough*

15:40-16:00 **On the Realization of Inverse Stieltjes Functions**, *E. R. Tsekanovskii, Sergey Belyi, Seppo Hassi, Henk de Snoo*

Room: 209, Session: TUM5

Chair: Damir Arov
Title: **Control of Distributed Parameter Systems**

14:00-14:30 **Optimal Control and Riccati Equations for a Degenerate Parabolic System**, *Jean-Marie Buchot, Jean-Pierre Raymond*

14:30-15:00 **Nonlinear Predictive Control of Flexible Manipulator Systems**, *Alaa Mohamedy, Andrzej Ordys, Michael Grimble*

15:00-15:30 **Furtivity and Masking Problems in Acoustics**, *Francesco Zirilli*

15:30-16:00 **Approximation of Optimal Controls for Semi-Linear Parabolic PDE by Solving Hamilton-Jacobi-Bellman Equations**, *Sophie Gombao*

Room: 210, Session: TUM6

Chair: Anders Lindquist
Title: **Filtering and Identification**

14:00-14:20 **System Identification of Nonlinear Dynamic Systems with Multiple Inputs and Single Output Using Discrete-Time Volterra Type Equations**, *Thomas Treichl, Stefan Hofmann, Dierk Schröder*

14:25-14:45 **Data Driven Local Coordinates**, *Thomas Ribarits, Manfred Deistler, Bernard Hanzon*

14:50-15:10 **Using Rank Order Filters to Decompose the Electromyogram**, *Dawnlee Roberson, Cheryl Schrader*

15:15-15:35 **Conditioning Analysis of a Continuous Time Subspace-Based Model Identification Algorithm**, *Juan Carlos Martinez-Garcia, G.H. Salàzar-Silva, R. Garrido*

15:40-16:00 **On Model and State Estimation under Mixed Uncertainty**, *Irina Digailova, Alexander B.Kurzhanski*

Afternoon:

Room: 102, Session: TUP1

Chair: Heide Gluesing-Luerssen
Title: **Convolutional Codes**

16:30-17:00 **Construction and Decoding of Strongly MDS Convolutional Codes**, *Roxana Smarandache, Heide Gluesing-Luerssen, Joachim Rosenthal*

17:00-17:30 **On Observers and Behaviors**, *Paul A. Fuhrmann*

17:30-18:00 **On the Convergence of Non-systematic Turbo Codes**, *Daniel Costello Jr., Adrish Banerjee, Francesca Vatta, Bartolo Scanavino*

18:00-18:30 **Some Small Cyclic Convolutional Codes**, *Heide Gluesing-Luerssen, Wiland Schmale, Melissa Striha*

Room: 126, Session: TUP2

Chair: Raimund Ober
Title: **Immunology 2: Microscopy and Biophysics**

16:30-17:10 **Microscopic Investigation of Synapse Formation**, *Michael Dustin*

17:10-17:50 **Studying Protein-Protein Interactions: Biosensor Technology**, *Peter Schuck*

17:50-18:30 **Protein Dynamics Near Membrane Surfaces: New Aspects of Local Coupled Reaction and Transport**, *Nancy L. Thompson*

Room: 129, Session: TUP3

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multidimensional Systems 2**

16:30-17:00 **State Representation of nD Behaviors**, *Isabel Brás, Paula Rocha*

17:00-17:30 **The Bang-Bang Principle for the Goursat-Darboux Problem**, *Dariusz Idczak*

17:30-18:00 **Elimination of Anticipation of Singular 2D Roesser Model**, *Tadeusz Kaczorek*

18:00-18:30 **Difference Equations and n-D Discrete Systems**, *Jiri Gregor*

Room: 136, Session: TUP4

Chair: Matthias Kawski
Title: **Nonlinear Systems and Control 3**

16:30-16:50 **Disturbance Attenuation for a Class of Nonlinear Systems by Output Feedback**, *Wei Lin, Xianqing Huang, Chunjiang Qian*

16:50-17:10 **A Linear Controller for a Multifrequency Model of a Pulse-Width-Modulated Cuk Converter**, *Yusuf Fuad, J.W. van der Woude, W.L. de Koning*

17:10-17:30 **Synergetic Synthesis of Nonlinear Kinematics Regulators for Mobile Robots**, *Boris Topchiev*

17:30-17:50 **On the Convergence of a Feedback Control Strategy for Multilevel Quantum Systems**, *Paolo Vettori*

18:10-18:30 **Global Output Feedback Control with Disturbance Attenuation for a Class of Nonlinear Systems**, *Xianqing Huang, Wei Lin*

Room: 209, Session: TUP5

Chair: Ruth Curtain
Title: **Infinite Dimensional Systems**

16:30-17:00 **Observability Analysis of a Nonlinear Tubular Reactor**, *Cedric Delattre, Denis Dochain, Joseph Winkin*

17:00-17:30 **A Hilbert Space Approach to Self-Similar Systems**, *Mamadou Mboup*

17:30-18:00 **Boundary Observability in the Quasi-Static Thermoelastic Contact Problem**, *Michael Polis, Irina Sivergina*

18:00-18:30 **Modeling Distributed Parameter Systems with Discrete Element Networks**, *Fabien Soulier, Patrick Lagonotte*

Room: 210, Session: TUP6

Chair: Avraham Feintuch
Title: **Robust and H-Infinity Control and Estimation**

16:30-16:50 **Simultaneous Robust Regulation and Robust Stabilization with Degree Constraint**, *Ryozo Nagamune*

16:50-17:10 **Closed-Loop Structure of DiscreteTime H-infinity Controller**, *Waree Kongprawechnon, Shun Ushida, Hidenori Kimura*

17:10-17:30 **On a Recursive State-space Method for Discrete-time H_2-Approximation**, *Ralf Peeters, Martine Olivi, Bernard Hanzon*

17:30-17:50 **PID Robust Control via Genetic Algorithms and Integral Criteria Minimization**, *Catalin Nicolae Calistru, Oana Geman*

17:50-18:10 **MIMO Systems Properties Preservation under SPR Substitutions**, *Juan Carlos Martinez-Garcia, G. Fernàndez-Anaya*

18:10-18:30 **State Feedback Mixed H2/H-Infinity Problem for Linear Systems with Finite Jumps**, *Vasile Dragan, Adrian Stoica*

20:00–22:00 *Room*: 102

Workshop on Open Problems in Systems Theory

Chairs: Anders Rantzer, Eduardo Sontag and Jan C. Willems

Wednesday August 14, 2002

8:00-9:00 *Room*: 101 Plenary Talk

J. William Helton,
Manipulating Matrix Inequalities Automatically

9:00-10:00 *Room*: 101 Invited Talk

Jan C. Willems,
Dissipative Distributed Systems

9:00-10:00 *Room*: 102 Invited Talk

Albert-Laszlo Barabasi,
The Architecture of Complexity: Emergence of Scaling in Complex Networks

9:00-10:00 *Room*: 136 Invited Talk

Knut Hueper,
The Dynamics of Matrix Eigenvalue Algorithms

Morning:

Room: 102, Session: WA1

Chair: Raimund Ober
Title: **Immunology 3: Structure and Kinetics**

10:30-11:10 **Geometrical Methods in Structural Molecular Biology**, *Timothy F. Havel*

11:10-11:50 **Kinetic aspects of TcR-MHC and Antibody-Antigen Interactions**, *Jefferson Foote*

11:50-12:30 **Biophysical Considerations of T-Cell Receptor-Peptide/MHC Interactions**, *Brian M. Baker*

