WELCOME TO MTNS96

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Clyde F. Martin, Lubbock
David S. Gilliam, Lubbock

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George Zames, Montreal
Armen H. Zemanian, Stony Brook
GENERAL INFORMATION

MTNS-96 CONFERENCE INFORMATION
The International Symposium on the Mathematical Theory of Networks and Systems (MTNS) is organized biannually. Previous meetings were held in College Park, Maryland, USA (1973), Montreal, Canada (1975), Lubbock, Texas, USA (1977), Delft, Netherlands (1979), Santa Monica, California, USA (1981), Beer Sheva, Israel (1983), Stockholm, Sweden (1985), Phoenix, Arizona, USA (1987), Amsterdam, Netherlands (1989), Kobe, Japan (1991), and Regensburg, Germany (1993).

LOCATION
THE RITZ-CARLTON, ST. LOUIS, MISSOURI

OPENING SESSION AND WELCOME
Monday, June 24th, SALON I, 7:50 AM, C.I. Byrnes

REFRESHMENTS
There will be complimentary refreshments served during the breaks.

BANQUET
A banquet will be held on Tuesday evening, June 25th at 7:30 PM, at The Ritz-Carlton in SALON II. Tickets may be purchased through advanced registration. Tickets may also be purchased at conference registration on Sunday.

PROCEEDINGS
There will be no general proceedings published for the conference. A conference record consisting of the plenary speakers, the invited speakers and the mini-courses will be published separately by Birkhäuser Boston in a volume tentatively entitled “Mathematical Theory of Networks and Systems – MTNS96” edited by Christopher I. Byrnes, Biswa Datta, Clyde F. Martin and David S. Gilliam and expected to appear by the end of 1996.

All authors whose papers have been presented at MTNS-96 are encouraged to submit them for publication in the “Journal of Mathematical Systems Estimation and Control” (published by Birkhäuser, Boston) by October 1, 1996. The editors of that Journal have agreed to publish all refereed papers with a footnote that the paper was also presented at the MTNS-96 Conference. Further information about submitting your paper(s) for publication will be available at the conference.

REGISTRATION DESK
There will be a registration desk at The Ritz-Carlton in the foyer of SALONS I and II. On Sunday June 23rd, the registration desk will be open from 2:00 PM until 9:00 PM. On Monday, June 24 - Wednesday, June 26, the registration desk will open from 7:30 AM until 5:30 PM and on Thursday, June 27 and Friday, June 28, the registration desk will be open from 9:00 AM until 4:00 PM.
PLENARY TALKS

PLNM 8:00-9:00 AM, Salon I
B.D.O. Anderson, Australian National University,
New developments in the theory of positive systems

PLNT 8:00-9:00 AM, Salon I
Hector Sussmann, Rutgers University,
Recent developments on finite-dimensional optimal control

PLNW1 8:00-9:00 AM, Salon I
John Burns, Virginia Polytechnic University,
Computational Methods for the Design of Distributed Parameter Control

PLNW2 2:00-3:00 PM, Salon I
Israel Gohberg, Tel Aviv University,
State Space Methods in Inverse Spectral Problems

PLNTH 8:00-9:00 AM, Salon I
Michael Miller, Washington University,
Image Understanding Via Deformable Templates: From Representation to Inference

PLNF 8:00-9:00 AM, Salon I
Anders Lindquist, Royal Institute of Technology,
On the geometry of positive real functions with applications to filtering and the rational covariance extension problem

MINICOURSES

MC1: 10:30-12:30 AM and 2:00-4:00 PM, Amphitheater
A. Lindquist, KTH, G. Picci, Padova,
Subspace Methods for Identification

MC2: 10:30-12:30 AM, 2:00-4:00 PM, Salon I
M. Fliess, CNRS, France
Differential Algebraic Methods for Nonlinear Systems

MC3: 10:30-12:30 AM, Amphitheater, 3:00-5:00 PM, Salon I
J. Rosenthal, Notre Dame, A. Wang, Texas Tech,
Inverse Eigenvalue Problems for Linear Multivariable Systems

MC4: 10:30-12:30 AM, 2:00-4:00 PM, Salon I
B.K. Ghosh, Wash U, C.F. Martin, Texas Tech,
Control Problems in Vision

MC5: 10:30-12:30 AM, 2:00-4:00 PM, Salon I
B. Datta, DeKalb,
Numerical Methods for Control Systems Design and Analysis
INVITED TALKS

9:00-10:00 AM MONDAY
IM1: Plaza: H. T. BANKS, North Carolina State University,
   Nonlinear vibrations in distributed parameter systems
IM2: Amphitheater: HÉLÈNE FRANKOWSKA, CNRS,
   How set-valued maps pop up in control theory
IM3: Salon I: U. HELMKE, Universität Würzburg,
   Control theory and the design of numerical algorithms

9:00-10:00 AM TUESDAY
IT1: Consulate: G. WEISS, University of Exeter, UK,
   Regular linear systems: A survey
IT2: Pavilion: S.I. MARCUS, University of Maryland,
   Risk-sensitive control of Markov decision processes
IT3: Salon I: J.C. WILLEMS, Universiteit Groningen,
   Fitting recursions to data sequences
IT4: Colonnade: A. TEEL, University of Minnesota,
   Nonlinear input-output stability and stabilization

9:00-10:00 AM WEDNESDAY
IW1: Salon I: ROGER W. BROCKETT, Harvard University
   Probability distributions on certain homogeneous spaces arising
   in computer vision
IW2: The Amphitheater: IRENA LASIECKA, University of Virginia,
   Stabilization and control of distributed parameter systems described
   by interactive structures
IW3: The Pavilion: KEVIN WISE, McDonnell-Douglas Aircraft,
   Fighter aircraft control challenges and technology transition

9:00-10:00 AM THURSDAY
ITH1: Plaza: R. W. FREUND, AT & T Bell Laboratories,
   Circuit simulation techniques based on Lanczos-type algorithms
ITH2: Salon I: J. WILLIAM HELTON, University of California at San Diego,
   Extending $H_{\infty}$ control to nonlinear systems
ITH3: Amphitheater: PETAR KOZOTIC, University of California at Santa Barbara,
   From asymptotic to Lyapunov recursive nonlinear feedback designs

9:00-10:00 AM FRIDAY
IF1: Salon I: P. R. KUMAR, University of Illinois at Urbana-Champaign,
   New results in performance analysis of queueing networks
IF2: Plaza: A. KURZHANSKY, Moscow State University,
   Ellipsoidal techniques for state estimation and feedback control
IF3: Amphitheater: YITZHAK M. RAM, University of Adelaide,
   On inverse spectral problems and pole-zero assignment
## PROGRAM AT A GLANCE

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<td>H. Sussmann</td>
<td>J. Burns</td>
<td>M. Miller</td>
<td>A. Lindquist</td>
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<td>9:00 - 10:00</td>
<td>Invited Lectures</td>
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<td>10:00 - 10:30</td>
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<td>Sessions WA1-WA10</td>
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<td>12:30 - 2:00</td>
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<td>I. Gohberg</td>
<td>Sessions THM1-THM10</td>
<td>Sessions FM1-FM10</td>
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<td>Sessions TP1-TP11</td>
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<td>Sessions THP1-THP11</td>
<td>Sessions FP1-FP12</td>
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* MC = MiniCourse
MONDAY - June 24th

Opening and Welcome, 7:50 AM, Salon I
C.I. BYRNES, Washington University

Plenary Address: PLNM 8:00-9:00 AM, Salon I
B.D.O. ANDERSON, Australian National University,
   New developments in the theory of positive systems

Invited Addresses: 9:00-10:00 AM
IM1: Plaza: H. T. BANKS, North Carolina State University,
    Nonlinear vibrations in distributed parameter systems
IM2: Amphitheater: HÉLÈNE FRANKOWSKA, CNRS,
    How set-valued maps pop up in control theory
IM3: Salon I: U. HELMKE, Universität Würzburg,
    Control theory and the design of numerical algorithms

Break: 10:00-10:30

MC1: 10:30-12:30 AM and 2:00-4:00 PM, Amphitheater
A. LINDQUIST, KTH, G. PICCI, Padova,
   Subspace Methods for Identification

A.M.

Session MA1: Viscosity Solutions and $H_{\infty}$ Control - Construction and Computation
ROOM: Pavillion CHAIRS: M. V. Day (Virginia Tech), W.M. McEneaney (NC State)
Characteristic characterization of viscosity supersolutions corresponding to nonlinear $H_{\infty}$ control ........................................... 10:30-11:00
W.M. McEneaney, North Carolina State University, USA
Computation of the $H_{\infty}$ norm for nonlinear systems ...................................... 11:00-11:30
F. Camilli, University of Rome, Italy
Viscosity solutions and Lagrange manifolds ............................................. 11:30-12:00
M. V. Day, Virginia Tech, USA
Computational approaches to convex HJI equations ................................... 12:00-12:30
M. Hardt, J. W. Helton, Univ. of California at San Diego, USA

Session MA2: Riemannian Geometry and Topology in Control & Parameterization Theory I
ROOM: Plaza CHAIRS: W. S. Gray (Drexel), U. Helmke (Wuerzberg), E. Verriest (Geogia Tech.)
Symmetries and forces in nonholonomic mechanics ..................................... 10:30-11:00
A. M. Bloch, University of Michigan, USA, P. E. Crouch, Arizona State University, USA
Nonholonomic mechanical systems on lie groups ................................ 11:00-11:30
P. S. Krishnaprasad, University of Maryland, USA
Riemannian maximal accuracy control ........................................... 11:30-12:00
W. S. Gray, Drexel University, USA, E. I. Verriest, Georgia Institute of Technology, USA
On output feedback invariants ........................................... 12:00-12:30
U. Helmke, University of Wuerzburg, Germany, M. S. Ravi, East Carolina University, USA, J. Rosenthal, University of Notre Dame, USA
Session MA3: Linear Periodic Discrete-Time Systems

**ROOM:** Suite C  
**CHAIRS:** V. Hernandez (Valencia)

**Pole assignment by output feedback: a robust periodic solution**  
S. Longhi, S. Riccioni, R. Zulli, Universita di Ancona, Italy  
10:30-11:00

**Periodic Descriptor Systems**  
J. Sreedhar, University of Illinois at Urbana-Champaign, USA, P. Van Dooren, Universite Catholique de Louvain, Belgium  
11:00-11:30

**Coprime factorizations of a collection of periodic rational matrices**  
R. Bru, C. Coll, Univ. Politecnica de Valencia, Spain, J. Gelonch, Univ. de Lleida, Spain  
11:30-12:00

**Minimal discrete time-varying forward/backward periodic realizations of rational matrices**  
V. D. Estruch, V. Hernandez, Universidad Politecnica de Valencia, Spain  
12:00-12:30

Session MA4: Modelling of Environmental Processes and Systems, I

**ROOM:** Promenade  
**CHAIRS:** G. Crosta (Milano), M. Hazewinkel (CWI), J. Verwer (CWI)

**An implicit finite difference scheme for the fully nonlinear size structured model**  
A. S. Ackleh, K. Ito, North Carolina State University, USA  
10:30-11:00

**Optimal control of PDE/ODE systems modeling bioremediation**  
S. Lenhart, University of Tennessee, USA  
11:00-11:30

**Paradoxical effects of the fluctuations of environment on growth and competition**  
C. Lobry, Lab d’Ecologie du Plancton Marin, France  
11:30-12:00

**Percolation models of the spread of infectious diseases**  
J. Dunyk, C. F. Martin, Texas Tech University, USA  
12:00-12:30

Session MA5: Modeling and Control of Hybrid Systems

**ROOM:** Salon I  
**CHAIRS:** B. Ghosh (Washington U.), L. Dai (Washington U.)

**Hierarchical approach to hybrid system synthesis**  
M. Lemmon, P. Antsaklis, University of Notre Dame, USA  
10:30-11:00

**Supervisory control of families of stabilizing controllers**  
J. Hespanha, A. S. Morse, Yale University, USA  
11:00-11:30

**A hierarchical system formulation of hybrid control**  
P. E. Caines, Y.-J. Wei, McGill University, Canada  
11:30-12:00

**Hierarchical hybrid machines**  
M. Heymann, NASA Ames, USA  
12:00-12:30

Session MA6: Inverse Eigenvalue Problems in Control Theory

**ROOM:** Monarch  
**CHAIRS:** J. Rosenthal (Notre Dame), X. Wang (Texas Tech)

**The pole placement problem: past, present and future directions**  
J. Rosenthal, University of Notre Dame, USA  
10:30-11:00

**An analysis of pole placement by dynamic feedback**  
S. Ariki, Tokyo University of Mercantile Marine, Japan  
11:00-11:30

**On the complexity of output feedback problems**  
C. Abdallah, G. L. Heileman, University of New Mexico, USA, O. Toker, Eindhoven University of Technology, The Netherlands  
11:30-12:00

**Perturbation methods for inverse eigenstructure assignment**  
N. Karcanias, J. Leventides, City University, UK  
12:00-12:30
Session MA7: Estimation and Control of Infinite Dimensional Systems, I

ROOM: Colonnade  CHAIR: H. T. Banks (NC State)

Control and identification in electromagnetics ........................................ 10:30-11:00
Y. Wang, Armstrong Lab, USA

Robustness questions related to delays in infinite dimensional structural acoustics systems ......................................................... 11:00-11:30
R. Rebarber, University of Nebraska, USA

Approximation methods for curved active constrained viscoelastic layer structures .............................................................. 11:30-12:00
N. Medhim, Clark Atlanta University, USA

Identification of hysteretic control influence operators representing smart actuators .............................................................. 12:00-12:30
A. Kurdila, Texas A&M University, USA

Session MA8: Spectral Theory for Time-Varying Linear Systems

ROOM: Diplomat  CHAIRS: W. Kliemann (Iowa State), F. Wirth (Bremen)

Spectra of discrete-time time-varying linear systems ........................................ 10:30-11:00
F. Wirth, Universitaet Bremen, Germany

Numerical calculation of the Lyapunov spectrum of time varying linear systems .......................................................... 11:00-11:30
L. Gruene, Univ. of Augsburg, Germany

