Electronic Proceedings of 15th International Symposium on the Mathematical Theory of Networks and Systems

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

Editors: David S. Gilliam
Joachim Rosenthal

Directions for Using Links

- This File contains the main program and author index for MTNS 2002. It also contains hyperlinks to help navigate to sessions from the author index.
- The paper names in each session which are highlighted (i.e., appear in a different color) are active links to the PDF paper of accepted papers for the Conference CD-ROM.
- If you click on a colored link you will be taken to the appropriate location – either to a session if you click in the author index or to a paper if you click on the name of a highlighted paper.

Monday August 12, 2002

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: Hidenori Kimura
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

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, Bjö rn 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, Nizhny Novgorod
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

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 Analysis of Iterative Decoding Algorithms,
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 I: 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: **Multi-dimensional 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 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 Nonsystematic 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
18:30-18:50 Some Properties of Linear Recurrent Error Control Codes: A Module-Theoretic Approach,
Michel Fliess

Room: 126, Session: TUP2

Chair: Raimund Ober
Title: **Immunology II: 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: **Multi-dimensional Systems 2**

16:30-17:00 State Representation of nD Behaviors,
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 Siverguina
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 Discrete Time 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

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
12:10-12:30 Approximation of the Logarithmic Derivative of Half-Order Hankel Functions,
Jing-Rebecca Li

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: **Multi-dimensional 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: **Multi-dimensional 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 Geometry, Moments and 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 Geometric Control for 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

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 ,
Harvey Segur

Room: 208, Session: THA5

Chair: Krzystof Galkowski, Eric Rogers, Victor Vinnikov
Title: **Multi-dimensional 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. Dymkov , 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,
Denis Matignon, G. Dauphin
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

Friday August 16, 2002

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

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

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

Raffaello D'Andrea,
Control of 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 Güumüşsoy, 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 Jansson, 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 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 Tme-Controllability,
Amol Sasane, M.K.Çamlibel
11:45:12:05 On a Class of Time-Varying Behaviors,
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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,
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12:10-12:30 Hamiltonian Structures for Interacting Satellites,
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Fred Neerhoff, P. van der Kloet
15:00-15:20 In Search of Sensitivity in Network Optimization,
Mike Chen, Charuhas Pandit, Sean Meyn
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15:00-15:30 Control of Electronic Material,
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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,
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Fabian Wirth
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Yuan Wang, Eduardo Sontag, B. Ingalls
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