Room: 126, Session: WA2

Chair: Martin Haenggi
Title: **Computer Networks**

10:30-10:50 **Min-Plus System Theory Applied to Communication Networks**, *Patrick Thiran, Jean-Yves Le Boudec*

10:55-11:15 **Elements of Probabilistic Network Calculus for Packet Scale Rate Guarantee Nodes**, *Milan Vojnovic, Jean-Yves Le Boudec*

11:20-11:40 **Statistical Performance Analysis of a Generalized Processor Sharing System by Using Large Deviations**, *Min Xie, Martin Haenggi*

11:45-12:05 **Resource Allocation and Congestion Control in Distributed Sensor Networks - a Network Calculus Approach**, *Jinsong Zhang, Kamal Premaratne, Peter Bauer*

12:10-12:30 **Optimal Media Streaming in a Rate-Distortion Sense For Guaranteed Service Networks**, *Olivier Verscheure, Pascal Frossard*

Room: 129, Session: WA3

Chair: Eric Rogers
Title: **Minicourse B: Multidimensional Systems**

10:30-11:10 **Recent Results on Multidimensional Behaviors**, *Eva Zerz*

11:10-11:50 **Motivation and General Concepts in Behavioral Systems**, *Jan C. Willems*

11:50-12:30 **Similarities/Differences between the Behavioral Approach for Multidimensional versus Delay-Differential Systems**, *Heide Gluesing-Luerssen*

Room: 136, Session: WA4

Chair: Paul Van Dooren
Title: **Model Reduction**

10:30-10:50 **An Overview of Model Reduction Methods for Large-Scale Dynamical Systems**, *Thanos Antoulas*

10:50-11:10 **Analysis of Smith-Type Methods for Lyapunov Equations and Balanced Model Reduction**, *Dan Sorensen*

11:10-11:30 **Krylov Subspace Techniques for Reduced Order Modeling of Nonlinear Dynamical System**, *Daniel Skoogh, Zhaojun Bai*

11:30-11:50 **Model Reduction of Second Order Systems**,
Younes Chahlaoui, D. Lemonnier, K. Meerbergen, A. Vandendorpe, P. Van Dooren

11:50-12:10 **Model Reduction via Tangential Interpolation**, *Antoine Vandendorpe, K. Gallivan, P. Van Dooren*

Room: 208, Session: WA5

Chair: Daniel Alpay, Yuli Eidelman
Title: **Time-Varying Systems and Numerical Problems**

10:30-11:00 **Unbounded J-inner Sections**, *Patrick Dewilde, Daniel Alpay*

11:00-11:30 **Linear Time-Varying Darlington Synthesis**, *Avraham Feintuch*

11:30-12:00 **Reduction to System Methods for Inversion of Diagonal Plus Semiseparable Operator Matrices**, *Yuli Eidelman, Israel Gohberg*

Room: 209, Session: WA6

Chair: Erik Verriest
Title: **Nonlinear Systems and Control 4**

10:30-11:00 **Parameter Tuning of a Non Integer Order PID Controller**, *Luigi Fortuna, Riccardo Caponetto, Domenico Porto*

11:00-11:30 **Nonlinear Discrete-Time Observer Design with Linearizable Error Dynamics**, *MingQing Xiao, Nikolaos Kazantzis, Costas Kravaris, Arthur J Krener*

11:30-12:00 **Analysis of Periodic Solutions of Tapping-Mode AFM: An IQC Approach**, *Murti Salapaka, Abu Sebastian*

12:00-12:30 **Bifurcations of the Controlled Escape Equation**, *Tobias Gayer*

Room: 210, Session: WA7

Chair: Rodolphe Sepulchre
Title: **Discrete Event and Hybrid Systems**

10:30-10:50 **Switched Systems that are Periodically Stable may be Unstable**, *Jacques Theys, Vincent Blondel, Alexander Vladimirov*

10:50:11:10 **The Servo Problem for Piecewise Linear Systems**, *Stefan Solyom, Anders Rantzer*

11:10-11:30 **Stability of Hybrid Control Systems Based on Time-State Control Forms**, *Yoshikatsu Hoshi, Mitsuji Sampei, Shigeki Nakaura,*

11:30-11:50 **Discrete-Time Modeling and Analysis of Pulse-Width-Modulated Switched Power Converters**, *Willem L. De Koning*

11:50-12:10 **On the Control of the Resonant Converter: A Hybrid-Flatness Approach**, *Hebert Sira-Ramirez, Ramon Silva-Ortigoza*

12:10-12:30 **Controllability of Periodically Switched Linear Systems with Delay in Control**, *Guangming Xie, Long Wang, Yijing Wang*

Middle:

Room: 102, Session: WM1

Chair: Raimund Ober
Title: **Immunology 4: Diffusion and Modelling**

14:00-14:40 **Measuring Lateral Diffusion and Associations of MHC Molecules in Membranes of the ER and at the Cell Surface**, *Michael Edidin*

14:40-15:20 **A Computational Model for T Cell Receptor Signal Integration**, *Mark Alber, Arancha Casal, Cenk Sumen, Tim Reddy, Mark Davis, Peter Lee*

15:20-16:00 **Immunological Synapse Formation: A Crossroad of Physical Chemistry and Cell Biology**, *Arup K. Chakraborty*

Room: 126, Session: WM2

Chair: Aleksandar Kavcic
Title: **Control and Communications**

14:00-14:20 **Feedback Capacity**, *Sekhar Tatikonda, Sanjoy Mitter*

14:20-14:40 **Sum-Product Algorithm and Feedback Capacity**, *Shaohua Yang, Aleksandar Kavcic*

14:40-15:00 **Kalman Filtering, Factor Graphs, and Electrical Networks**, *Pascal O. Vontobel, Dani Lippuner, Hans-Andrea Loeliger*

15:00-15:20 **Kalman Filtering Applied to Timing Recovery in Tracking Mode**, *Panu Chaichanavong, Brian Marcus*

15:20-15:40 **Lower Bounds for the Performance of Iterative Timing Recovery at low SNR**, *Aravind Nayak, J. Barry, S. McLaughlin*

15:40-16:00 **Classical Capacity of Quantum Channels**, *Navin Khaneja*

Room: 129, Session: WM3

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multidimensional Systems 3**

14:00-15:00 **Conservative Multidimensional Systems: A Survey**, *Joseph A. Ball*

15:00-15:30 **On *J*-Conservative Scattering nD System Realizations**, *Dmitry Kalyuzhniy-Verbovetzky*

15:30-16:00 **Factorization of M-D Polynomial Matrices for Design of M-D Multirate Systems**, *Mikhail Tchobanou, Cynthia Woodburn*

Room: 136, Session: WM4

Chair: Uwe Helmke
Title: **Control and Computation**

14:00-14:30 **Continuation of Eigendecompositions**, *Luca Dieci*

14:30-5:00 **Numerical Solution of Euclidean Balanced Norm Realizations via Gradient Flows**, *N. Del Buono, L. Lopez*

15:00-15:30 **Controllability of the QR Algorithm on Hessenberg Flags**, *Uwe Helmke, Jens Jordan*

15:30-16:00 **The Continuos-Time Rayleigh Quotient Flow on the Grassmann Manifold**, *Rodolphe Sepulchre, P.-A. Absil, R. Mahony*

Room: 209, Session: WM5

Chair: Anthony Bloch
Title: **Algebraic and Differential Geometry in Systems Theory**