Zeros of continuous-time linear periodic systems ...................................................... 11:30-12:00
G. De Nicolao, G. F. Trecate, Univ. di Pavia, S. Pinzoni, Univ. di Padova, Italy

Stability properties of products of random matrices .................................................. 12:00-12:30
P. Baxendale, University of Southern California, USA

Session MA9: Nonlinear Systems

ROOM: Consulate  CHAIRS: C.I. Byrnes (Washington U), C.F. Martin (Texas Tech)

Robust Nonlinear Output Regulation .......................................................... 10:30-11:00
C.I. Byrnes, Washington University, USA, A. Isidori, Universita degli Studi di Roma ‘La Sapienza’, Italy

Stability of Randomly Switched Systems ...................................................... 11:00-11:30
W.P. Dayawansa, C.F. Martin, Texas Tech University, USA,

On the Dissipation Inequality for Lossless Systems .................................................. 11:30-12:00
K. Doll, Washington University, USA

On the role of connections in global nonlinear noninteracting control via static measurement feedback .......................................... 12:00-12:30
S. Battilotti, University of Rome, Italy

Session MA10: Discrete Time Nonlinear Control

ROOM: Ambassador  CHAIR: A. Isidori (Rome)

Finite discretization and digital control of a PVTOL aircraft .............. 10:30-11:00
P. Di Giamberardino, S. Monaco, Universita di Roma ‘La Sapienza’, Italy, M. Djemai, D. Normand-Cyrot, CNRS-ESE, France

Deciding dead beat controllability using QEPCAD .............................................. 11:00-11:30
I.M.Y. Mareels, D. Nesic, Australian National University, Australia

Inversion algorithm for nonlinear recursive systems ............................................ 11:30-12:00
U. Kotta, Estonian Academy of Sciences, Estonia

Approximating dynamical systems by compositions ............................................. 12:00-12:30
Y. Moreau, J. Vandewalle, Katholieke Universiteit Leuven, Belgium
Lunch: 12:30-2:00

MIDDLE

Session MM1: Mechanics, Control, and Optimization - I

ROOM: Plaza
CHAIRS: A.M. Bloch (Michigan), P.E. Crouch (ASU), J. Baillieul (Boston U)

Integrable optimal flows .......................................................... 2:00-2:30
A. M. Bloch, University of Michigan, USA, P. E. Crouch, Arizona State University, USA

Infinite-dimensional semidefinite programming: interior-point algorithms, regularized deter-
maminants and control applications ........................................... 2:30-3:00
L. Faybusovich, University of Notre Dame, USA

Control of dynamical systems with bifurcations .............................. 3:00-3:30
J. Baillieul, Boston University, USA

Lorentz invariant forms of the nonholonomic integrator ....................... 3:30-4:00
R.W. Brockett, Harvard University, USA

Session MM2: Control of Locomotion - I

ROOM: Colonnade
CHAIRS: S. Nikitin (ASU)

Energy methods and underwater vehicle locomotion .................................. 2:00-2:30
N. E. Leonard, Princeton University, USA

Spacial motion and nonlinear control of redundant mechanical systems ........ 2:30-3:00
A. Lyamin, I. Miroshnik, V. Nikiforov, St. Petersburg Institute of Fine Mechanics and Optics, Russia,

On nonlinear control of Euler-Lagrange systems: disturbance attenuation properties ........ 3:00-3:30
R. Ortega, Universite de Compiegne, France, J. Scherpen, Delft University of Technology, The Netherlands

Extending discontinuous stabilizers for nonholonomic systems from kinematic controllers to
dynamic controllers ................................................................. 3:30-4:00
A. Astolfi, Swiss Federal Institute of Technology (ETH), Switzerland

Session MM3: Inverse Eigenvalue Problems in Control Theory

ROOM: Consulate
CHAIRS: J. Rosenthal (Notre Dame), X. Wang (Texas Tech)

Some problems in simultaneous system design with a view towards hybrid control ........ 2:00-2:30
B. K. Ghosh, Washington University, USA

Jacobi-type methods for solving inverse eigenvalue problems .................... 2:30-3:00
U. Helmke, Universitaet Wuerzburg, Germany

Interpolation theory and quantum cohomology ....................................... 3:00-3:30
M. S. Ravi, East Carolina University, USA

On decentralized pole assignment of linear systems .................................. 3:30-4:00
X. A. Wang, Texas Tech University, USA

Session MM4: Estimation and Control of Infinite Dimensional Systems, II

ROOM: Ambassador
CHAIRS: H.T. Banks (NC State)

An algorithm for computations of discrete solutions to algebraic riccati equations arising in
an optimal control problem for a structural acoustics application ....................... 2:00-2:30
E. Hendrickson, Arkansas State University, USA

Uniform stabilization of a linear conical shell ...................................... 2:30-3:00
C. McMillan, VPI&SU, USA

Infinite dimensional control and associated finite element approximations of a coupled nonlinear
system arising in shallow shell theory ........................................... 3:00-3:30
R. Marchand, University of Virginia, USA

Optimal sensor placement via Gaussian quadrature .................................... 3:30-4:00
R. Miller, University of Arkansas, USA
Session MM5: Factorization of Systems and their Applications, I

ROOM: Salon I CHAIRS: H. Bart (Amsterdam), B. Helton (UC SanDiego), Hi. Kimura (Tokyo U)

Minimal factorization and job scheduling ................................................................. 2:00-2:30
L. Kroon, Erasmus University, The Netherlands

Quasicomplete factorization and job scheduling ....................................................... 2:30-3:00
R. Zuidwijk, CWI, The Netherlands

J-inner outer factoring of non-linear systems ......................................................... 3:00-3:30
M. James, Australian National University, Australia

On discrete-time (J,J')-lossless factorizations ....................................................... 3:30-4:00
H. Kimura, W. Kongprawechnon, Instituto Tecnologico de Aeronautica, Brazil

Session MM6: Linear Control Systems: Variations on a Theme of Wedderburn

ROOM: Promenade CHAIRS: B.F. Wyman (Ohio State)

Wedderburn-Forney spaces and cohomology of coherent sheaves on the projective line ................................................ 2:00-2:30
V. G. Lomadze, M. S. Ravi, East Carolina University, USA

Wedderburn-Forney spaces as a computational tool for linear systems .................... 2:30-3:00
S. J. Giust, Nicholls State University, USA

Controllability, observability, and Wedderburn-Forney filtrations ............................ 3:00-3:30
C. Schrader, University of Texas - San Antonio, USA

Poles, zeros, and cohomology for linear systems .................................................... 3:30-4:00
B. Wyman, Ohio State University, USA

Session MM7: Theory and Applications of Deformable Models in Machine Vision

ROOM: Pavilion CHAIRS: B.K. Ghosh (Washington U), G. Picci (Padova)

Object recognition using probabilistic deformable models ..................................... 2:00-2:30
M. Burl, T. Leung, P. Perona, M. Weber, Cal Tech, USA

Stochastic processes on homogeneous spaces ......................................................... 2:30-3:00
R. W. Brockett, Harvard University, USA

A conformal surface evolution approach to 3-D segmentation .................................. 3:00-3:30
S. Kichenassamy, P. Olver, A. Tannenbaum, A. Yezzi, University of Minnesota, USA

Experiments in model-based robotic visual tracking using active deformable models ... 3:30-4:00
M. Sullivan, N. Papanikolopoulos, University of Minnesota, USA

Session MM8: Circuits and Signals

ROOM: Directors CHAIRS: R. Ortega (Compiegne), H. Sira-Ramirez (Univ. Los Andes)

A Lagrangian approach to a general DC-to-DC power conversion model ................. 2:00-2:30

Estimate the point spread function by bispectrum ................................................. 2:30-3:00
S. Boon-Hee, J. Liu, Nanyang Technological University, Singapore

On the foundation for algebraic reuse of concurrent processes ............................... 3:00-3:30
A.C.V. de Melo, DCA-FEE-Unicamp, Brazil

A new model-independent method for the description and identification of nonlinear systems .................................................... 3:30-4:00
K. Stamm, University of Aachen, Germany
Session MM9: Algebraic Methods for Nonlinear Control

**Room:** Diplomat  
**Chairs:** F. Szigeti (Univ. Los Andes), M. Spielmann (Duisburg)

**Transformation of nonlinear systems into Isidori-Byrnes normal form via graph-theoretical methods** ................................................................. 2:00-2:30  
*H. Schwarz, M. Spielmann, T. Wey, University of Duisburg, Germany*

**Relational control structures and reachability/controllability of nonlinear systems** ........ 2:30-3:00  
*M. Lemmen, M. Schleuter, University of Duisburg, Germany*

**Algebraic characterization of reachability subspaces for bilinear systems** ................. 3:00-3:30  
*F. Szigeti, University of Los Andes, Venezuela, J. Bokor, A. Edelmayer, Hungarian Academy of Sciences, Hungary*

**Algebraic approach to analysis of controllability of nonlinear systems** ................. 3:30-4:00  
*A.N. Zhirabok, Far Eastern State Technical University, Russia*

Session MM10: New Techniques for Linear Systems

**Room:** Suite C  
**Chair:** S. Weilands (Einhoven)

**Robust solutions to least-square problems with uncertain data matrices** ............... 2:00-2:30  
*L. El Ghaoui, H. Lebret, Ecole Nationale Superieure de Techniques Avancees, France*

**A classification of minimal realizations of strictly proper transfer under similarity transformations** ................................................................. 2:30-3:00  
*V. Eldem, K. Oscaliran, Research Institute for Basic Sciences, Turkey*

**A minimax design of robust I-PD controller based on genetic algorithm** ................. 3:00-3:30  
*T. Katayama, T. Kawabe, University of Tokushima, Japan*

**Perturbation bounds for Hankel singular values** ........................................ 3:30-4:00  
*D.W. Gu, Leicester University, UK, M. Konstantinov, University of Architecture and Civil Engineering, Bulgaria, P. Petkov, University of Sofia, Bulgaria, I. Postlethwaite, Leicester University, UK*

PM

Session MP1: Continuous-Time Systems

**Room:** Ambassador  
**Chairs:** A. Bagchi (Twente), T. E. Duncan (Kansas), L. Gerencser (Budapest)

**On the relationship between assumed density filters and projection filters** ............ 4:15-4:45  
*D. Brigo, LADSEB / CNR, Italy, B. Hanzon, Free University Amsterdam, The Netherlands, F. LeGland, IRISA / INRIA, France*

**Approximation results in nonlinear filtering** ............................................. 4:45-5:15  
*I. Gyongy, The University of Edinburgh, UK*

**Nonparametric robustness of the GLR test for change detection** ...................... 5:15-5:45  
*F. Campillo, CMI / INRIA, France, Y. Kutoyants, Universite du Maine, France, F. LeGland, IRISA / INRIA, France*

**Statistical analysis of linear systems driven by finitely additive white noise** ........ 5:45-6:15  
*A. Bagchi, The University of Twente, The Netherlands, L. Gerencser, Computer and Automation Institute of the Hungarian Academy of Sciences, Hungary*

**Controllability analysis for continuous-time linear time varying systems** .......... 6:15-6:45  
*J. Bokor, A. Edelmayer, F. Szigeti, Computer and Automation Institute of the Hungarian Academy of Sciences, Hungary*

Session MP2: Performance Analysis and Optimization of Discrete Event Dynamic Systems

**Room:** Salon I  
**Chairs:** L. Dai (Washington U)

**Using smoothed perturbation analysis and continuous flow models to determine loss in an ATM network link** ............................................. 4:15-4:45  
*C. A. Brooks, University of Illinois at Chicago, USA*

**The distributional version of Little’s Law via Campbell’s Theorem and its connection to the Palm-Khinchine equation** ..................................... 4:45-5:15  
*M. A. Zazanis, University of Massachusetts, USA*
Simulation optimization via simultaneous perturbation stochastic approximation .... 5:15-5:45
M. D. Fu, University of Maryland at College Park, USA, S. D. Hill, The Johns Hopkins University, USA

Perturbation analysis techniques for dynamic control of manufacturing systems .... 5:45-6:15
G. Liberatore, S. Nicosia, P. Valigi, Università di Roma, Tor Vergata, Italy

Perturbation analysis for a discrete-time stationary single-server queue ............. 6:15-6:45
D. Horibe, N. Miyoshi, Kyoto University, Japan

Session MP3: Industrial Applications of Nonlinear Control Theory

ROOM: Plaza
Chairs: X. Hu (KTH), P.-O. Gutman (Technion)

Stabilizability under actuator constraints: an application to aircraft control ........ 4:15-4:45
S. T. Glad, Linköping University, Sweden

About nonlinear control of a distillation column ........................................ 4:45-5:15
M. Alamir, G. Besançon, G. Bornard, Laboratoire d’Automatique de Grenoble, France

Nonlinear modeling and control of CO2 enrichment in greenhouses ................ 5:15-5:45
P.-O. Gutman, R. Liniker, I. Seginer, Technion-Israel Institute of Technology, Israel

VSC control of two-mass systems based on output measurements .................... 5:45-6:15
D. Galardini, X. Hu, Royal Institute of Technology, Sweden

Computational questions of equilibrium calculation with application to nonlinear aircraft dynamics .............................. 6:15-6:45
S. T. Glad, M. Jirstrand, Linköping University, Sweden

Session MP4: Systems over Rings

ROOM: Amphitheater
Chairs: G. Conte (Ancona)

Tracking in systems over rings ................................................................. 4:15-4:45
E. W. Kamen, Georgia Institute of Technology, USA

Coprime factorization of transfer function matrices for linear systems over rings .... 4:45-5:15
H. Inaba, N. Ito, W. Wang, Tokyo Denki University, Japan

Linear behavior over rings and applications to parametrized systems .............. 5:15-5:45
F. Fagnani, Scuola Normale Superiore, Italy, S. Zampieri, Dipartimento di Elettronica e Informatica, Italy

Some results on noninteracting control for systems over rings ........................ 5:45-6:15
G. Conte, A. Lombardo, A.-M. Perdon, Università’ di Ancona, Italy

Feedback stabilization and robustness of stabilizability over integral domains ........ 6:15-6:45
K. Abe, K. Mori, Tohoku University, Japan

Session MP5: Numerical and Algorithmic Aspects in Linear Systems

ROOM: Monarch
Chair: B. Datta (DeKalb)

On the relationship between interpolation and partial realization .................. 4:15-4:45
M. Kuijper, University of Melbourne, Australia

A behavioral approach to delay-differential systems ................................... 4:45-5:15
H. Glüsing-Luerssen, Universität Oldenburg, FB-6 - Mathematik, Germany

Interpolation with multiple norm constraints ............................................. 5:15-5:45
R.K. Prasanth, M.A. Rotea, Purdue University, USA

Towards an algorithmic theory of systems, stability, and robustness ............ 5:45-6:15
M. Mesbahi, G.P. Papavassilopoulos, University of Southern California, USA

Interpretation of zeros and zero directions of LTI systems by the Moore-Penrose pseudoinverse of the first non-zero Markov parameter ....................... 6:15-6:45
J. Tokarzewski, Institute of Mechanical Vehicles, Poland
Session MP6: Nonlinear Dynamical Systems
ROOM: Colonnade CHAIR: C. Schwartz (Tallahassee)
The dynamics of multibody systems as Hamiltonian systems defined on Dirac structures ...
B.M. Maschke, Laboratoire d’Automatisme Industriel du CNAM, France, A.J. van der Schaft, University of Twente, The Netherlands
Bifurcation phenomenon of systems with uncontrollable linearization .............. 4:45-5:15
W. Kang, Naval Postgraduate School, USA
Construction of Lyapunov functions for nonlinear systems in critical cases .......... 5:15-5:45
C.A. Schwartz, A. Yan, University of Florida, USA
Dynamic systems with state constraints .................................................. 5:45-6:15
P. Saint-Pierre, Ceremade - URA CNRS, France
On connections between linear and non-linear equations ......................... 6:15-6:45
L.A. Sakhnovich, Odessa, Ukraine

Session MP7: Nonlinear Control
ROOM: Pavilion CHAIR: J. Hauser (Boulder)
Maneuver modified trajectory tracking ................................................... 4:15-4:45
J. Hauser, R. Hindman, University of Colorado, USA
Inverse control for output nonlinearity ................................................. 4:45-5:15
P.V. Kokotovic, University of California, USA, G. Tao, University of Virginia, USA
Nonlinear feedback control of imperfectly known singularly perturbed nonlinear systems subject to control constraints .................................................. 5:15-5:45
H.S. Binning, D.P. Goodall, Coventry University, U.K.
Chattering-free sliding mode control of constrained manipulator .................. 5:45-6:15
G. Bartolini, University of Cagliari - Piazza d’Armi, Italy, A. Ferrara, E. Punta, University of Genova, Italy
Comparison principles for singularly perturbed systems ......................... 6:15-6:45
Z. Retchkiman, G. Silva-Navarro, CIMA-UAdC, USA

Session MP8: Modeling and Identification
ROOM: Consulate CHAIR: M Milanese (Pol. Torino)
On adaptive HMM state estimation ....................................................... 4:15-4:45
J. Ford, J.B. Moore, Australian National University, Australia
Modelling of random signals using orthonormal bases ................................ 4:45-5:15
H. Hjalmarsson, Sweden, B. Ninness, University of Newcastle, Australia
SM system identification with approximated models .................................. 5:15-5:45
L. Giarre, M. Milanese, Politecnico di Torino, Italy
An analytical description of the stationary points for the multivariable Steiglitz-McBride method ................................................................. 5:45-6:15
M. Ashari, CNRS - ESE - UPS, France, M. Mboup, Univ. Rene Descartes-Paris V, France, P.A. Regalia, Inst. National des Telecommms, France
Time series analysis and modeling ....................................................... 6:15-6:45
D. Di Ruscio, Telemark Institute of Technology, Norway
Session MP9: Adaptive Control of Linear Systems

ROOM: Promenade CHAIRS: T. Yamamoto (Okayama, Japan), F. Lamnabhi-Lagarrigue (LSS, France)

A discrete-time simple adaptive controller ............................................. 4:15-4:45
M. Kaneda, T. Yamamoto, Okayama Prefectural University, Japan, S. Omatu, University of Osaka Prefecture, Japan

Adaptive control scheme for some parametrized nonlinear discrete-time systems .... 4:45-5:15
A. Laib, F. Lamnabhi-Lagarrigue, CNRS, SUPELEC, France

On robust stability in model reference adaptive control systems with low sensitivity property ......................................... 5:15-5:45
A. Inoue, S. Masuda, Okayama University, Japan

Optimal adaptive control of uncertain stochastic discrete linear systems ............ 5:45-6:15
A. Guez, Drexel University, USA, I. Rusnak, RAFAEL (88), Israel

Singularity free adaptive LQG control stability and optimality ..................... 6:15-6:45
M. Campi, M. Prandini, Universita degli Studi di Brescia, Italy

Session MP10: Discrete Events and Hybrid Systems

ROOM: Directors CHAIR: J. van Schuppen (Amsterdam)

On the stability of a class of hybrid dynamical systems with unilateral constraints .. 4:15-4:45
B. Brogliato, S.-L. Niculescu, Grenoble (URA-CNRS 228), France, M. Monteiro-Marques, Centro de Matematica a Aplicacoes Fundamentais, Portugal

Algebraic analysis of discrete event systems modelled by generalized petri nets by use of invariants ............................................. 4:45-5:15
A. Bourjii, G. Krzakala, S. Nowakowski, Universite Henri Poincare-Nancy I, IUT, France

Model matching for max-plus linear systems ....................................... 5:15-5:45
L. Libeaut, J.J. Loiseau, Ecole Centrale de Nantes/Universite de Nantes, France

A hybrid system investigation of fluid-filled tanks .................................. 5:45-6:15
G. Labinaz, K. Rudie, L. Ricker, N. Bayoumi, Queen’s University, Canada

An efficient suboptimal realization procedure for discrete event systems .......... 6:15-6:45
J.M. Prou, E. Wagneur, Ecole Centrale de Nantes/Universite de Nantes, France

Session MP11: Linear Distributed-Parameters Systems

ROOM: Diplomat CHAIRS: D. Gilliam (Texas Tech)

A simple observer for distributed systems applications to a heat exchanger .......... 4:15-4:45
J.P. Gauthier, P. Ligarius, C.Z. Xu, France

A note on decoupling for linear infinite dimensional systems .......................... 4:45-5:15
M. Malabre, Ecole Centrale de Nantes, France, R. Rabah, Ecole des Mines de Nantes, France

Output target control problems and uncertain infinite dimensional systems ....... 5:15-5:45
Z. Emirsajlow, Technical University of Szczecin, Poland

Fractional modal decomposition of a boundary controlled and observed infinite dimensional linear system ........................................... 5:45-6:15
D. Matignon, Ecole Nationale Superieure des Telecommunications, France

Mathematical model and problem research of optimal placement of discrete physical field sources .................................................. 6:15-6:45
V.C.B. Kryshanskiw, Y.G. Stoyan, S.I. Yaremchuk, Institute for Problems in Machinery, Ukraine
TUESDAY - June 25th

Plenary Address: PLNT 8:00-9:00 AM, Salon I

Hector Sussmann, Rutgers University,
Recent developments on finite-dimensional optimal control

Invited Addresses: 9:00-10:00 AM

IT1: Consulate:  G. Weiss, University of Exeter, UK ,
Regular linear systems: A survey
IT2: Pavilion :  S.I. Marcus, University of Maryland,
Risk-sensitive control of Markov decision processes
IT3: Salon I:  J.C. Willems, Universiteit Groningen,
Fitting recursions to data sequences
IT4: Colonnade:  A. Teel, University of Minnesota,
Nonlinear input-output stability and stabilization

Break: 10:00-10:30

MC2: 10:30-12:30 AM, 2:00-4:00 PM, Salon I

M. Fliess, CNRS, France
Differential Algebraic Methods for Nonlinear Systems

AM

Session TA1: Riccati Equations and Inequalities

ROOM: Ambassador CHAIRS: L. Rodman (William and Mary)

Hamilton-Jacobian equations as generalizations of algebraic Riccati equations  ......10:30-11:00
J. A. Ball, Virginia Tech, USA
Inverse free divide and conquer algorithms for the numerical solution of algebraic riccati
equations .................................................................11:00-11:30
P. Brenner, Universitat Chemnitz-Zwickau, Germany, R. Byers, University of Kansas, USA
The rate of stability of Hermitian solutions of the continuous algebraic riccati equation ......
..................................................................................................................11:30-12:00
A. C. M. Ran, Vrije Universiteit, The Netherlands, L. Rodman, College of William and Mary, USA
TBA ..........................................................................................12:00-12:30
L. Rodman, College of William and Mary, USA

Session TA2: Modelling of Environmental Processes and Systems, II

ROOM: Directors CHAIRS: G. F. Crosta (Milano), M. Hazewinkel (CWI), J. Verwer (CWI)

Flows of viscous fluids around corners ...............................................................10:30-11:00
H. Bellout, Northern IL University, USA
A method for the stabilization of numerical algorithms for problems with moving boundaries
..................................................................................................................11:00-11:30
M. Braginsky, UC Berkeley, USA, Y. Krasnov, Bar Ilan University, Israel
Longshore Current and Littoral Transport on Beaches with Seawall ...............11:30-12:00
W.G. McDougal, P. Ruggiero, R. Guenther, Oregon State University, USA
Recent progress in the analysis of non-steady time series data .......................12:00-12:30
N.E. Huang, S.R. Long, Z. Shen, Laboratory for Hydrospheric Processes, USA
Session TA3: Parametrization and Approximation of Systems, I: Frequency Domain Approach

ROOM: Promenade

CHAIRS: A. Gombani (Padova), J. Leblond (Sophia-Antipolis)

Dissipative periodic systems and symmetric interpolation in Schur classes ............ 10:30-11:00
D. Alpay, V. Bolotnikov, Ben Gurion Univ., Israel, P. Loubaton, Univ. de Marne la Vallée, France

On the decay of interpolation errors and uniqueness of $H_2$ rational approximants .... 11:00-11:30
L. Baratchart, INRIA, France, B. Saff, University of South Florida, USA, F. Wielonsky, INRIA, France

Schur parameters and matrix rational $H_2$ approximation .................................. 11:30-12:00
P. Fučík, M. Olivi, INRIA, France

Frequency-domain error bounds for modal truncation of systems with unbounded input-output operators .......................................................... 12:00-12:30
J. Imai, K. Wada, Kyushu University, Japan

Session TA4: Estimation and Control of Infinite Dimensional Systems, III

ROOM: Suite C

CHAIR: H.T. Banks (NC State)

A new model for acoustic-structure interaction and its exponential stability .......... 10:30-11:00
C. Wang, University of Southern California, USA

Stabilization of a 3-dimensional system of elasticity ........................................ 11:00-11:30
M. A. Horn, Vanderbilt University, USA

Stabilization of shells in the presence of supersonic flow ................................ 11:30-12:00
W. Hayman, University of Virginia, USA

Session TA5: Commutant Lifting Methods and Applications, I

ROOM: Pavillion

CHAIR: C. Foias (Indiana)

Skew Toeplitz in $H_\infty$ control theory and beyond ........................................ 10:30-11:00
H. Bercovici, Indiana University, USA

On structured bitangential interpolation with applications to robust control ........ 11:00-11:30
J. Cockburn, Florida State University, USA

Time dependent interpolation and systems ...................................................... 11:30-12:00
I. Gohberg, Tel-Aviv University, Israel

Interpolation for a class of causal and periodic systems .................................. 12:00-12:30
C. Gu, MSRI, USA

Session TA6: Supervisory Control of Discrete Event Systems, I

ROOM: Consulate

CHAIRS: R. Kumar (Kentucky), S. Marcus (Maryland)

A generalized framework for supervisory control of discrete event systems .......... 10:30-11:00
F. Lin, Z. H. Lin, Wayne State University, USA

Petri net supervisors for DES ................................................................. 11:00-11:30
P. Antsaklis, Notre Dame University, USA

Languages and hierarchies in logic control ................................................... 11:30-12:00
P. E. Caines, C. Martinez-Mascarua, Y.-J. Wei, McGill University, Canada

A theory of interfaces and displays .......................................................... 12:00-12:30
M. Heymann, Technion, Israel

Session TA7: Nonlinear and Uncertain Systems with Integral Quadratic Constraints

ROOM: Monarch

CHAIRS: A. Rantzer (Lund)

IQC’s in the stability analysis of gain scheduled flight control ....................... 10:30-11:00
A. Megretski, Iowa State University, USA

Parametric Lyapunov functions for uncertain systems: the multiplier approach ... 11:00-11:30
S. Dasgupta, M. Fu, University of Iowa, USA

A survey of robust filtering results for uncertain systems with integral quadratic constraints .......................................................... 11:30-12:00
S. O. R. Moheimani, I. R. Petersen, A. V. Saekin, Australian Defence Force Academy, Australia
Session TA8: Image Understanding via Deformable Templates

ROOM: Colonnade Chairs: J. O’Sullivan (Washington U)
Deformable templates for vision objective recognition 10:30-11:00
A. Yuille, Harvard University, USA
Formulation of a control problem on a space of diffeomorphisms 11:00-11:30
P. DuPuis, Brown University, USA
Deformable templates: from representation to inference 11:30-12:00
M. I. Miller, Washington University, USA
ATR: representations, inferences and performance analysis on Lie groups 12:00-12:30
A. Srivastava, Washington University

Session TA9: Mathematical Modeling of Physiological Systems

ROOM: Diplomat Chair: L. Schovanec (Texas Tech)
Activating the Actuator: Calcium Dynamics in Cross-Bridge Models of Muscle 10:30-11:00
G. Zahalak, Mechanical Engineering, Washington University, USA
A Control Theoretic Model of Musculoskeletal Injury 11:00-11:30
C.F. Martin, Lawrence Schovanec, Department of Mathematics, Texas Tech University, USA
A Mathematical Model of the Dynamics of Cystolic Free Calcium in Endothelial Cells Responding to Shear Stress 11:30-12:00
T. Wiesner, Dept. of Chemical Engineering, Texas Tech University, USA