14:00-14:20 **Hamiltonian Structure of the Algebraic Riccati Equation and its Infinitesimal V-Stability**, *Nanaz Fathpour, Edmond A. Jonckheere*

14:20-14:40 **Global Transformation of Nonlinear Dynamic Systems into Canonical Forms**, *Anna Michtchenko, Aleksey Zhirabok*

14:40-15:00 **A Lie-Group Approach for Nonlinear Dynamic Systems Described by Implicit Ordinary Differential Equations**, *Kurt Schlacher, Andreas Kugi, Kurt Zehetleitner*

15:00-15:20 **Quotients of Fully Nonlinear Control Systems**, *Paulo Tabuada, George J. Pappas*

15:20-15:40 **The Wave Equation as a Port-Hamiltonian System, and a Finite Dimensional Approximation**, *Viswanath Talasila, Goran Golo, Arjan van der Schaft*

15:40-16:00 **Pseudo Balancing for Discrete Nonlinear Systems**, *Erik Verriest*

Room: 210, Session: WM6

Chair: Panos Antsaklis, Anthony Michel
Title: **Hybrid Control System Analysis, Synthesis and Diagnosis**

14:00-14:30 **Partial Stability of Dynamical Systems**,
Ye Sun, A.N. Michel, A.P. Molchanov

14:30-15:00 **An Approach to General Switched Linear Quadratic Optimal Control Problems with State Jumps**, *Xuping Xu, Panos Antsaklis*

15:00-15:30 **The Controlled Composition Analysis of Hybrid Automata**, *Ying Shang, M.D. Lemmon*

15:30-16:00 **Monitoring and Diagnosis of Hybrid Systems Using Particle Filtering Methods**, *Xenofon Koutsoukos, James Kurien, Feng Zhao*

Room: 208, Session: WM7

Chair: Giorgio Picci
Title: **Stochastic Systems 2**

14:00-14:30 **State Space Realization of Random Processes with Feedback**, *Giorgio Picci, Alessandro Chiuso*

14:30-15:00 **Approximate Realization of Hidden Markov Chains**, *Lorenzo Finesso*

15:00-15:30 **Random Sampling of a Continuous-Time Stochastic Dynamical System**, *Mario Micheli, Michael I. Jordan*

15:30-16:00 **The Hilbert Space of an Ergodic Sequence**, *Giorgio Picci*

Afternoon:

Room: 102, Session: WP1

Chair: Raimund Ober
Title: **Immunology 5: Cellular Aspects**

16:30-17:30 **Staining Antigen Specific CD4+ T -Cells with Class II MHC Oligomers**, *Lawrence Stern*

17:10-17:40 **The Roles of Serial Engagement and Kinetic Proofreading in Peptide-Induced T-Cell Activation**, *Dan Coombs, Carla Wofsy, Byron Goldstein*

Room: 126, Session: WP2

Chair: Roxana Smarandache
Title: **Cryptography**

16:30-17:00 **A High-Speed Processing for RSA Cryptograms Using High-Radix Signed-Digit Numbers and a New Algorithm of Modulo Operation**, *Yoshinori Fujisawa, Yasushi Fuwa*

17:00-17:30 **On the Rational Cubic Curve Cryptosystems**, *Xiaochang Wang, Heather Henkel*

17:30-18:00 **Public Key Cryptography Based on Simple Modules over Simple Rings**, *Gerard Maze, Christopher Monico, Joan-Josep Climent, Joachim Rosenthal*

Room: 129, Session: WP3

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multidimensional Systems 4**

16:30-17:00 **Spatial Restoration with Reduced Boundary Error**, *Nirmal Bose, Jaehoon Koo*

17:00-17:30 **On Succesive Packing Approach to Multidimensional (M-D) Interleaving**, *Sankar Basu, Xi Min Zhang, Yun Q. Shi*

17:30-18:00 **Matrix Functions in Homomorphic Signal Processing**, *Eduard Krajnik*

18:00-18:30 **Cellular Automata in Image Processing**, *Adriana Popovici, Dan Emanuel Popovici*

Room: 136, Session: WP4

Chair: Biswa Nath Datta, Floyd B. Hanson
Title: **Large-Scale Computations in Control**

16:30-16:50 **Projection Methods for Reduced Order Modeling with Guaranteed Stability**, *Thanos Antoulas*

16:55-17:15 **Computational Methods for Portfolio and Consumption Policy Optimization in Log-Normal Diffusion, Log-Uniform Jump Environments**, *Floyd B. Hanson, J. J. Westman*

17:20-17:40 **Partial Eigenvalue Assignment in Linear Systems: Existence, Uniqueness and Numerical Solution**, *Biswa N. Datta, Daniil Sarkissian*

17:45-18:05 **Model Reduction via an Explicitly Restarted Lanczos Algorithm**, *Vasilios Papakos, Imad M. Jaimoukha*

Room: 208, Session: WP5

Chair: J. William Helton
Title: **Expressing Polynomials as Sums of Squares Together with Applications**

16:30-17:10 **How to Write a Polynomial as a Sum of Squares of Polynomials, and Why You'd Want to Do So**, *Bruce Reznick*

17:10-17:30 **Applications of Our Newfound Facility in Expressing Polynomials as Sums of Squares.**, *Pablo A. Parrilo*

17:30-17:50 **Reduced Representations of Positive Polynomials**, *Mihai Putinar*

17:50-18:10 **Recent Progress in Polynomial Optimization**, *Ruchira Datta*

18:10-18:30 **Bounding Linear PDEs via Semidefinite Optimization**, *Constantine Caramanis, Dimitris Bertsimas*

Room: 209, Session: WP6

Chair: Viswanath Ramakrishna
Title: **Quantum Engineering II**

16:30-17:10 **Optimal Control of Laser Cooling: A Theory of Purity Increasing Transformations**, *David Tannor, Shlomo Sklarz*

17:10-17:30 **Controllability of Pairs of Coupled Quantum Dots**, *Viswanath Ramakrishna*

17:30-17:50 **Constructive Control of Quantum Systems**,
Sonia Schirmer, A.D. Greemtree

17:50-18:10 **Use of Wei-Norman Formulae and Parameter Differentiation in Quantum Control**,*Claudio Altafini*

18:10-18:30 **Control of Quantum Mechanical Systems with Minimum Number of Switches**, *Domenico D' Alessandro*

20:00–22:00 *Room*: 102

Panel Discussion on Future Directions of Research and Teaching in Mathematical Control and Systems Theory,

Biswa Datta, Organizer.