Session TA10: Disturbance Rejection

ROOM: Suite B Chairs: J.M. Dion (Grenoble), Y. Oishi (Tokyo)
Disturbance rejection by measurement feedback: a structural solution 10:30-11:00
B.M. Cuellar, M. Malabre, Ecole Centrale de Nantes - Universite de Nantes, France
Output feedback disturbance rejection for structured systems: a geometric approach 11:00-11:30
C. Commault, J.M. Dion, V. Hovelaque, Laboratoire d’Automatique de Grenoble, France
The regulation problem for sampled linear systems 11:30-12:00
B. Castillo, CINVESTAV-JPN, Mexico, S. Di Gennaro, Universita di L’Aquila, Italy
Converging and non-converging properties of the best achievable performance in sampled-data control 12:00-12:30
Y. Oishi, The University of Tokyo, Japan

Lunch: 12:30-2:00

MIDDLE

Session TM1: Completion Problems and Applications, I

ROOM: Diplomat Chairs: C. R. Johnson (William and Mary), F. van Schagen, H.J. Woerdeman (William and Mary)
Robustness analysis of semidefinite programs and applications to matrix completion problems 2:00-2:30
L. El Ghaoui, Ecole National Superieure de Technologique Advance, France, F. Oustry,
Positive definite completion via time-varying Nevanlinna-Pick interpolation 2:30-3:00
J. Kos, National Aerospace Laboratory, The Netherlands
Inverse eigenvalue problems and matrix completion problems arising in systems theory; a survey of some recent results 3:00-3:30
J. Rosenthal, University of Notre Dame, USA, X. A. Wang, Texas Tech University, USA
Feedback simulation, invariant subspaces and completion problems .......... 3:30-4:00
I. Zaballa, Universidad del Pais Vasco, Spain

Session TM2: Fuzzy Minimax Estimation in System Theory

ROOM: Suite C
CHAIRS: G.M. Bakan (Kiev)

Fuzzy Ellipsoidal estimates in the state observation problem of linear dynamic systems .......... 2:00-2:30
G. M. Bakan, Institute of Cybernetics, Ukraine

Convergence investigation of fuzzy observer for multidimensional dynamic systems .......... 2:30-3:00
N. N. Kussul, Institute of Cybernetics, Ukraine

Nonlinear fuzzy estimation of spacecraft angular motion parameters using magnetometer data .......... 3:00-3:30
D. V. Lebedev, Institute of Cybernetics, Ukraine

Minimax estimation of quasilinear stochastic equations solutions .......... 3:30-4:00
A. G. Nakonechny, Kiev State University, Ukraine

Session TM3: Parameterization and Approximation of Systems, II: Inner Functions

ROOM: Consulate
CHAIRS: A. Gombani (Padova), J. Leblond (Sophia-Antipolis)

On a homeomorphism between inner functions and outer detectable subspaces .......... 2:00-2:30
P. A. Fuhrmann, Ben-Gurion University of the Negev, Israel, U. Helmke, Universitat Regensburg, Germany

A state space approach for $L_2$ model reduction schemes .......... 2:30-3:00
A. Gombani, LADSEB-CNR, Italy, M. Olivi, G. Leblond, INRIA, France

Parameterization of inner functions .......... 3:00-3:30
B. Hanzon, Free University Amsterdam, The Netherlands, R. Ober, University of Texas at Dallas, USA

Basis functions induced by balanced realizations of inner functions, and their role in system approximation .......... 3:30-4:00
P. S. C. Heuberger, National Institute of Public Health and Environmental Protection, The Netherlands, P. van den Hof, Delft University of Technology, The Netherlands

Session TM4: Time Dependent Systems in Network Theory and Control

ROOM: Pavilion
CHAIRS: A. Ben-Artzi (Tel-Aviv), M. A. Kaashoek (Amsterdam), T. Kailath (Stanford)

Interpolation, inner-outer factorization, low-sensitivity control and the solution of infinite sets of linear equations .......... 2:00-2:30
P. Dewilde, Delft University of Technology, The Netherlands

Commutant lifting and time varying interpolation .......... 2:30-3:00
A. E. Frazho, Purdue University, USA

Mixed input-output optimization for linear time-varying stochastic systems .......... 3:00-3:30
V. Dragan, A. Halanay, T. Morozan, University of Bucharest, Romania

Classification of linear time-varying difference equations .......... 3:30-4:00
J. Kos, National Aerospace Laboratory NLR, The Netherlands

Session TM5: Implicitly Modeled Systems

ROOM: Promenade
CHAIRS: S.L. Campbell (NC State)

On mechanical systems with unilateral constraints .......... 2:00-2:30
N. H. McClamroch, The University of Michigan, USA

Output feedback control of singular systems .......... 2:30-3:00
P. Daoutidis, R. Gandikota, A. Kumar, University of Minnesota, USA

Nonlinear observer design using index two descriptor systems .......... 3:00-3:30
D. von Wissel, INRIA, France

The index of an infinite dimensional implicit system .......... 3:30-4:00
S. L. Campbell, W. Marszalek, North Carolina State University, USA
Session TM6: Compensator Design for Distributed Parameter Systems

ROOM: Monarch CHAIRS: B.B. King (Oregon State)

A compensator design for nonlinear distributed systems .............................................. 2:00-2:30
K. Ito, North Carolina State University, USA

Finite dimensional compensators for hyperbolic boundary control problems ............. 2:30-3:00
E. Henderson, University of Arkansas, USA, I. Lasiecka, University of Virginia, USA

Computational results on the $H_{\infty}$ control of 3-D structural acoustic systems with virtual sensors .......................................................................................................................... 3:00-3:30
H.T. Banks, M. University of Virginia, North Carolina State University, USA

Reduced basis compensators for control of distributed parameter systems ............... 3:30-4:00
B. King, Oregon State University, USA

Session TM7: Supervisory Control of Discrete Event Systems, II

ROOM: Colonnade CHAIRS: R. Kumar (Kentucky), S. Marcus (Maryland)

Optimal control of stochastic discrete event systems .................................................. 2:00-2:30
S. Lafortune, University of Michigan at Ann Arbor, USA, R. Sengupta, University of California at Berkeley, USA

On Supervisory Policies that Enforce Liveness in Discrete Event Dynamic Systems Modeled by Controlled Petri Nets ............................................................... 2:30-3:00
R.S. Sreenivas, University of Illinois, USA

Modular supervision, interference, and feature interaction in distributed systems ........ 3:00-3:30

Modeling stochastic discrete event systems using probabilistic languages .............. 3:30-4:00
V. K. Garg, University of Texas at Austin, USA, R. Kumar, University of Kentucky, USA, S. I. Marcus, University of Maryland, USA

Session TM8: System Theoretic Methods in Machine Vision

ROOM: Ambassador CHAIRS: B.K. Ghosh (Washington U), G. Picci (Padova)

Observer Based Visual Servoing With Redundant Features ..................................... 2:00-2:30
K. Hashimoto, T. Noritsugu, Okayama University, Japan

Navigation by controlling shape .................................................................................... 2:30-3:00
R. Frezza, S. Soatto, Universita di Padova, Italy

Models of ocular dynamics ......................................................................................... 3:00-3:30
P. Lockwood, C.F. Martin, Texas Tech University, USA

Motion planning for visual serving using perceptual control manifold .................... 3:30-4:00
R. Sharma, University of Illinois at Urbana-Champaign, USA

Session TM9: Fundamental Aspects of Identification

ROOM: Directors CHAIRS: R. Guidorzi (Bologna), S. Weiland (Eindhoven)

On continuity of $\ell_\infty$ optimal models .................................................................... 2:00-2:30
M. Deistler, W. Scherrer, Technical University Vienna, Austria, S. Weiland, Eindhoven University of Technology, The Netherlands

Rank reducibility in Frisch scheme identification; algorithmical and geometrical aspects ................................................................. 3:00-3:30
U. Soverini, Universita de Bologna, Italy

Identification of multivariable processes in the Frisch scheme context ................... 3:00-3:30
R.P. Guidorzi, University of Bologna, Italy

Joint state observability and parameters identifiability of discrete linear systems ...... 3:30-4:00
I. Rusnak, RAFAEL (88), Israel
Session TM10: Signal Processing

**Room:** Suite B  
**Chairs:** E. Yaz (Univ. of Arkansas), L. Jetto (Ancona)

Contemporaneous recursive image restoration and maximum-likelihood identification of blur parameters ............................................................ 2:00-2:30
L. Jetto, Universita di Ancona, Italy

Estimation of harmonic signals using a linear matrix inequality formulation .............. 2:30-3:00
K.J. Olejniczak, E.E Yaz, University of Arkansas, USA

A scheme of decomposition and reconstruction of continuous-time signals by B-spline functions .......................................................... 3:00-3:30
K. Ichige, University of Tsukuba, Japan, R. Ishi, Yokohama National University, Japan, M. Kamada, Ibaraki University, Japan

On the signal processing for identification by means of non-linear filters ............... 3:30-4:00
M. Durnas, B. Grzywacz, Technical University of Szczytno, Poland

Session TM11: Reproducing Kernel Hilbert Spaces

**Room:** Suite A  
**Chairs:** H. Dym (Weizman Institute)

Inverse Scattering and Reproducing Kernel Spaces ........................................ 2:00-2:30
D. Alpay, Ben-Gurion University of the Negev, Israel

Reproducing Kernels and Roots ............................................................. 2:30-3:00
H. Dym, Weizmann Institute of Science, Israel

Conservative 2D Systems and Reproducing Kernel Spaces ............................. 3:00-3:30
V. Vinnikov, Weizmann Institute of Science, Israel

Solutions of an Indeterminate Nehari Problem ......................................... 3:30-4:00
A. Kheifets, Weizmann Institute of Science, Israel

PM

Session TP1: Completion Problems and Applications, II

**Room:** Colonnade  
**Chairs:** C. R. Johnson (William and Mary), F. van Schagen, H.J. Woerdeman (William and Mary)

On positive extension of functions of several variables ............................. 4:15-4:45
M. Bakonyi, Georgia State University, USA, L. Rodman, I. Spitkovskii, H. J. Woerdeman, The College of William and Mary, USA

The real positive definite completion problems for nonchordal graphs ............. 4:45-5:15
W. Barrett, Brigham Young University, USA

Matrix completion problems other than the positive definite ones ................. 5:15-5:45
C. R. Johnson, The College of William and Mary, USA

TBA ......................................................... 5:45-6:15
M. Lundquist, Brigham Young University, USA

Cone inclusion numbers ................................................................. 6:15-6:45
H. J. Woerdeman, The College of William and Mary, USA

Session TP2: Approximate Solutions to PDEs Arising in Nonlinear Control

**Room:** Salon I  
**Chair:** W. Sluis (Cal Tech)

Synthesis of nonlinear observers with approximately linear error dynamics: The case for an output transformation ........................................ 4:15-4:45
A.F. Lynch, S. Bortoff, University of Toronto, Canada

Geometric deformation theory and its utilization in feedback linearization and control .... 4:45-5:15
R. Hermann, USA

Least squares solutions of systems of PDEs ........................................... 5:15-5:45
A. Banaszuk, University of California, USA
An efficient representation for analysis and synthesis of nonlinear control systems ............................................ 5:45-6:15
R. Murray, California Institute of Technology, USA, J. Hauser, University of Colorado, USA

Homotopy methods for finding approximate solutions to systems of PDE ........................................... 6:15-6:45
W. Sluis, California Institute of Technology, USA

Session TP3: Control and Identification of Distributed Parameter Systems

ROOM: Ambassador CHAIR: D. S. Gilliam (Texas Tech)
Control of a thermal convection loop ............................................ 4:15-4:45
J. Burns, D. Rubio, Virginia Polytechnic Institute and State University, USA

Recent results on the structure of attractors for a boundary controlled viscous Burgers’ equation ........................................ 4:45-5:15
A. Balogh, D. S. Gilliam, V. I. Shubov, Texas Tech University, USA

On the output regulation problem for distributed parameter systems ........................................ 5:15-5:45
C. I. Byrnes, Washington University, USA, D. S. Gilliam, I. Lauko, V. I. Shubov, Texas Tech University, USA

Non-marching Sinc approximation for a boundary controlled Burgers’ equation .......... 5:45-6:15
J.R. Lund, Montana State University, USA

Session TP4: Adaptive and Nonlinear Control

ROOM: Suite C CHAIR: I. Burkov (St. Petersburg)
Stochastic adaptive controller based on nonmodified robust AML algorithm ........... 4:15-4:45
V.Z. Filipovic, H.C. Viskuza Celuloza, Yugoslavia

To solution of the problem of adaptive estimation in dynamical system with a priori unknown covariance functions .............................................................................. 4:45-5:15
E.L. Pervukhina, Sevastopol State Technical University, Ukraine

A new design of decentralized model-reference adaptive controllers ...................... 5:15-5:45
B.M. Mirkin, E.L. Mirkin, Institute of Automation, Kyrgyzstan

Stabilization of second order systems without measurements of the derivatives ........ 5:45-6:15
I. Burkov, St. Petersburg State Tech. Univ. Russia

Dynamic output stabilization of a class of nonlinear systems ................................... 6:15-6:45
A.M. Ghulchak, A.S. Shirjaev, St. Petersburg State University, Russia

Session TP5: Time Varying Linear Systems I

ROOM: Promenade CHAIR: A.M. Perdon (Ancona)
An algebraic condition to reachability of time varying discrete-time linear systems ........
....................................................................................................................................................... 4:15-4:45
S. Mohnar, System Expert Consulting Ltd. Hungary, F. Szigeti, University Los Andes, Venezuela

Stability of continuous time systems with saturation ............................................ 4:45-5:15
F. Albertini, Universita di Padova, Italy, D. D’Alessandro, University of California, USA, A.D.B. Paice, University of Bremen, Germany

Computable differential algebraic and rank condition to controllability of the time varying linear systems ............................................. 5:15-5:45
A. Edelmayer, Hungarian Academy of Sciences, Hungary, F. Szigeti, C.E. Vera, University of Los Andes, Venezuela

Robust observability for a class of time-varying discrete-time uncertain systems .... 5:45-6:15
S.O.R. Moheimani, I.R. Petersen, Australian Defence Force Academy, Australia, A.V. Savkin, University of Melbourne, Australia

On the Furhmann’s conditions for time varying linear systems ......................... 6:15-6:45
J. Rivero, F. Szigeti, Los Andes University, Venezuela
Session TP6: Geometric Methods in Nonlinear Control

ROOM: Consulate CHAIRS: A. Astolfi (Imperial College), F. Bullo (Caltech)

Multiparticle systems ................................................................. 4:15-4:45
W.P. Dayawansa, Texas Tech University, USA, S. James, U. of Maryland, USA
A structural approach to noninteracting control of nonlinear systems .......... 4:45-5:15
T. Wey, University of Duisburg, Germany
On the Hamilton-Jacobi inequality arising in the almost disturbance decoupling problem ...

W.P. Dayawansa, Texas Tech University, USA, S. James, U. of Maryland, USA

Configuration controllability of mechanical systems on Lie groups ............. 5:45-6:15
F. Bullo, A.D. Lewis, California Institute of Technology, USA
Integrals, invariant relationships and controllability of nonlinear dynamical systems ....

A. Astolfi, Swiss Federal Institute of Technology (ETH), Switzerland

Session TP7: Stability and Stabilizability of Nonlinear Systems

ROOM: Monarch CHAIRS: H. Schattler (Wash. Univ.), J.-I. Imura (Kyoto)

A uniformly asymptotic stability result with applications in detectability and robust stabilizabil-

R. Balan, Princeton University, USA

Wide positive real matrices and their applications to absolute stability of nonlinear feedback systems .................................................. 4:45-5:15
D. Hill, C. Xiao, University of Sydney, Australia

Stability of implicitly defined polynomial dynamics the scalar case ............... 5:15-5:45
G. Bastin, R. Mahony, I. Mareels, D. Nesic, Australian National University, Australia

Smooth feedback stabilizability and parametrization of all stabilizing controllers of nonlinear systems ........................................... 5:45-6:15
J.-I. Imura, T. Yoshikawa, Kyoto University, Japan

Dynamical stabilization of spatial motion for asymmetric nonlinear plants .......... 6:15-6:45
I. Miroshnik, State Institute of Fine Mechanics and Optics, Russia

Session TP8: $H_\infty$ Control of Linear Systems

ROOM: Pavillion CHAIRS: K. Furuta (Yokyo), M. Grimble (Strathclyde)

Extensions to $H_\infty$ concepts via LMIs ......................................... 4:15-4:45
K.-C. Goh, F. Wu, Imperial College of Science, Tech. and Medicine, UK

Receding horizon $H_\infty$ control for time-varying discrete linear systems .......... 4:45-5:15
W.H. Kwon, J.-W. Lee, Seoul National University, Korea

Robust-based $H_\infty$ optimal controller design .................................. 5:15-5:45
K. Furuta, O. Nishimura, Tokyo Institute of Technology, Japan

$H_\infty$ robust generalized predictive control ..................................... 5:45-6:15
M.J. Grimble, University of Strathclyde, U.K.

Solution of the state feedback $H_\infty$ Control problem for linear time-varying systems ....

F. Amato, M. Mattei, A. Pironti, Universita degli Studi di Napoli ‘Federico II’, Italy

Session TP9: Stabilization of Distributed/Stochastic Systems

ROOM: Suite B CHAIR: S.M. Shahruz (Berkeley)

Stabilization of a class of nonlinear composite stochastic systems ............. 4:15-4:45
C. Boulanger, URA CNRS, France

Boundary control of a nonlinear string ........................................... 4:45-5:15
S.M. Shahruz, Berkeley Engineering Research Institute, USA
Some remarks on distributed and boundary feedback controls of the viscous Burgers’ equation
..................................................................................................................5:15-5:45
H.V. Ly, K.D. Mease, E.S. Titi, University of California, USA
Stabilization of partially linear stochastic systems via estimated state feedback law ........
..................................................................................................................5:45-6:15
P. Florchinger, Universite de Metz, France
About absolute stability of time-lag systems .................................................6:15-6:45
M.R. Liberzon, Moscow State Aviation Technological University, Russia

Session TP10: Numerical Methods in Control I
ROOM: Directors Chair: D. DiRuscio (Telemark Inst. Norway)
State space canonical form subspace identification .................................4:15-4:45
D. Di Ruscio, Telemark Institute of Technology, Norway
Periodic observers for discrete-time periodic systems .............................4:45-5:15
J. Sreedhar, Univ. of Illinois at Urbana-Champaign, USA, P. Van Dooren, Universite Catholique de Louvain, Belgium
Parallel solvers based on the Shur vectors for the algebraic Riccati equations ......5:15-5:45
E. Quintana Universidad Jaime I de Castellon, Spain, V. Hernandez, Universidad Politecnica de Valencia, Spain
Matrix sign function method and partial stabilization of large linear control systems 5:45-6:15
C. He, University of Kansas, USA
Discrete-time algebraic Riccati equation with singular transition matrix ..........................6:15-6:45
T. Fujinaka, H. Shibata, Y. Sun, Osaka Prefecture University, Japan

Session TP11: Robotics
ROOM: Diplomat Chair: S. Niwa (Nagoya)
Linear adaptive compensation control for a servopneumatic actuator ..................4:15-4:45
H. Hahn, A. Piepenbrink, University of Kassel, Germany
The singular value decomposition and the control of a robot in singular configuration 4:45-5:15
C. Chevallereau, R. Rabah, Centrale-Universite-Ecole des Mines, Nantes, France
Sensor fusion system for a visual control of mobile robot ...............................5:15-5:45
Y. Ando, S. Doi, T. Nakatani, M. Suzuki, Nagoya University, Japan, S. Niwa, Shizuoka Institute of Science and Technology, Japan
On the control of a one-link flexible arm .................................................5:45-6:15
Y. Aoustin, Universite de Nantes, France, A. Formal’sky, Moscow State University, Russia
Optimization of the program regime for bi-ped walking apparatus ..........................6:15-6:45
V.M. Budanov, E.K. Lavrovsky, Moscow State University, Russia
Wednesday - June 26th

Plenary Address: PLNW1 8:00-9:00 AM, Salon I
John Burns, Virginia Polytechnic University,
Computational Methods for the Design of Distributed Parameter Control

Invited Addresses: 9:00-10:00 AM
IW1: Salon I: Roger W. Brockett, Harvard University
Probability distributions on certain homogeneous spaces arising in computer vision
IW2: The Amphitheater: Irena Lasiecka, University of Virginia.
Stabilization and control of distributed parameter systems described by interactive structures
IW3: The Pavilion Room: Kevin Wise, McDonnell-Douglas Aircraft,
Fighter aircraft control challenges and technology transition

Break: 10:00-10:30

MC3: 10:30-12:30 AM, Amphitheater, 3:00-5:00 PM, Salon I
J. Rosenthal, Notre Dame, A. Wang, Texas Tech,
Inverse Eigenvalue Problems for Linear Multivariable Systems

AM

Session WA1: Mechanics, Control, and Optimization, II
Room: Pavilion Chairs: A.M. Bloch (Michigan), P. Crouch (ASU), J. Baillieul (Boston U)
Moment mappings and convexity .................................................. 10:30-11:00
J. Lawson, Louisiana State University, USA
Optimal control problems on Lie groups ...................................... 11:00-11:30
D. Mittenhuber, LSU, USA
The symmetric product in geometry, mechanics, and control of mechanical systems 11:30-12:00
A.D. Lewis, R.M. Murray, Caltech, USA
Geometric methods for motion control of deformable bodies ............ 12:00-12:30
P.S. Krishnaprasad, University of Maryland, USA

Session WA2: Robust Control-Analysis by Deterministic and Stochastic Methods
Room: Consulate Chairs: R.J. Elliott (Edmonton), C.D. Charalambous (McGill)
Robust control of set-valued systems ....................................... 10:30-11:00
J. S. Baras, N. Patel, University of Maryland, USA
Finite-dimensional risk-sensitive adaptive control ....................... 11:00-11:30
C.D. Charalambous, McGill University, USA
Representations for exponential functionals of Markov processes .......... 11:30-12:00
M. Boue, P. Dupuis, Brown University, USA
Uniqueness of the risk-sensitive limit under quadratic growth .......... 12:00-12:30
W. McEneaney, Carnegie Mellon University, USA

Session WA3: Realization Methods for Rational Matrix Functions and Meromorphic Matrix Functions on Riemann Surfaces
Room: Colonade Chairs: J.A. Ball (VPI), L. Lerer (Techion), A.C.M. Ran (Amsterdam)
Reproducing kernel spaces on algebraic curves and Fay’s identity ......... 10:30-11:00
D. Alpay, Ben-Gurion University of the Negev, Israel
Realization theory for transfer functions of 2-D systems .................. 11:00-11:30
J.A. Ball, VPI/SU, USA
2-D Systems and algebraic curves ....................................................... 11:30-12:00
V. Vinnikov, Israel

Realization of Abstract Behaviors ....................................................... 12:00-12:30
V. Lomadze, Academy of Sciences of the Republic of Georgia, Republic of Georgia, M.S. Ravi, East Carolina University, USA, J. Rosenthal, University of Notre Dame, USA, J. M. Schumacher, Tilburg University, The Netherlands

Session WA4: Mathematical Modeling in Population Biology
ROOM: Suite A  CHAIR: L.J.S. Allen (Texas Tech)
Flour beetles in a fluctuating environment ............................................. 10:30-11:00
S.M. Shandelle, University of Arizona, USA
An interacting particle system for plant invasions ................................ 11:00-11:30
M. Burke, Washington State University, USA
Predator-prey theory: ratio-dependency vs. prey-dependency ................. 11:30-12:00
Y. Kuang, Arizona State University, USA
Competitive exclusion in a distributed delay chemostat model .............. 12:00-12:30
H. Xia, York University, USA

Session WA5: Delay Systems: Analysis and Design
ROOM: Promenade  CHAIRS: M. Fliess (Paris), J.-F. Lafay (Nantes), E.I. Verriest (Georgia Tech)
Bounded real criteria for linear time-delay systems ................................ 10:30-11:00
C. E. de Souza, University of Newcastle, Australia, U. Shaked, I. Yaesh, Tel-Aviv University, Israel
Riccati type conditions for robust stability of delay systems .................. 11:00-11:30
E.I. Verriest, Georgia Institute of Technology, USA
A matrix pencil approach for asymptotic stability of delayed state linear systems 11:30-12:00
S.-I. Niculescu, J.-M. Dion, L. Dugard, Laboratoire d’Automatique de Grenoble, France
Constrained stabilizing control for time-delay systems .......................... 12:00-12:30
M. Dambrine, A. Goubet-Bartholomeus, J.P. Richard, LAIL - URA, France

Session WA6: Modelling of Environmental Processes and Systems
ROOM: Suite B  CHAIRS: G.F. Crosta (Milano), M. Hazewinkel (CWI), J. Verwer (CWI)
Direct and inverse problems for transport in high contrast media .......... 10:30-11:00
J. Berryman, L. Borcea, Stanford University, USA
Toward a uniform approach to a class of inverse problems .................... 11:00-11:30
P. DuChateau, Colorado State University, USA
Resolution of regularized output least squares procedures .................... 11:30-12:00
L.W. White, University of Oklahoma, USA
A fast phase unwrapping algorithm for phase interferometry .................. 12:00-12:30
F. Zirilli, University of Roma I, Italy

Session WA7: Unbounded Control and Observation Operators
ROOM: Directors  CHAIRS: G. Weiss (Beer Sheba)
On the infinite-dimensional continuous time algebraic Riccati equation ...... 10:30-11:00
O. J. Staffans, Helsinki University of Technology, Finland
System theoretic aspects of completely symmetric systems .................... 11:00-11:30
R. J. Ober, University of Texas at Dallas, USA
Optimal regularity results for boundary control of elastic systems with fractional order damping ................................................................. 11:30-12:00
S. Hansen, Iowa State University, USA
An up-date on infinite dimensional Riccati equations: abstract and PDE aspects ......................................................................................... 12:00-12:30
R. Triggiani, University of Virginia, USA
Session WA8: Nonlinear Identification and Control

ROOM: Diplomat  
CHAIR: S. Bittanti (Milano)

Approximate linearization via feedback: an overview ................................. 10:30-11:00  
G.O. Guardabassi, S.M., Savaresi, Politecnico di Milano, Italy

Identification of nonstationary and nonlinear models in econometrics ............ 11:00-11:30  
M. Deistler, Institut fur Okonometrie, Austria

Neural networks for identification and control: a critical overview ................. 11:30-12:00  
C.J. Harris, University of Southampton, UK

Implicit Kalman filtering for structure detection ...................................... 12:00-12:30  
A. Matveev, A. Schiriaev, St. Petersburg, Russia, X. Hu, KTH Stockholm, Sweden, R. Frezza, University of Padova, Italy

Session WA9: Regulation of uncertain systems

ROOM: Suite C  
CHAIR: V.D. Yurkevich (Novosibirsk)

On a local approach to the inverse minimax regulator problem for continuous-time systems ................................................................. 10:30-11:00  
M. Kogan, Nizhni Novgorod State University, Russia

Decoupling of uncertain discrete systems: dynamic contraction method ......... 11:00-11:30  
V.D. Yurkevich, Novosibirsk State Technical University, Russia

Adaptive control of a system with parametric and non-parametric uncertainties based on solving inequalities ......................................................... 11:30-12:00  
L.S. Zhiteckij, Ukrainian National Academy of Sciences, Ukraine


ROOM: Monarch  
CHAIRS: H. Nijmeijer (Twente), S. Celikovsky (Prague)

Minimum time dead beat control for simple Hammerstein systems ............... 10:30-11:00  
I.M.Y. Mareels, D. Nevsic, Cooperative Research Centre for Robust and Adaptive Systems, Australia