Thursday August 15, 2002

8:00-9:00 *Room*: 101 Plenary Talk

Eduardo Sontag,
On Systems Molecular Biology and Control Theory

9:00-10:00 *Room*: 126 Invited Talk

Olof Staffans,
Passive and Conservative Infinite-Dimensional Impedance and Scattering Systems (from a Personal Point of View)

9:00-10:00 *Room*: 129 Invited Talk

Wolfgang J. Runggaldier,
On Stochastic Control in Finance

9:00-10:00 *Room*: 136 Invited Talk

Matthias Heinkenschloss,
Domain Decomposition Approaches for the Optimization of Distributed Systems

Morning:

Room: 102, Session: THA1

Chair: Mark Alber
Title: **Complex Networks and Biological Applications 1**

10:30-11:10 **The Spread of Infections on Social Networks**, *Mark Newman*

11:10-11:50 **Information Theory Aspects of Signal Transduction and Gene Regulation**, *Andrea Levchenko*

Room: 126, Session: THA2

Chair: Ruth Curtain, Olof Staffans
Title: **Distributed Parameter Systems: Theory Part I**

10:30-10:50 **Some Results on the Theory of Linear Time-Invariant Dissipative Systems with Hilbert and Pontryagin State Spaces**, *Damir Arov*

10:55-11:15 **Explicit Formulae for J-Spectral Factors for Well-Posed Systems**, *Ruth Curtain, Amol J. Sasane*

11:20-11:40 **A Riccati Equation Approach to the Standard Infinite-Dimensional H-Infinity Problem**, *Kalle M. Mikkola, Olof Staffans*

11:45-12:05 **Sub-optimal Hankel Norm Approximation for the Wiener Class**, *Orest Iftime, Amol Sasane*

12:10-12:30 **LQG Balancing in Infinite Dimensions**, *Mark R. Opmeer, Ruth Curtain*

Room: 129, Session: THA3

Chair: J.M. (Hans) Schumacher
Title: **Systems and Control Theory in Finance and Insurance 1**

10:30-11:30 **Control and Financial Engineering**, *J. M. (Hans) Schumacher*

11:30-12:00 **Dynamic Risk Sensitive Asset Management With Nonnegative Multiple Factor Constraints**, *Arunabha Bagchi, K. Suresh Kumar*

12:00-12:30 **A Filtered No-arbitrage Model for Term Structures from Noisy Data**, *Andrea Gombani, Stefan R. Jaschke, Wolfgang J. Runggaldier*

Room: 136, Session: THA4

Chair: David Nicholls
Title: **Fully Nonlinear, Three-Dimensional, Surface Water Waves in Arbitrary Depth**

10:30-11:00 **Experiments on Deep-Water Waves with Two-Dimensional Surface Patterns**, *Diane Henderson*

11:00-11:30 **Instability of Bounded Solutions of the 2-D Cubic Nonlinear Schrodinger Equation**, *John Carter*

11:30-12:00 **Computing (quasi) Periodic Waves in Shallow Water**, *Bernard Deconinck*

12:30-13:00 **Mathematical Models of Deep-Water Waves with two-Dimensional Surface Patterns**, *Harvey Segur*

Room: 208, Session: THA5

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multidimensional Systems 5**

10:30-11:00 **Robust Stability and Stabilization of n-D Systems**, *Jiang-Qian Ying, Li Xu, Masayuki Kawamata*

11:00-11:30 **Succesive stabilization of a class of 2D systems**, *Krzysztof Galkowski, Bartek Sulikowski, Eric Rogers, David H. Owens*

11:30-12:00 **Optimal Control for a Class of Differential Linear Repetitive Processes**, *Eric Rogers, S. Dymkou, M. Dymkov, K. Galkowski, D. H Owens*

12:00-12:30 **Relation between Eigenvalues and Singular Values in the Problem of Stability Maintenance of Ellipsoidal Estimates**, *Taalaibek A. Akunov, Anatoly V. Ushakov*

Room: 209, Session: THA6

Chair: Koichi Hashimoto
Title: **Globally Stable Robust Visual Servoing**

10:30-11:00 **Keeping Features in the Camera's Field of View: a Visual Servoing Strategy**, *Graziano Chesi, K. Hashimoto, D. Prattichizzo, A. Vicino*

11:00-11:30 **Binocular Visual Servoing with a Limited Field of View**, *Noah Cowan*

11:30-12:00 **Visual Servoing with Dynamics: Control of an Unmanned Blimp**, *Jim Ostrowski*

12:00-12:30 **Enlarging the Stable Region of Image Based Control by Path Planning**, *Youcef Mezouar*

Room: 210, Session: THA7

Chair: Bill Helton, Andre Ran, Leiba Rodman
Title: **Matrix and Operator Equations II**

10:30-11:00 **Noncommutative Convexity of Functions and Sets**, *J. William Helton*

11:00-11:30 **Symmetry Groups, Semidefinite Programming,and Sums of Squares**, *Pablo A. Parrilo*

11:30-12:00 **The Symmetric Linear Matrix Equation**, *Martine C. B. Reurings*

12:00-12:30 **Investigating Duality on Stability Conditions**, *Mauricio de Oliveira*

Middle:

Room: 102, Session: THM1

Chair: Mark Alber
Title: **Complex Networks and Biological Applications 2**

14:00-14:40 **Synchronization of Oscillators in Small World Systems**, *Lou Pecora*

14:40-15:20 **Intracellular signaling is dependent on the cytoskeleton. Evidence from proteomics.**, *Gabor Forgas*

15:20-16:00 **The Role of Scale-free Connectivity Patterns in Spreading Phenomena**, *Alessandro Vespignani*

Room: 126, Session: THM2

Chair: Ruth Curtain, Olof Staffans
Title: **Distributed Parameter Systems: Theory Part II**

14:00-14:30 **Zeros of SISO Infinite-Dimensional Systems**, *Kirsten Morris, Richard Rebarber*

14:30-15:00 **Stabilizability of Systems with Signals in $\ell_2(\mathbb{Z})$**, *Birgit Jacob*

15:00-15:30 **Stability and Boundedness of Continuous and Discrete-Time Systems**, *Hans Zwart, B.Z. Guo*

15:30-16:00 **Coprimeness Conditions for Pseudorational Transfer Functions**, *Yutaka Yamamoto*

Room: 129, Session: THM3

Chair: J.M. (Hans) Schumacher
Title: **Systems and Control Theory in Finance and Insurance 2**

14:00-15:00 **Ruin Probabilities Minimization and Dividend Distribution Optimization in Diffusion Models**, *Michael Taksar*

15:00-15:30 **Continuous-Time Mean-Variance Portfolio Selection with Markov-Modulated Market Parameters**, *Xun Yu Zhou*

15:30-16:00 **Stock Selection Based on Cluster and Outlier Analysis**, *Steven Craighead, Bruce Klemesrud*

Room: 136, Session: THM4

Chair: Paul Van Dooren
Title: **Robust Control and Linear Matrix Inequalities**

14:00-14:30 **Linear Matrix Inequalities in Robust Control: A Brief Survey**, *Venkataramanan Balakrishnan*

14:30-15:00 **Periodic Multirate Systems, nu-Gap and Robust Stabilization**, *Li Qiu, Li Chai*

15:00-15:30 **Spectral Factorization and Sums of Squares via Semidefinite Programming**, *Hugo Woerdeman*

15:30-16:00 **Robustness Analysis via Stability Radii, Spectral Value Sets and mu-Functions**, *Michael Karow*

Room: 208, Session: THM5

Chair: Maria Elena Valcher
Title: **The Behavioral Approach to Dynamic Systems**

14:00-14:30 **Deterministic Kalman Filtering**, *Jan C. Willems*

14:30-15:00 **Over-Determined Systems**, *Eva Zerz*

15:00-15:30 **Regular Implementability nD Behaviors**, *Paula Rocha*

15:30-16:00 **Cones of Trajectories as Subsets of Linear Systems: the Autonomous Case**, *Andrea Morettin*

Room: 209, Session: THM6

Chair: Naomi Leonard
Title: **Control and Dynamics of Mechanical Systems I**

14:00-14:20 **Composition of Dirac Structures and Control of Port-Hamiltonian Systems**, *Arjan van der Schaft, J. Cervera*

14:20-14:40 **Hamiltonian Attitude Dynamics for a Spacecraft with a Point Mass Oscillator**, *Craig Woolsey*

14:40-15:00 **Controllable Kinematic Reductions for Mechanical Systems: Concepts, Computational Tools, and Examples**, *Andrew Lewis, Francesco Bullo, Kevin M. Lynch*

15:00-15:20 **Matching and Stabilization of Linear Mechanical Systems**, *Dimitri Zenkov*

15:20-15:40 **Matching and Stabilization of Constrained Systems**, *Guido Blankenstein*

15:40-16:00 **Extremal Flows on Stiefel Manifolds, and Riemannian Potatoes**, *Peter Crouch, Anthony M. Bloch*

Room: 210, Session: THM7

Chair: Jan van Schuppen
Title: **Control and Algebra**

14:00-14:30 **Control and Algebra - An Introduction**, *Jan H. van Schuppen*

14:30-15:00 **Towards an Algebraic Systems Theory of Hybrid Systems**, *George J. Pappas*

15:00-15:30 **The Category of a Affine Connection Control Systems**, *Andrew Lewis*

15:30-16:00 **Coalgebra and Supervisory Control with Partial Observations**, *Jan Komenda*

Afternoon:

Room: 102, Session: THP1

Chair: Mark Alber
Title: **Complex Networks and Biological Applications 3**

16:30-17:00 **Connections Matter: A Boolean Model for the Segment Polarity Network of Drosophila Melanogaster**, *Reka Albert*

17:00-17:30 **Modeling Mesenchymal Condensation during Limb Chondrogenesis**, *Gilberto Tomas*

17:30-18:00 **Classification of scale-free networks**, *Byungnam Kahng*

18:00-18:30 **Prediction of Protein Essentiality Based on Genomic Data**, *Hawoong Jeoong, Zoltan N. Oltvai and Albert-Laszlo Barabasi*

Room: 126, Session: THP2

Chair: Kirsten Morris, Olof Staffans
Title: **Distributed Parameter Systems: Stabilization and Control, Part I**

16:30-17:00 **Reciprocals of Regular Linear Systems: a Survey.**, *Ruth Curtain*

17:00-17:30 **H-infinity Control of Acoustic Noise in a Duct with a Feedforward Configuration**, *Kirsten Morris*

17:30-18:00 **Positivity and Dissipativity of Oscillating Diffusive Filters, Application to the Stability of Coupled Systems**, *G. Dauphin, Denis Matignon*

18:00-18:30 **Can Positive Pseudo-Differential Operators of Diffusive Type Help Stabilize Unstable Systems?**, *Denis Matignon*

Room: 129, Session: THP3

Chair: Tyrone Duncan
Title: **Stochastic Theory and Applications**

16:30-17:00 **An Approach to Stochastic Integration for Fractional Brownian Motion in a Hilbert Space**, *Tyrone Duncan, B. Pasik-Duncan, J. Jakubowski*

17:00-17:30 **A Class of Tractable Partially Observed Discrete Stochastic Games**, *William McEneaney*

17:30-18:00 **Hybrid Stock Models and Parameter Estimation**, *George Yin, Q. Zhang, K. Yin*

18:00-18:30 **Jump-Diffusion Stock Return Models in Finance: Stochastic Process Density with Uniform-Jump Amplitude**, *Floyd B. Hanson, J. J. Westman*

Room: 136, Session: THP4

Chair: Georg Heinig, Vadim Olshevski
Title: **Computational Methods for Structured Matrices and Applications**

16:30-17:00 **Split Algorithms for Toeplitz and Toeplitz-plus-Hankel Matrices**, *Georg Heinig*

17:00-17:30 **Structured LDPC Codes**, *Amin Shokrollahi*

17:30-18:00 **Efficient Matrix Computations in Wideband Communications**, *Patrick Dewilde, Lang Tong, Alle-Jan van der Veen*

18:00-18:30 **Stable Factorization of Hankel and Hankel-like Matrices**, *Vadim Olshevsky, Michael Stewart*

Room: 209, Session: THP5

Chair: Naomi Leonard
Title: **Control and Dynamics of Mechanical Systems II**

16:30-16:50 **On the Ball and Beam Problem: Regulation with Guaranteed Transient Performance and Tracking Periodic Orbits**, *Romeo Ortega, Fabio Gomez-Estern, Javier Aracil, Francisco Gordillo*

16:50-17:10 **Reduction of Controlled Lagrangian Systems with Symmetries**, *Dong Eui Chang*

17:10-17:30 **Constrained Mechanical Systems with Impacts**, *Patrick Hagerty*

17:30-17:50 **Adjoints of Hamiltonian Systems and Iterative Learning Control**, *Kenji Fujimoto, Toshiharu Sugie*

17:50-18:10 **Controllability of Mechanical Systems with Constraints and Symmetry**, *Jorge Cortes, Sonia Martínez, Jim P. Ostrowski, Hong Zhang*

18:10-18:30 **The Use of Information in Swarm Motions of Autonomous Vehicles**, *John Baillieul*

Room: 210, Session: THP6

Chair: Jan Willem Polderman
Title: **New Approaches to Adaptive Control**

16:30-16:50 **Cautious Hierarchical Switching Control of Stochastic Linear Systems**, *Marco Campi, Jaoa Hespanha, M. Prandini*

16:50-17:10 **Strong Robustness in Multi-Phase Adaptive Control: the Basic Scheme**, *Maria Cadic, Jan Willem Polderman*

17:10-17:30 **Near Optimal LQR Performance for Uncertain First Order Systems**, *Daniel Miller, Li Luo*

17:30-17:50 **Self-Tuning Control for Polynomial Systems: an Algorithmic Perspective**, *Iven Mareels*

17:50-18:10 **Geometry of Adaptive Control, Part II: Optimization and Geodesics**, *Felipe Pait, Diego Colon*

18:10-18:30 **Two Scale High Gain Adaptive Control**, *Jan Willem Polderman, Iven Mareels*

19:00—22:00 Banquet Dinner

Center for Continuing Education

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8:00-9:00 *Room*: 101 Plenary Talk

Anthony Bloch,
Conservative and Dissipative Dynamics in Classical and Quantum Systems.

9:00-10:00 *Room*: 101 Invited Talk

Raffaello D'Andrea,
A State Space Approach to Control of Spatially Interconnected Systems

9:00-10:00 *Room*: 102 Invited Talk

Allen Tannenbaum,
Controlled Active Vision in Image Guided Surgery and Therapy.

9:00-10:00 *Room*: 126 Invited Talk

Karl Kunisch,
From Viscoelastic Fluids to Constrained Optimal Control

Morning:

Room: 102, Session: FA1

Chair: Reinhard Laubenbacher
Title: **Genetic Networks**

10:30-11:00 **Biochemistry by Numbers: Modeling, Signaling and Genetic Networks**, *Pedro Mendes, Alberto de la Fuente, Paul Brazhnik, Stefan Hoops*

11:00-11:30 **Designer Gene Networks**, *Mads Kaern, James J. Collins*

11:30-12:00 **Function, Design, and Gene Circuitry**, *Michael A. Savageau*

12:00-12:30 **Comparative analysis of mathematical models of intracellular networks**, *Vassily Hatzimanikatis, Amit Mehra, Michael Beste*

Room: 126, Session: FA2

Chair: Belinda King, Kirsten Morris
Title: **Distributed Parameter Systems: Stabilization and Control, Part II**

10:30-10:50 **An Example of Output Regulation for Distributed Parameter Systems with Infinite Dimensional Exosystem**, *David Gilliam, Christopher I. Byrnes, Jeff B. Hood, Victor I. Shubov*