A note on linearization by output injection of nonlinear discrete-time systems ... 11:00-11:30  
H.J.C. Huijberts, Eindhoven Univ. of Technology, The Netherlands

Global stabilization of discrete-time nonlinear systems via a passivity and bounded feedback ................................................................. 11:30-12:00  
W. Lin, Washington University, USA

Singular multi-input stabilization and feedback linearization for discrete-time triangular systems ......................................................... 12:00-12:30  
S. Celikovsky, Academy of Sciences of the Czech Republic, Czech Republic, H. Nijmeijer, C. Simoes, University of Twente, The Netherlands

Session WA11: Commutant Lifting Methods and Applications, II

ROOM: Salon I  
CHAIRS: C. Foias (Indiana)

Solution of operator optimization problems using modern primal dual methods ... 10:30-11:00  
J.W. Helton, Univ. of California at San Diego, USA

The three chains Completion theorem and non-stationary robust control problems .......... 11:00-11:30  
M. Kaashoek, Vrije University, The Netherlands

On the computation of $H_{\infty}$ controllers for a class of infinite dimensional systems ................................................................. 11:30-12:00  
H. Ozay, Ohio State University, USA

The two-disc control problem by interpolation of operators in certain Banach spaces .......... 12:00-12:30  
G. Zames, McGill University, Canada
Session WM1: Risk-Sensitive Control and Estimation

**ROOM:** Pavilion
**CHAIRS:** R.J. Elliott (Edmonton), C.D. Charalambous (McGill)

New results on finite dimensional controllers for partially observable risk-sensitive control problems ........................................ 3:00-3:30
*J.S. Baras, University of Maryland, USA, A. Bensoussan, INRIA Domaine de Voluceau Rocquencourt, France, R. J. Elliott, University of Alberta, Canada*

Risk-sensitive control of finite state machines on an infinite horizon ........... 3:30-4:00
*W.H. Fleming, Brown University, USA, D.H. Hernandez, CINVESTAV-IPN, Mexico*

Risk-sensitivity of stochastic control problems ........................................ 4:00-4:30
*J. H. van Schuppen, CWI, The Netherlands*

Topics in discrete-time risk-sensitive estimation and control ................. 4:30-5:00
*S. Dey, J.B. Moore, Australian National University, Australia*

The Role of information state and adjoint in relating nonlinear output feedback risk-sensitive control and dynamic games ................... 5:00-5:30
*C.D. Charalambous, McGill University, Canada*

Session WM2: Hidden Markov Models: Realization and Estimation

**ROOM:** Colonnade
**CHAIRS:** L. Finesso (Padova), G. Picci (Padova)

Factorization of doubly stochastic circulants ...................................... 3:00-3:30
*G. Picci, Washington University, USA, J.M. van den Hof, J.H. van Schuppen, CWI, The Netherlands*

Convergence of the recursive maximum likelihood algorithm for HMM’s .......... 3:30-4:00
*F. LeGland, IRISA/INRIA, France, L. Mevel, IRMAR, France*

Bayesian estimators for finite HMM’s ............................................. 4:00-4:30
*G. Di Masi, Universita di Padova, Italy, L. Finesso, LADSEB-CNR, Italy*

Asymptotic properties of the maximum likelihood estimator for general HMM’s . 4:30-5:00
*T. Ryden, Lund University, Sweden*

Session WM3: Time Dependent Systems in Network Theory and Control, II

**ROOM:** Monarch
**CHAIRS:** A. Ben-Artzi, (Tel-Aviv), M. A. Kaashoek (Amsterdam), T. Kailath (Stanford)

Kolmogorov decomposition and time dependent systems ......................... 3:00-3:30
*T. Constantinescu, University of Texas at Dallas, USA*

Time-adaptive signal decomposition and reconstruction banks ................ 3:30-4:00
*E. F. Deprettere, Delft University of Technology, The Netherlands*

A Popov-Yakubovich approach to the time-varying discrete generalized distance problem: the 4 block case ........................................ 4:00-4:30
*V. Ionescu, C. Oara, University Politehnica Bucharest, Romania*

Time-Variant displacement structure, maximum entropy, and extension problems . . 4:30-5:00
*T. Constantinescu, University of Texas at Dallas, USA, T. Kailath, Stanford, USA, A.H. Sayed, University of California, USA*

Session WM4: High Order Conditions in Optimal Control

**ROOM:** Promenade
**CHAIRS:** H. Schattler (Washington U)

Highly oscillatory variations in optimal control .................................. 3:00-3:30
*M. Kawski, Arizona State University, USA*
On singularities in solutions to the Hamilton-Jacobi-Bellman Equation .................. 3:30-4:00
M. Kiefer, H. Schattler, Washington University, USA
A second order sufficient condition for optimality in nonlinear control-The conjugate point approach ................................................................. 4:00-4:30
A. Nowakowski, University of Lodz, Poland
On high order tangent cones and their application in optimal control .................. 4:30-5:00
U. Ledzewicz, Southern Illinois University at Edwardsville, USA, H. Schattler, Washington University, USA
Some results on optimal control with state constraints and their applications .... 5:00-5:30
I. Kolmanovsky, Scientific Research Labs, Ford Motor Company, USA

Session WM5: Nonlinear Optimal and Suboptimal Control

ROOM: Suite A CHAIRS: L. Schovanec (Texas Tech)
Suboptimal feedback control by a scheme of iterative identification and control design 3:00-3:30
R.A. de Callafon, P.M.J. Van den Hof, Delft University of Technology, The Netherlands
Optimal control of nonlinear descriptor systems ............................................ 3:30-4:00
P.C. Muller, University of Wuppertal, Germany
Regularity of semi-permeable surfaces in control theory and applications ........ 4:00-4:30
C. Pierre, Universite Paris-Dauphine, France
Problem of admissible and optimal synthesis for certain classes of systems .... 4:30-5:00
V.I. Korobov, Kharkov State University, Ukraine
On the asymptotical behaviour of nonlinear time-optimal problems .............. 5:00-5:30
S.Y. Ignatovich, G.M. Sklyar, Kharkov State University, Ukraine,

Session WM6: 2-D and Generalized Linear Systems

ROOM: Suite B CHAIR: P. Conte (Ancona)
Active vibration suppression for flexible spacecraft ........................................ 3:00-3:30
C. Califano, Universita di Roma ‘La Sapienza’, Italy, S. Di Gennaro, Universita di L’Aquila, Italy
Characterization of the zero structure of a class of 2-D linear systems ........ 3:30-4:00
G.E. Hayton, D.H. Owens, A.C. Pugh, E. Rogers, J. Wood, University of Southampton, UK
Extended state space model based predictive control .................................... 4:00-4:30
D. Di Ruscio, Telemark Institute of Technology, Norway
A form of strict system equivalence for 2-D system theory ......................... 4:30-5:00
G.E. Hayton, Leeds Metropolitan University, UK, S.J. McInerney, A.C. Pugh, Loughborough University of Technology, UK
Decentralized model reference adaptive control for nonlinear systems with retard interconnections ................................................................. 5:00-5:30
V.A. Brusin, Y.Y. Ugrinovskaya, Nizhny Novgorod State Arch. and Building Acad. Russia

Session WM7: Stochastic and Information Theoretical Methods

ROOM: Diplomat CHAIR: R. Frezza (Padova)
A simple derivation of a two-stage information criterion for ARMA processes ...... 3:00-3:30
L. Finesso, LADSEB-CNR, Italy, L. Gerencser, Hungarian Academy of Sciences, Hungary
Properties of stochastic boundary models and their implications on approximation ................................................................. 3:30-4:00
A. Beghi, R. Frezza, Universita di Padova, Italy
On the problem of blind equalization using a stochastic differential calculus approach ................................................................. 4:00-4:30
C. Carlemalm, B. Wahlberg, Royal Institute of Technology, Sweden
Information theoretical issues in state estimation with communication constraints .. 4:30-5:00
X. Li, W.S. Wong, The Chinese University of Hong Kong, Hong Kong
An operatorial view on infinite-variate prediction ........................................ 5:00-5:30
I. Valusescu, Institute of Mathematic Romanian Academy, Romania
Session WM8: Parametrization and Model Reduction

ROOM: Consulate
CHAIRS: L. Gerencser (Budapest), Gy. Michaletzky (Budapest), R. Ober (Dallas)

The statistical analysis of subspace algorithms ................................................. 3:00-3:30
M. Deistler, W. Scherrer, Institute f. Econometrics, Austria

Duality theory for robust control and model reduction ..................................... 3:30-4:00
P. A. Fuhrmann, Ben Gurion University, Israel

Parameterization and performance degradation in multivariable adaptive prediction 4:00-4:30
L. Gerencser, Computer and Automation Institute of the Hungarian Academy of Sciences, Hungary

Band limited identification in $H_p$ ................................................................. 4:30-5:00
F. Seyfert, INRIA, France

Session WM9: Robust Nonlinear Control

ROOM: Suite
CHAIR: R.G. Lai (Iowa State)

Robust control of nonlinear systems with uncertainty in input matrix .................. 3:00-3:30
R.D. Brandt, Intelligent Devices, Inc. USA, F. Lin, Wayne State University, USA

Multiple objective optimization approach to control of uncertain nonlinear systems ........
I. Rusnak, RAFAEL (88), Israel

Decentralized robust stabilization of linear systems with jumps - nonlinear versus linear coordination ................................................................. 4:00-4:30
E.K. Boukas, Ecole Polytechnique de Montreal, Canada, K. Simek, A. Swierniak, Silesian Technical University, Poland

Robust stabilization of one-dimensional nonlinear uncertain systems .................... 4:30-5:00
R.-G. Lai, S. Lin, Iowa State University, USA

Robust identification based on dynamic neural networks .................................... 5:00-5:30
T.-Y. Chai, Q.-H. Dai, Z. Tao, Northeastern University, P.R. China

Session WM10: Recent Developments on Numerical Methods in Control Systems

ROOM: Directors
CHAIR: B. Datta (De Kalb)

Explicit formulae and numerically stable algorithms for the multi-input pole assignment problem ................................................................. 3:00-3:30
M. Arnold, University of Arkansas, USA

Partial pole assignment for second-order systems .............................................. 3:30-4:00
E., Chu, Monash University, Australia

Computational methods for stochastic dynamic programming .............................. 4:00-4:30
F.B. Hanson, University of Illinois at Chicago, U.S.A.

Matrix sign function methods and partial stabilization of large linear control systems 4:30-5:00
C. He, University of Kansas, U.S.A.

An Arnoldi method for the Sylvester-Observer equation ................................. 5:00-5:30
C. Chandanie, Northern Illinois University, U.S.A., B.N. Datta, De Kalb University, U.S.A.
THURSDAY - June 27th

Plenary Address: PLNTH 8:00-9:00 AM, Salon I

Michael Miller, Washington University,
Image Understanding Via Deformable Templates: From Representation to Inference

Invited Addresses: 9:00-10:00 AM

ITH1: Plaza:  R. W. Freund, AT & T Bell Laboratories,
Circuit simulation techniques based on Lanczos-type algorithms
ITH2: Salon I:  J. William Helton, University of California at San Diego,
Extending $H_{\infty}$ control to nonlinear systems
ITH3: Amphitheater:  Petar Kokotovic, University of California at Santa Barbara,
From asymptotic to Lyapunov recursive nonlinear feedback designs

Break: 10:00-10:30

MC4: 10:30-12:30 AM, 2:00-4:00 PM, Salon I

B.K. Ghosh, Wash U, C.F. Martin, Texas Tech,
Control Problems in Vision

AM

Session THA1: The Mathematical Theory of Electrical Networks I

Room: Promenade Chairs:  W. Sandberg (Austin), A.H. Zemanian (Stony Brook)
Precision and approximate flatness in artificial neural networks ............... 10:30-11:00
M. B. Stinchcombe, University of Texas at Austin, USA
Universal approach to neural network approximation ........................... 11:00-11:30
R. Chen, Sun Microsystems, USA, T. Chen, Fudan University, China
A multidimensional functional neural network with applications ............... 11:30-12:00
R. deFigueiredo, University of California at Irvine, USA, R. Newcomb, University of Maryland, USA, L. Sellami, U.S. Naval Academy, USA
Myopic maps and uniform approximations ........................................... 12:00-12:30
I.W. Sandberg, L. Xu, University of Texas at Austin, USA

Session THA2: Control of Locomotion II

Room: Diplomat Chairs:  S. Nikitin (ASU)
Control of self-propulsion in ideal irrotational fluid ................................ 10:30-11:00
A. Mahalov, S. Nikitin, Arizona State University, USA
Courant-Hilbert approach to nonholonomic systems and smoothness of sub-Riemannian minimizers ................. 11:00-11:30
S. Nikitin, Arizona State University, USA
Eigenfrequencies pseudo invariance of loaded flexible bodies .................. 11:30-12:00
M. Coisattis, Mecatronique Et Electronique, France, M. Rouff, Laboratoire De Genie Electrique De Paris, France
Elastic interaction of constant mass asymetrical solids in the space flight .......... 12:00-12:30
E.P. Kryshko, V.V. Kravets, University of Railway Transport, Ukraine
Session THA3: Multidimensional Systems

ROOM: Directors Chairs: E. Fornasini (Padova), M.E. Valcher (Padova)

Some computational aspects of the causal 2-D optimal control problem ............. 10:30-11:00
M. Bisiacco, University of Padova, Italy

Neurocomputing and spatio-temporal processing ........................................ 11:00-11:30
N.K. Bose, Spatial and Temporal Signal Processing Center, USA

Strictly positive behavior of 2-D positive systems ..................................... 11:30-12:00
E. Fornasini, M. E. Valcher, Univ. di Padova, Italy

Trajectory generation and controllability of discrete linear repetitive processes modelled as singular 2-D systems .................................................. 12:00-12:30
K. Galkowski, Technical University of Wroclaw, Poland, D.H. Owens, University of Exeter, UK, E. Rogers, University of Southampton, UK

Session THA4: Applications of Exterior Differential Systems

ROOM: Plaza Chairs: R. Gardner (North Carolina)

The relation between classical Finsler geometry and non-linear control ............. 10:30-11:00
R. Gardner, University of North Carolina, USA

How to parallel park a car with trailers using exterior differential systems ........ 11:00-11:30
D. Tilbury, University of Michigan, USA

A bound on the number of integrators needed to linearize a control system ....... 11:30-12:00
W. Sluis, Cal Tech, USA

Real-time trajectory generation and tracking for flight control systems .......... 12:00-12:30
R. Murray, Cal Tech, USA

Session THA5: Stabilization and Tracking in Infinite Dimensions

ROOM: Amphitheater Chairs: G. Weiss (Beer Sheba)

Low gain PI tracking for uncertain infinite-dimensional systems ................. 10:30-11:00
H. Logemann, University of Bath, UK, S. Townley, University of Exeter, UK

A parameterization of robustly stabilizing controllers for nonexponentially stabilizable systems ............................................................... 11:00-11:30
R. Curtain, J. Oostveen, University of Groningen, The Netherlands

Approximate parametric optimization of infinite-dimensional systems .......... 11:30-12:00
P. Grabowski, Academy of Mining and Metallurgy, Poland

Repetitive control of unstable systems .................................................. 12:00-12:30
G. Weiss, University of Exeter, UK

Session THA6: Spectral Theory for Time-Varying Linear Systems and Stabilization

ROOM: Consulate Chairs: W. Kliemann (Iowa State), F. Wirth (Bremen)

The Lyapunov spectrum of control systems and of random systems ............. 10:30-11:00
W. Kliemann, Iowa State University, USA

A unified spectral theory for linear time-varying systems .......................... 11:00-11:30
J. J. Zhu, Louisiana State University, USA

Feedback stabilization of bilinear control systems based on the Lyapunov spectrum ........ 11:30-12:00
H. Wang, Iowa State University, USA
Session THA7: Asymmetric and Symmetric Riccati Equations and Related Factorization Problems

ROOM: Colonnade  CHAIRS: M. Pavon (Padova), A. Ferrante (Udine)

A review of nonsymmetric Riccati equations ........................................... 10:30-11:00
H. Abou-Kandil, Ecole Normale Superieure de Cachan-LURPA, France, G. Freiling, G. Jank, Lehrstuhl II
fur Mathematik-RWTH Aachen, Germany

Projective superposition laws for Riccati equations .................................. 11:00-11:30
D. D’Alessandro, M. Pavon, Universita’degli Studi di Padova, Italy

Asymmetric spectral factorization problems and related algebraic Riccati equations ........... 11:30-12:00
A. Ferrante, M. Pavon, Universita’degli Studi di Udine, Italy

Factorization and dilation of rational matrix functions with applications ............. 12:00-12:30
M. Pavon, S. Pinzoni, Universita’degli Studi di Padova, Italy

Session THA9: Methods of Indefinite Metrics, I

ROOM: Monarch  CHAIRS: A. Dijksma (Groningen), H. Langer (Vienna), R. Mennicken (Regensburg)

Schur functions, operator colligations, and reproducing kernel Pontryagin spaces ................ 10:30-11:00
A. Dijksma, Univ. of Groningen, The Netherlands

H-selfadjoint and H-unitary matrix pencils ............................................ 11:00-11:30
P. Lancaster, University of Calgary, Canada

Some spectral properties of operator matrices ......................................... 11:30-12:00
H. Langer, Technical University Vienna, Austria

Perturbations of real spectrum of G-selfadjoint operators and selfadjoint operator polynomials ............ 12:00-12:30
A. Markus, Ben Gurion University of the Negev, Israel

Session THA10: Analysis of Queuing Networks

ROOM: Pavillion  CHAIR: L. Dai (Wash U)

Finite moments and exponential tail distribution of queue length processes of non-homogeneous queueing systems ........................................... 10:30-11:00
L. Dai, Washington University, St. Louis, USA

Fluid models for stability of polling models with multiple servers ..................... 11:00-11:30
D. Down, VTT Information Technology, Finland

Critical probability and other properties of 2-D tessellation ................................ 11:30-12:00
K. Tiyapan, Tokyo Institute of Technology, Japan

A max-plus algebra dynamic representation and dead-lock analysis of fork-join queueing networks ........................................... 12:00-12:30
N.K. Krivulin, St. Petersburg State University, Russia
Lunch: 12:30-2:00

MIDDLE

Session THM1: The Mathematical Theory of Electrical Networks, II

ROOM: Promenade  CHAIRS: I. W. Sandberg (Austin), A. H. Zemanian (Stony Brook)

Homotopy methods for design of signal-adaptive quadrature-mirror filters ............ 2:00-2:30
P. Moulin, L. Trajkovic, Bell Communications Research, USA

A unified view of networks in learning static and temporal signals ..................... 2:30-3:00
F. M. Salam, Michigan State University, USA

Does it really make sense to use differentiable manifolds in the theory of electrical networks?
---------------------------------------------------------------------------------------------- 3:00-3:30
W. Mathis, University of Wuppertal, Germany, R. Pauli, Technical University of Munich, Germany

Weighted norms and network approximation of functionals ................................. 3:30-4:00
I. W. Sandberg, University of Texas at Austin, USA

Session THM2: Algebraic System Theory

ROOM: Suite  CHAIRS: V. Ayala (Chile)

Controllability of linear control systems on Lie groups ..................................... 2:00-2:30
V. Ayala, Universidad Catolica del Norte, Chile

A characterization of linear vector fields on Lie groups .................................. 2:30-3:00
J. Tirao, Universidad Nacional de Cordoba, Argentina

Localization of eigenvalues of matrices ............................................................... 3:00-3:30
O. Rojo, Universidad Catolica del Norte, Chile

Observable linear pairs ......................................................................................... 3:30-4:00
A. Hacibekiroglu, Yildiz Technical University, Turkey

Session THM3: Viscosity Solutions and $H_\infty$ Control - Construction and Computation, II

ROOM: Pavillion  CHAIRS: M.V. Day (VPI), W. McEneaney (NC State)

The synthesis of universal feedback strategies in differential games ................... 2:00-2:30
F. Clarke, University of Montreal, Canada, Y. S. Ledyaev, Steklov Institute, Russia, A. Subbotin, P.N. Lebedev, Physics Institute, Russia

Dissipative control systems and disturbance attenuation for nonlinear $H_\infty$ problems 2:30-3:00
H. Frankowska, CEREMADE, Université de Paris IX

Viscosity solutions for infinite dimensional HJI equations ................................. 3:00-3:30
M.R. James, Australian National University, Australia

The nonlinear evasion problem for controlled dynamic objects ............................ 3:30-4:00
A.A. Chikrii, Cybernetics Institute, Ukraine

Session THM4: Realization Methods for Rational Matrix Functions and Meromorphic Matrix Functions on Riemann Surfaces

ROOM: Consulate  CHAIRS: J. A. Ball (VPI), L. Lerer (Technion), A.C.M. Ran (Amsterdam)

On a new class of realization formulas ............................................................... 2:00-2:30
H. Dym, Weizmann Institute, Israel

Tangent spaces of rational matrix functions ....................................................... 2:30-3:00
P. A. Fuhrmann, Ben-Gurion University of the Negev, Israel, U. Helmke, Universitat Wurzburg, Germany

Bounds for the $H_\infty$-norm of a stable transfer function ............................... 3:00-3:30
M. Rakowski, Ohio State University, USA

Ordinary distributed delay-differential equations .............................................. 3:30-4:00
J.J. Claus, S.J.L. van Eijndhoven, Eindhoven University of Technology, The Netherlands
Session THM5: Mathematical Modeling in Population Biology, II

ROOM: Diplomat  CHAIRS: L.J.S. Allen (Texas Tech)

Estimation of toxicant levels in a chemically stressed population model from summary statistics and population level parameters ......................................................... 2:00-2:30
E. T. Funasaki, T. G. Hallam, University of Tennessee, USA

Prey-directed movement for a structured predator population ........................................ 2:30-3:00
D. Lika, University of Tennessee, USA

Models for weed dispersal, competition, and control .................................................. 3:00-3:30
L.J.S. Allen, Texas Tech University, USA

Resource allocation in the control of mixed pattern AIDS-Tuberculosis co-infection ........ 3:30-4:00
J.A.F. de Souza, Universidade da Beira Interior, Portugal, H. Kimura, T. Yoneyama, Instituto Tecnologico de Aeronautica, Brazil

Session THM6: Modelling of Environmental Processes and Systems

ROOM: Monarch  CHAIRS: G. F. Crosta (Milano), M. Hazewinkel (CWI), J. Verwer (CWI)

Modeling of energy and water flow in the soil-plant-atmosphere system and optimal control of soil water content ................................................................. 2:00-2:30
B. Zaslavsky, Arizona State University, USA

Interconnected inverse and direct problems of ground water flow ................................ 2:30-3:00
G.F. Crosta, Universita degli Studi, Italy

Spreadability of distributed systems ........................................................................... 3:00-3:30
A. El Jai, University of Perpignan, France

Operator support based on dynamic mass balances .................................................. 3:30-4:00
O. Aaker, HiT-TF, Norway

Session THM7: Time Dependent Systems in Network Theory and Control, III

ROOM: Plaza  CHAIRS: A. Ben-Artzi, (Tel-Aviv), M. A. Kaashoek (Amsterdam), T. Kailath (Standford)

TBA ......................................................................................................................... 2:00-2:30
C. Foias, Indiana University, USA

Entropy for continuous-time time-varying systems .................................................... 2:30-3:00
P.A. Iglesias, M. Peters, The Johns Hopkins University, USA

Optimal time-varying passive scattering systems ...................................................... 3:00-3:30
D.R. Pik, Vrije Universiteit, The Netherlands

LU-decomposition of certain operators ....................................................................... 3:30-4:00
A.C.M. Ran, Vrije Universiteit Amsterdam, The Netherlands

Session THM8: Dynamics and Control of Compressors

ROOM: Amphitheater  CHAIRS: A. Krener (UC Davis)

Oscillatory control designs for compressors ................................................................. 2:00-2:30
J. Baillieul, Boston University, USA, B. Lehman, Northeastern University, USA, K. Shujaee, Clark Atlanta University, USA

Shape signifiers for control of surge and stall in jet engines ...................................... 2:30-3:00
P.V. Kokotovic, R. Sepulchre, University of California – Santa Barbara, USA

Active control of an axial flow compressor via pulsed air injection .......................... 3:00-3:30
R.M. Murray, California Institute of Technology, USA

The feedbacks which soften the primary bifurcation of the Moore-Greitzer compressor model ............................................................................................................ 3:30-4:00
A.J. Krener, University of California, Davis, USA
Session THM9: Positive Linear Systems

ROOM: Colonnade  
CHAIRS: J.H. van Schuppen (CWI), G. Picci (Padova)

Minimality of realizations of positive linear systems ........................................... 2:00-2:30  
J.M. van den Hof, CWI, The Netherlands

On the existence of a positive realization ......................................................... 2:30-3:00  
L. Farina, Universita di Roma ‘La Sapienza’, Italy

Optimal control of a linear control system with positive inputs ............................. 3:00-3:30  
W.P.M.H. Heemels, A.A. Stoorvogel, S.J. L. van Eijndhoven, Eindhoven University of Technology, The Netherlands

Positive linear algebra for realization of positive linear systems .......................... 3:30-4:00  
G. Picci, Washington University, USA, J.M. van den Hof, J.H. van Schuppen, CWI, The Netherlands

Session THM10: Reconfigurable Systems I: System Identification

ROOM: Directors  
CHAIRS: R. J. Landy (McDonell-Douglas), R. Eberhardt (McDonell-Douglas)

System identification for thrust vectoring aircraft ............................................ 2:00-2:30  
G. Schkolnik, NASA Dryden Flight Research Center, U.S.A.

Parameter modeling using neural networks ............................................................ 2:30-3:00  
W. Bond, McDonnel Douglas Corp., U.S.A.

System identification via dynamical neural networks ......................................... 3:00-3:30  
M. Massoud, Washington University, U.S.A.

On-line estimation and learning of stability and control derivatives ...................... 3:30-4:00  
G. Peterson, McDonnell Douglas Corp., U.S.A.