10:50-11:10 **Control of Systems with Infinitely Many Unstable Modes and Strongly Stabilizing Controllers Achieving a Desired Sensitivity**, *Suat Gümüşsoy, Hitay Özbay,*

11:10-11:30 **Receding Horizon Control and Reduced-Order Methods**, *Ito Kazufumi*

11:30-11:50 **Some Problems of Control for Nonlinear Partial Differential Equations**, *David Russell*

11:50-12:10 **Global Stabilization of Systems of Partial Differential Equations Using Finite Dimensional Controllers**, *Igor Mezic*

12:10-12:30 **Ouput Regulation of Nonlinear Systems with State Delay**, *Emilia Fridman*

Room: 129, Session: FA3

Chair: Wolfgang Kliemann
Title: **Stochastic Control and Estimation**

10:30-10:50 **Algebraic Optimization Techniques for the Estimation of Zero-Beta Pricing Models**, *Bernard Hanzon*

10:50-11:10 **Trajectory Planning Under a Stochastic Uncertainty**, *Ulf Jönsson, Clyde Martin, Yishao Zhou*

11:10-11:30 **An Addendum to the Problem of Stochastic Observability**, *Vasile Dragan, Teodor Morozan*

11:30-11:50 **Combined Optimization of Portfolio and Risk Exposure of an Insurance Company**, *Daniel Cajueiro, Takashi Yoneyama*

11:50-12:10 **On a Unitary Model for Two-Time Parameter Stationary Processes**, *Dan Emanuel Popovici*

Room: 138, Session: FA4

Chair: Patrick Dewilde
Title: **Stability and Numerics**

10:30-10:50 **Parameter Dependent Extremal Norms for Linear Parameter Varying Systems**, *Fabian Wirth*

10:50-11:10 **On the Sensitivity of Algebraic Riccati Equations**, *Ji-guang Sun*

11:10-11:30 **A Numerically Reliable Method for a Neglected but Unsolved Problem: State Feedback Decoupling with Stability for (A, B, C, D) Quadruples**, *Delin Chu*

11:30-11:50 **Large Stability Property of Solutions of Large-Scale Discrete-Time Systems**, *Tanya Lukyanova, Anatoliy Martynyuk*

11:50-12:10 **Pole Placement Under Output Feedback: A Simplification of the Problem**, *Michael Schilmoeller, Joyce O'Halloran*

12:10-12:30 **To the Problem of Construction of Liapunov Functions for Continuous Large Scale Systems**, *Vitaliy Slyn'ko, Anatoliy Martynyuk*

Room: 208, Session: FA5

Chair: Harry Trentelman
Title: **A Behavioral Approach to Systems, Control and Coding Theory**

10:30-10:50 **A Behavioral Approach to List Decoding**, *Jan Willem Polderman, Margreta Kuijper*

10:55-11:15 **Linear Hamiltonian systems**, *Paolo Rapisarda, H.L. Trentelman*

11:20-11:40 **Approximate Time-Controllability versus Time-Controllability**, *Amol Sasane, M.K. Çamlibel*

11:45:12:05 **On a Class of Time-Varying Behaviors**, *Madhu Belur, M.K. Çamlibel, A.J. Sasane, J.C. Willems*

12:10-12:30 **Synthesis of Strictly Dissipative Systems and the Strictly Suboptimal State Space H-infinity Control Problem**, *Harry. L. Trentelman*

Room: 209, Session: FA6

Chair: Naomi Leonard
Title: **Coordinated Control of Vehicle Networks**

10:30-10:50 **Stability of Systems of Self-Driven Particles Undergoing Phase Transitions**, *A. Stephen Morse*

10:50-11:10 **Stability Properties of Interconnected Vehicles**, *Vijay Kumar, Herbert Tanner, George Pappas*

11:10-11:30 **Formations with a Mission: Stable Coordination of Vehicle Group Maneuvers**, *Naomi Leonard, Petter Ogren, Edward Fiorelli*

11:30-11:50 **Coordinated Control Strategies for Networked Vehicles: An Application to Autonomous Underwater Vehicles**, *Joao Sousa, Fernando Pereira*

11:50-12:10 **Group Shape Feedback Control**, *Raffaello D'Andrea*

12:10-12:30 **Hamiltonian Structures for Interacting Satellites**, *P.S. Krishnaprasad*

Room: 210, Session: FA7

Chair: Mrdjan Jankovic
Title: **Nonlinear Control and Applications**

10:30-11:00 **Application of Nonlinear Lyapunov-based Controllers and Observers to Gasoline Direct Injection Engine Charge and Torque Control**, *Ilya Kolmanovsky*

11:00-11:30 **Multivariable Extremum Seeking Feedback: Analysis and Design**, *Kartik B. Ariyur, Miroslav Krstic*

11:30-12:00 **Stabilization of Sets Parametrized by a Single Variable: Application to Ship Maneuvering**, *Roger Skjetne, Andrew R. Teel, Petar V. Kokotovic*

12:00-12:30 **Nonlinear Control and Automotive Engine Applications**, *Mrdjan Jankovic*

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Room: 102, Session: FM1

Chair: Martin Haenggi
Title: **Mathematical Theory of Networks and Circuits**

14:00-14:20 **On Switched Hamiltonian Systems**, *Arjan van der Schaft, Maurice Heemels, Karin Gerritsen*

14:20-14:40 **Parameter Influence on the Zeros of Network Determinants**, *Sven Feldmann*

14:40-15:00 **Canonical Realizations of Linear Time-Varying Systems**, *Fred Neerhoff, P. van der Kloet*

15:00-15:20 **In Search of Sensitivity in Network Optimization**, *Mike Chen, Charuhas Pandit, Sean Meyn*

15:20-15:40 **Dynamic Eigenvalues for Scalar Linear Time-Varying Systems**, *Pieter Van der Kloet, F.L. Neerhoff*

15:40-16:00 **Interconnection Structures in Physical Systems: a Mathematical Formulation**, *Goran Golo, Orest V. Iftime, Arjan van der Schaft*

Room: 126, Session: FM2

Chair: Belinda King, Kirsten Morris
Title: **Distributed Parameter Systems: Applications and Computation, Part I**

14:00-14:30 **Performance Enhancement of Controlled Diffusion Processes by Moving Actuators**, *Michael Demetriou, Nikolaos Kazantzis*

14:30-15:00 **Equilibrium Profiles of Tubular Reactor Nonlinear Models**, *M. Laabissi, M. E. Achhab,Joseph Winkin, D. Dochain*

15:00-15:30 **Control of Electronic Material**, *Katherine Kime*

15:30-16:00 **Active Sound Field Attenuation via Acoustic Arrays**, *H.T. Banks*

Room: 129, Session: FM3

Chair: William Helton
Title: **Operator Theoretic Methods**

14:00-14:20 **A Nehari Theorem for Continuous-Time FIR Systems**, *Gjerrit Meinsma, Mirkin, Zhong*

14:25-14:45 **Optimal Approximation of Linear Operators: a Singular Value Decomposition Approach**, *Siep Weiland, Hardy Siahaan, Anton Stoorvogel*

14:50-15:10 **Geometrical and Spectral Properties of the Time-Varying Riccati Difference Equation**, *Nevio Carpanese*

15:15-15:35 **A Generalization of the Widrow's Quantization Theorem**, *Alexandru Isar, Dorina Isar*

15:40-16:00 **Functions of System and Their Perturbations**, *Alexey (Olexiy) Tikhonov*

Room: 138, Session: FM4

Chair: David Nicholls
Title: **Nonlinear Surface Water Waves: Theory, Computation and Experiment**

14:00-14:30 **Numerical Simulation of Blow-up Solutions of the Vector Nonlinear Schrödinger Equation**, *Catherine Sulem*

14:30-15:00 **Existence Theory for Traveling Water Waves in Three Dimensions**, *Walter Craig*

15:00-15:30 **Numerical Simulation of Traveling Water Waves**, *David Nicholls*

15:30-16:00 **Similarities between the Quasi-Bubble and the Generalized Wave Continuity Equation Solutions to the Shallow Water Equations**, *John H.Atkinson, Joannes Westerink*

Room: 210, Session: FM5

Chair: Lars Gruene, Fabian Wirth
Title: **Input-to-State Stability, Part II**

14:00-14:30 **Input-to-state stability of pulse width modulated control systems**, *Andrew Teel, L. Moreau, D. Nesic*

14:30-15:00 **ISS for Dynamic Inputs**, *Fabian Wirth*

15:00-15:30 **A Relaxation Theorem for Differential Inclusions with Applications to Stability Properties**, *Yuan Wang, Eduardo Sontag, B. Ingalls*

15:30-16:00 **Characterization of the Non-Uniform in Time ISS Property and Applications**, *Iasson Karafyllis, J. Tsinias*

Room: 126, Session: FP2

Chair: Belinda King, Ruth Curtain
Title: **Distributed Parameter Systems: Applications and Computation, Part II**

16:30-16:50 **POD Based Control of Beam Vibrations: Methodology and Experimental Implementations**, *Brian Lewis, Gregory P. Hicks*

16:50-17:10 **A Comparison of Balancing Techniques for Reduced Order Controllers for Systems of PDEs**, *Belinda King, Katie A. E. Camp*

17:10-17:30 **Modeling and Control Issues Associated with Atomic Force Microscopy**, *Ralph Smith*

17:30-17:50 **The Effect on Control Design of a Stabilized Finite Element Approximation for Burgers' Equation**, *Belinda King,*

17:50-18:10 **Functional Gain Computations for a 1D Parabolic Equation Using Non-Uniform Meshes.**, *John Burns, Belinda B. King, Lizette Zietsman*

18:10-18:30 **A Continuous Control Design Method**, *Jeff Borggaard*

18:00—20:00 Farewell Party

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Mezouar, Youcef	THA6
Michaletzky, Gyorgy	MM3
Michel, A.N.	WM6
Micheli, Mario	WM7
Michtchenko, Anna	WM5
Mikkola, Kalle M.	THA2
Miller, Daniel	THP6
Minchenko, Leonid	MM2
Mirkin,	FM3
Mirkin, Boris	MA7
Mitter, Sanjoy	MP1
Mitter, Sanjoy	WM2
Mohamedy, Alaa	TUM5
Molchanov, A.P.	WM6
Monico, Christopher	WP2
Moore, Helen	WM1
Moreau, L.	FM5
Morettin, Andrea	THM5
Mori, Kazuyoshi	MP5
Morozan, Teodor	FA3
Morris, Kirsten	THM2
Morris, Kirsten	THP2
Morse, A. Stephen	FA6
Muscato, Giovanni	MM6

N

Nabieva, Elena	WM1
Nagamune, Ryozo	TUP6
Nair, Girish	MP1
Nair, Girish	TUA5
Nakaura, Shigeki	WA7
Nayak, Aravind	WM2
Neerhoff, F.L.	FM1
Neerhoff, Fred	FM1
Nesic, D.	FM5
Newman, Mark	THA1
Nicholls, David	FM4
Nikoukhah, Ramine	TUA7
Nikoukhah, Ramine	TUA7

O

O'Halloran, Joyce	FA4
O'Sullivan, Michael	TUM1
Ober, Raimund J.	TUM2
Ober, Raimund J.	TUA6
Ogren, Petter	FA6

Olivi, Martine — TUP6
Olshevsky, Vadim — THP4
Ooba, Tatsushi — TUM3
Opmeer, Mark R. — THA2
Ordys, Andrzej — TUM5
Ortega, Antonio — MP6
Ortega, Romeo — THP5
Ostrowski, Jim — THA6
Ostrowski, Jim P. — THP5
Owens, D. H. — THA5
Owens, David H. — TUM3
Owens, David H. — THA5
Özbay, Hitay — FA2

P

Pait, Felipe — THP6
Pandit, Charuhas — FM1
Papakos, Vasilios — WP4
Pappas, George J. — WM5
Pappas, George J. — THM7
Pappas, George J. — FA6
Parrilo, Pablo A. — TUA5
Parrilo, Pablo A. — WP5
Parrilo, Pablo A. — THA7
Pasik-Duncan, B. — THP3
Pavon, Michele — MA6
Pecora, Lou — THM1
Peeters, Ralf — TUP6
Pereira, Fernando — FA6
Petersen, Mark A. — MA4
Picci, Giorgio — MM3
Picci, Giorgio — WM7
Picci, Giorgio — WM7
Pinzoni, Stefano — MM3
Pivovarchik, Vjacheslav — MP4
Plischke, Elmar — MP5
Polderman, Jan Willem — THP6
Polderman, Jan Willem — THP6
Polderman, Jan Willem — FA5
Polis, Michael — TUP5
Polpitiya, A. — TUA2
Popov, Andrey — MA2
Popovici, Adriana — WP3
Popovici, Dan Emanuel — WP3
Popovici, Dan Emanuel — FA3
Porto, Domenico — WA6
Prajna, Stephen — TUA5
Prandini, M. — THP6
Prattichizzo, D. — THA6
Pravia, Marco A. — TUA6
Premaratne, Kamal — WA2
Provost, A. — MA5
Putinar, Mihai — WP5

Q

Qian, Chunjiang — TUP4
Qiu, Li — THM4

R

Raccanelli, Giorgio — MA6
Radcliffe, James — TUM3
Ramakrishna, Viswanath — WP6
Ran, A. C. M. — MA4
Rantzer, Anders — WA7
Rapisarda, Paolo — FA5
Raymond, Jean-Pierre — TUM5
Rebarber, Richard — THM2
Reddy, Tim — WM1
Reurings, Martine C. B. — THA7
Reznick, Bruce — WP5
Ribarits, Thomas — TUM6
Ricardo, Sandra — MM6
Roberson, Dawnlee — TUM6
Rocha, Paula — TUP3
Rocha, Paula — THM5
Rodman, Leiba — MA4
Rogers, Eric — TUM3
Rogers, Eric — THA5
Rogers, Eric — THA5
Rosenthal, Joachim — TUA1
Rosenthal, Joachim — TUP1
Rosenthal, Joachim — WP2
Rovnyak, Jim — MM4
Runggaldier, W. J. — TH-Invited
Runggaldier, Wolfgang J. — THA3
Russell, David — FA2

S

Saito, Osami — TUM3
Sakhnovich, Alexander L. — MM4
Sakhnovich, L. A. — MA4
Salàzar-Silva, G.H. — TUM6
Salapaka, Murti — WA6
Sampei, Mitsuji — WA7
Sanei, Ahmad — MA7
Sanyal, Amit K. — MM2
Sarkissian, Daniil — WP4
Sasane, Amol J. — FA5
Sasane, Amol J. — THA2
Sasane, Amol J. — FA5
Sasane, Amol J. — THA2
Savageau, Michael A. — FA1
Scanavino, Bartolo — TUP1
Schilmoeller, Michael — FA4
Schirmer, Sonia — WP6
Schirmer, Sonia G. — MA6
Schlacher, Kurt — WM5