PM

Session THP1: Riccati Equations and Inequalities, II

ROOM: Plaza  
CHAIR: L. Rodman (William and Mary)

The nonstrict algebraic Riccati inequality ............................................................ 4:15-4:45  
C. Scherer, Delft University of Technology, The Netherlands

Algebraic Riccati equations with dissipative Hamiltonians .................................... 4:45-5:15  
H. Langer, Vrije Universiteit, The Netherlands, A. C. M. Ran, D. Temme, Vrije Universiteit, The Netherlands

The damped algebraic Riccati equation ................................................................. 5:15-5:45  
C.-Y. He, University of Kansas, USA, J.J. Hench, V. Kucera, UTIA, Czech Republic, V. Mehrmann, Technische Universitat Chemnitz, Germany

Strong stabilizing solution to the continuous and discrete-time Riccati equations 5:45-6:15  
V. Ionescu, C. Oara, University Polytechnica Bucharest, Romania

Asymptotic properties of the guaranteed filtering scheme for hereditary time-invariant differential systems .................................................. 6:15-6:45  
B. I. Ananev, Institute for Mathematics and Mechanics, Russia

Session THP2: Numerical Methods for Interpolation and Structured Matrices

ROOM: Salon I  
CHAIRS: G. Heinig (Kuwait), V. Olshevky (Stanford)

Hyperbolic transformations on unitary Hessenberg matrices for downdating trigonometric polynomial discrete least squares approximants ........................................ 4:15-4:45  
G. Ammar, Northern Illinois University, USA

On optimal inputs for identification or how exciting can a signal really be? 4:45-5:15  
A. Antoulas, Rice University, USA

Numerical algorithms for Vandermonde and Vandermonde-like matrices 5:15-5:45  
I. Gohberg, Tel-Aviv University, Israel
Stable and efficient algorithms for Toeplitz and Toeplitz-plus-Hankel least squares problems

M. Gu, University of California at Berkeley, USA

Transformation techniques for structured matrices

G. Heinig, Kuwait University, Kuwait

Session THP3: Stochastic Theory - Adaptive Control

ROOM: Pavillion CHAIRS: B. Pasik-Duncan (Kansas)

Adaptive stabilizing with the help of stochastic approximation

H.-F. Chen, Chinese Academy of Sciences, China

Stochastic adaptive control for continuous time linear regulators

T. Duncan, B. Pasik-Duncan, University of Kansas, USA, L. Guo, Chinese Academy of Sciences, China

Characterizing optimality for controlled diffusions

X.Y. Zhou, Chinese University of Hong Kong, Hong Kong

Finite dimensional filtering and control for discrete-time nonlinear systems

L. Aggoun, University of Auckland, New Zealand, R. Elliott, University of Alberta, Canada

Finite dimensional filtering of doubly stochastic auto-regressive processes

R. Elliott, University of Alberta, Canada, V. Krishnamurthy, University of Melbourne, Australia

Session THP4: Stabilization of Linear Systems I

ROOM: Colonnade CHAIR: H. Logemann (Bath)

Least squares pole assignment by memoryless output feedback

D.-C. Jiang, J.B. Moore, Australia National University, Australia

Exponential stability of triangular differential inclusion systems

N. Cohen, L. Rodman, William and Mary, US, I. Lewkowicz, Imperial College, UK

The effect of small time-delays in the feedback loop on the stability of singular systems

H. Logemann, University of Bath, UK

Triangle conditions for the quadratic stability of linear systems

Y. Funahashi, T. Ooba, Nagoya Institute of Technology, Japan

Stability of linear delay-differential systems and related complex programming problems

H. Ozbay, Ohio State University, USA, O. Toker, Eindhoven University of Technology, The Netherlands

Session THP5: Discrete Time and Inverse Linear Systems

ROOM: Diplomat CHAIR: K. Sugimoto (Nagoya)

Discrete-time linear periodic systems and the output feedback problem

R. Canto, C. Coll, E. Sanchez, Universitat Politecnica de Valencia, Spain

The inverse problem of sampled-data LQ control an LMI approach

K. Sugimoto, Nagoya University, Japan

Canonical forms for discrete time positive reachable systems

M.E. Valcher, Universita de Padova, Italy

Stability for linear combinations of characteristic polynomials for discrete-time systems

H. Inaba, Tokyo Denki University, Japan, R. Ishii, Yokohama National University, Japan, N. Otsuka, K. Shiozmi, University of Tsukuba, Japan

A state space design method of filtered inverse systems and their application

K. Yamada, K. Watanabe, Yamagata University, Japan
Session THP6: Differential Geometric Techniques in Nonlinear Control

ROOM: Amphitheater  CHAIR: R. Murray (Caltech)

Extending the theory of geodesics to a second order variational problem in Riemannian manifolds ................................................. 4:15-4:45
M. Camarinha, F. Silva Leite, Universidade de Coimbra, Portugal, P. Crouch, Arizona State University, USA

Controllability of kinematic control systems on stratified configuration spaces .... 4:45-5:15
J. Burdick, B. Goodwine, California Institute of Technology, USA

Modeling and analysis of nonlinear control systems using exterior differential systems 5:15-5:45
D. Niemann, S. Sastry, University of California, Berkeley, USA

Principal connections and self-propulsion through fluid media .......................... 5:45-6:15
S.D. Kelly, R.M. Murray, California Institute of Technology, USA

The path planning problem for some particular Lie groups ............................. 6:15-6:45
M. Puta, West University of Timisoara, Romania

Systematic generation of motion plans for failure compensation ..................... 6:45-7:15
N. E. Leonard, Princeton University, USA

Session THP7: Global Feedback Stabilization of Nonlinear Systems

ROOM: Consulate  CHAIR: J.B. Pomet (INRIA France)

A new method for the design of homogeneous time-varying stabilizing control laws for driftless controllable systems ........................................ 4:15-4:45
P. Morin, J.-B. Pomet, C. Samson, INRIA Sophia-Antipolis, France

Stabilization of upper-triangular homogeneous systems .................................. 4:45-5:15
M. Jankovic, R. Sepulchre, University of California, USA

On global nonlinear feedback stabilizations .............................................. 5:15-5:45
X. Hu, Royal Institute of Technology, Sweden

Global stabilization of rigid spacecraft with uncertainties and input saturations in a central gravitational field ........................................... 5:45-6:15
S. Di Gennaro, Universita di L’Aquila, Italy

Global stabilization of a class of nonlinear systems an alternative description of the sufficient condition ................................................. 6:15-6:45
A.M. Ghulchak, A.S. Shirjaev, St. Petersburg State University, Russia

Session THP8: Numerical and Symbolic Computation in Control

ROOM: Directors  CHAIR: J.R. Lund (Montana State)

A software package for observability testing for a class of nonlinear systems .... 4:15-4:45
H. Hammouri, A.R. Moghadassi, Universite Claude Berand Lyon 1, France

Forward/Backward decomposition of periodic descriptor systems .................. 4:45-5:15
Sreedhar, Univ. of Illinois at Urbana-Champaign, USA, P. Van Dooren, Universite Catholique de Louvain, Belgium

Solution of an ARMA - representation via its boundary mapping equation ....... 5:15-5:45
J. Jones, A.C. Pugh, Loughborough University of Technology, UK, N.P. Karampetakis, University of Thessaloniki, Greece

An algorithm for the computation of the generalized inverse and its implementation via MAPLE ............................................................... 5:45-6:15
J. Jones, A.C. Pugh, Loughborough University of Technology, UK, N.P. Karampetakis, University of Thessaloniki, Greece

An algorithm of controllability by completions of partial upper triangular matrices ................................................................. 6:15-6:45
C. Jordan, J.R. Torregrosa, A. Urbano, Universidad Politecnica de Valencia, Spain
Session THP9: Robust Linear Control

ROOM: Monarch CHAIRS: K. Özcaldiran (Istanbul), J. Garloff (Konstanz)
A framework for a class of robust controller design problems ..................... 4:15-4:45
T.-S. Chang, C.-Y. Chang, University of California, USA
Quadratic stabilization of singularly perturbed system .................................. 4:45-5:15
Y. Ando, S. Kobayashi, M. Suzuki, Nagoya University, Japan
Robust controller optimization over linear domains ..................................... 5:15-5:45
E.C. De Paiva, R. Santos-Mendes, DCA-FEE Unicamp, Brazil, P.A.V. Ferreira, LAC/DT-FEE Unicamp, Brazil
A result on Schur stability of interval polynomials ...................................... 5:45-6:15
L. Haliloglu, Boğaziçi University, Turkey, K. Özcaldiran, Research Institute for Basic Sciences, Turkey
The Bernstein algorithm and its application to robust control problems .......... 6:15-6:45
J. Garloff, M. Zettler, Fachbereich Informatik, Germany

Session THP10: Dynamic Control Problems in Vehicle Automation

ROOM: Suite CHAIRS: R. Eger, H. Mayer (Karlsruhe)
Control of freeway systems in congested traffic conditions ...................... 4:15-4:45
A. Alessandri, A. Di Febo, Raro, A. Ferrara, E. Punta, DIST-University of Genova, Italy
3-D flight control by dynamic contraction method .................................. 4:45-5:15
M. Blachuta, K. Wojciechowski, Silesian Technical University, Poland, V. Yurkevich, Novosibirsk State Technical University, Russia
Modeling and simulation of nonlinear vehicle dynamics .............................. 5:15-5:45
U. Kiencke, R. Majjad, University of Karlsruhe, Germany
High performance and robust speed controller for automotive engine .......... 5:45-6:15
W.M. Hosny, University of East London, UK, A.G. Loukianov, Institute of Control Sciences, Russia, J.V. Volga, Dept. of the Russian Eng. Academy, Russia
A model based approach for tire pressure loss diagnosis evaluating wheel speeds ... 6:15-6:45
R. Eger, H. Mayer, University of Karlsruhe, Germany

Session THP11: New Directions in Systems and Control

ROOM: Promenade CHAIR: R. Ober (UT Dallas)
Modelling and controlling shape change ............................................. 4:15-4:45
W.P. Dayawansa, Texas Tech University, USA, A.M. Girard, U. of Maryland, USA
A new packet-loss minimization routing control for ATM high-speed data networks ......... 4:45-5:15
G.M. Huang, S. Zhu, Texas A&M University, USA
A system theoretic formulation of NMR experiments .............................. 5:15-5:45
R.J. Ober, E.S. Ward, University of Texas at Dallas, USA
Jordan algebras, symmetric cones and interior-point methods .................. 5:45-6:15
L. Faybusovich, University of Notre Dame, USA
Non-smooth robust stabilization of a family of linear systems in the plane .......... 6:15-6:45
W.P. Dayawansa, Texas Tech University, USA, B. Ho-Mock-Qai, U. of Maryland, USA
FRIDAY - June 28th

Plenary Address: PLNF 8:00-9:00 AM, Salon I

Anders Lindquist, Royal Institute of Technology,
On the geometry of positive real functions with applications to filtering and the rational covariance extension problem

Invited Addresses: 9:00-10:00 AM
IF1: Salon I: P. R. Kumar, University of Illinois at Urbana-Champaign,
New results in performance analysis of queueing networks
IF2: Plaza: A. Kurzhansky, Moscow State University,
Ellipsoidal techniques for state estimation and feedback control
IF3: Amphitheater: Yitzhak M. Ram, University of Adelaide,
On inverse spectral problems and pole-zero assignment

MC5: 10:30-12:30 AM, 2:00-4:00 PM, Salon I
B. Datta, DeKalb,
Numerical Methods for Control Systems Design and Analysis

Break: 10:00-10:30

AM

Session FA1: The Mathematical Theory of Electrical Networks III
ROOM: Promenade CHAIRS: I. W. Sandberg (Austin), A. H. Zemanian (Stony Brook)
Monotone resistive networks .......................................................... 10:30-11:00
B. Calvert, The University of Auckland, New Zealand
Networks with distributed and lumped parameters ............................. 11:00-11:30
C. Marinov, Polytechnic University of Bucharest, Romania
Some recent results related to resistances and random walks .............. 11:30-12:00
P. Tetali, Georgia Institute of Technology, USA
Node voltages in nonlinear resistive transfinite networks .................. 12:00-12:30
A. H. Zemanian, University at Stony Brook, USA

Session FA2: Multidimensional Systems, II
ROOM: Monarch CHAIRS: E. Fornasini (Padova), M.E. Valcher (Padova)
Unreachability and uncontrollability of 2-D linear systems with bounded inputs ... 10:30-11:00
T. Kaczorek, Warsaw Technical University, Poland
2-D exact model matching with stability the structural approach ............ 11:00-11:30
D. Brethe, J. J. Loiseau, Universite de Nantes, France
Driving-variable models and model reduction for 2-D systems .............. 11:30-12:00
P. Rocha, University of Aveiro, Portugal
Design of 2-D model-following servo controller .............................. 12:00-12:30
O. Saito, L. Xu, M. Yamada, Toyohashi University of Technology, Japan
Session FA3: Realization Methods for Rational Matrix Functions and Meromorphic Matrix Functions on Riemann Surfaces, III

ROOM: Plaza Chairs: J. A. Ball (VPI), L. Lerer (Technion), A.C.M. Ran (Amsterdam)
(J, J')-Inner-matrix functions with prescribed zero-pole structure ......................... 10:30-11:00
J. Kim, Kwangji, Korea
Common zero structure of rational matrix functions and Bezoutian matrices ...... 11:00-11:30
L. Lerer, Technion-Israel Institute of Technology, Israel, L. Rodman, William and Mary, USA
Symmetric factorizations and localization of zeroes of rational matrix functions . 11:30-12:00
L. Lerer, Technion-Israel Institute of Technology, Israel, L. Rodman, William and Mary, USA
On minimal square spectral factors ................................................................. 12:00-12:30
A.C.M. Ran, Vrije Universiteit, The Netherlands

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Computing nonstationary noise using harmonic balance .................................. 11:00-11:30
J. S. Roychowdhury, P. Feldmann, AT&T Bell Laboratories, USA
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C. Visweswariah, A.R. Conn, R. A. Haring, IBM T. J. Watson Research Center, USA
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A. Feintuch, Ben-Gurion University, Israel
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Y. Latushkin, S. Montgomery-Smith, University of Missouri-Columbia, USA
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ROOM: Colonnade CHAIRS: L. Gerencser (Budapest), Gy. Michaletzky (Budapest), R.J. Ober (Dallas)

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D. Bauer, M. Deistler, Institute f. Econometrics, Austria

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B. Hanzon, Vrije University, The Netherlands, R.J. Ober, University of Texas at Dallas, USA

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G. Michaletzky, Budapest Science University, Hungary

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B. Hanzon, Vrije University Amsterdam, The Netherlands, R.L.M. Peeters, University of Limburg, The Netherlands

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ROOM: Diplomat CHAIR: G. Radzievskii (Ukraine)

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G. Freiling, Universitaet Duisburg, Germany

Oscillation spectral theory for non-standard differential equations .............. 11:00-11:30
A. Borovskikh, Y. Pokornyi, Voronezh State University, Russia

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A.M. Gomilko, G.V. Radzievskii, Ukrainian Academy of Sciences, Ukraine

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G.V. Radzievskii, Ukrainian Academy of Sciences, Ukraine

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ROOM: Ambassador CHAIRS: R. Mennicken (Vienna), H. Langer (Regensburg)

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R. Mennicken, Universitat Regensburg, Germany

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J. Saurer, Universitat Regensburg, Germany

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E. Aranda-Bricaire, Queen’s University, Canada, U. Kotta, Estonian Academy of Sciences, Estonia

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V.A. Chang, A.H. Zemanian, University at Stony Brook, USA

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B. De Moor, P. Lemmerling, ESAT - Katholieke Universiteit Leuven, Belgium
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CHAIRS: R.W. Freund (Murray Hill), P. Feldmann (Murray Hill)

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A. Demir, University of California at Berkeley, USA
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C. Bonnet, INRIA, France, J. R. Partington, University of Leeds, UK
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ROOM: Monarch
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