Schmale, Wiland — TUP1
Schmidt, Henning — MA2
Schovanec, Lawrence — TUA2
Schrader, Cheryl — TUM6
Schröder, Dierk — TUM6
Schuck, Peter — TUP2
Schumacher, J. M. (Hans) — THA3
Sebastian, Abu — WA6
Segur, Harvey — THA4
Sepulchre, Rodolphe — WM4
Shang, Ying — WM6
Shen, Jinglai — MM2
Shi, Yun Q. — WP3
Shokrollahi, Amin — THP4
Shondin, Yuri — MP4
Shubov, V.I. — FA2
Siahaan, Hardy — FM3
Silva-Ortigoza, Ramon — WA7
Sindano, H. — MM2
Sira-Ramirez, Hebert — WA7
Sivergina, Irina — TUP5
Skjetne, Roger — FA7
Sklarz, Shlomo — WP6
Skoogh, Daniel — WA4
Slyn'ko, Vitaliy — FA4
Smarandache, Roxana — TUM1
Smarandache, Roxana — TUP1
Smith, Hal — MA5
Smith, Ralph — FM6
Solomon, A. I. — MA6
Solyom, Stefan — WA7
Song, Guobiao — MP6
Sontag, Eduardo — TUA4
Sontag, Eduardo — TH-Plenary
Sontag, Eduardo — FM5
Sorensen, Dan — WA4
Soulier, Fabien — TUP5
Sousa, Joao — FA6
Spitkovsky, I. M. — MA4
Srai, Manjit Singh — MM2
Staffans, Olof — TH-Invited
Staffans, Olof — THA2
Stefan, Radu — MM6
Stern, Lawrence — WP1
Stewart, Michael — THP4
Stockbridge, Richard H. — MP3
Stoica, Adrian — TUP6
Stoorvogel, Anton — FM3
Strang, Gilbert — TU-Plenary
Striha, Melissa — TUP1
Sugie, Toshiharu — THP5
Sulem, Catherine — FM4
Sulikowski, Bartek — THA5
Sumen, Cenk — WM1
Sun, Ji-guang — FA4
Sun, Ye — WM6
Suresh Kumar, K. — THA3

T

Tabuada, Paulo	WM5
Taksar, Michael	THM3
Talasila, Viswanath	WM5
Tannenbaum, Allen	F-Invited
Tanner, Herbert	FA6
Tannor, David	WP6
Tatikonda, Sekhar	MP1
Tatikonda, Sekhar	WM2
Tchobanou, Mikhail	WM3
Teel, Andrew	FM5
Teel, Andrew R.	FA7
Teklemariam, Grum	TUA6
Tesi, Alberto	MP2
Theys, Jacques	WA7
Thiran, Patrick	WA2
Thompson, Nancy L.	TUP2
Tikhonov, Alexey (Olexiy)	FM3
Tomas, Gilberto	THP1
Tong, Lang	THP4
Topchiev, Boris	TUP4
Treichl, Thomas	TUM6
Trentelman, Harry L.	FA5
Trentelman, Harry L.	FA5
Tretter, Christiane	MP4
Trumpf, Jochen	MA7
Tsekanovskii, E. R.	TUM4
Tsinias, J.	FM5
Turinici, Gabriel	TUA6

U

Ushakov, Anatoly V.	THA5
Ushida, Shun	TUP6

V

Valcher, Maria Elena	MA5
van der Kloet, P.	FM1
Van der Kloet, Pieter	FM1
van der Mee, Cornelis	MP4
van der Schaft, Arjan	TU-Invited
van der Schaft, Arjan	WM5
van der Schaft, Arjan	THM6
van der Schaft, Arjan	FM1
van der Schaft, Arjan	FM1
van der Veen, Alle-Jan	THP4
van der Woude, J.W.	TUP4
Van Dooren, P.	WA4
Van Dooren, P.	WA4
van Schuppen, Jan H.	MP5
van Schuppen, Jan H.	THM7

Vandendorpe, A.	WA4
Vandendorpe, Antoine	WA4
Varaiya, Pravin	MP2
Vasudevan, Lavanya	MP6
Vatta, Francesca	TUP1
Verduyn Lunel, Sjoerd	M-Invited
Verriest, Erik	WM5
Verschelde, Jan	MM5
Verscheure, Olivier	WA2
Veselov, Gennady	MA2
Vespignani, Alessandro	THM1
Vettori, Paolo	TUP4
Vicino, A.	THA6
Vicino, Antonio	MP2
Vinnikov, Victor	TUA3
Vladimirov, Alexander	WA7
Vojnovic, Milan	WA2
Volosevich, Aleksey	MM2
Vontobel, Pascal O.	TUA1
Vontobel, Pascal O.	WM2

W

Wang, Dianhui	MP5
Wang, Dianhui	TUA5
Wang, Hui	MP3
Wang, Long	WA7
Wang, Xiaochang	MM5
Wang, Xiaochang	WP2
Wang, Xiaoshen	MM5
Wang, Yijing	WA7
Wang, Yuan	FM5
Wang, Yusong	MM5
Ward, E. Sally	TUM2
Weeks, William	MM1
Weiland, Siep	FM3
Westerink, Joannes	FM4
Westman, J. J.	WP4
Westman, J. J.	THP3
Westman, John	MA2
Willems, Jan C.	FA5
Willems, Jan C.	W-Invited
Willems, Jan C.	WA3
Willems, Jan C.	THM5
Winkin, Joseph	TUP5
Winkin, Joseph	FM2
Wirth, Fabian	MP5
Wirth, Fabian	FA4
Wirth, Fabian	FM5
Wittenmark, Bjorn	MP1
Woerdeman, H. J.	MA4
Woerdeman, Hugo	THM4
Wofsy, Carla	WP1
Wong, Wing Shing	MP1

Wood, Jeff	TU-Invited
Woodburn, Cynthia	WM3
Woolsey, Craig	THM6
Wu, Mengnien	MM5

X

Xiao, MingQing	WA6
Xibilia, Maria Gabriella	MM6
Xie, Guangming	WA7
Xie, Min	WA2
Xu, Li	TUM3
Xu, Li	THA5
Xu, Xuping	WM6

Y

Yamada, Minoru	TUM3
Yamamoto, Yutaka	THM2
Yang, Shaohua	WM2
Yin, George	MP3
Yin, George	THP3
Yin, K.	THP3
Ying, Jiang-Qian	THA5
Yoneyama, Takashi	FA3
Yoshizawa, Shintaro	MM6
Yu, Runyi	MP5
Yu, Runyi	TUA5

Z

Zampieri, Sandro	MP1
Zefran, Milos	MP6
Zehetleitner, Kurt	WM5
Zenkov, Dimitri	THM6
Zerz, Eva	WA3
Zerz, Eva	THM5
Zhang, Hong	THP5
Zhang, Jinsong	WA2
Zhang, Q.	THP3
Zhang, Xi Min	WP3
Zhao, Feng	WM6
Zhirabok, Aleksey	WM5
Zhong,	FM3
Zhou, X. Y.	MP3
Zhou, Xun Yu	THM3
Zhou, Yishao	FA3
Zietsman, Lizette	FM6
Zirilli, Francesco	TUM5
Zwart, Hans	THM2