

# Program at a Glance: Monday, 5 July

regular session  invited session

<b>Room 1</b>	08.40 – 10.00 Opening Ceremony Plenary Lecture: Béla Bollobás	10.30 – 12.30 Stochastic Model Predictive Control	14.00 – 15.00 Semi-plenary Lecture: Manfred Deistler	15.30 – 17.00 Continuous-Time Model Identification
<b>Room 2</b>		10.30 – 12.30 Information and Markov Dynamics		15.30 – 17.30 Filtering, Estimation and Control
<b>Room 3</b>		10.30 – 12.00 Observers		15.30 – 17.30 PDE Systems
<b>Room 4</b>		10.30 – 12.30 Algebraic Systems Theory, Behaviors, and Codes: Stabilization and Interconnection		15.30 – 17.30 Algebraic Systems Theory, Behaviors, and Codes: New Developments Beyond Classical Algebraic Coding Theory
<b>Room 6</b>		10.30 – 12.30 Real Algebraic Geometry and Applications – 1		15.30 – 17.30 Systems Theory and the Economics of Pricing in New Markets
<b>Room 7</b>		10.30 – 12.30 Graph Processes		15.30 – 17.00 Biological Networks
<b>Room 8</b>		10.30 – 12.30 Communication		15.30 – 17.00 Signal Processing
<b>Room 9</b>		10.30 – 12.30 Piece-Wise Affine Systems		15.30 – 17.30 Switched Systems
<b>Room 10</b>		10.30 – 12.30 Advanced Linear Algebra – 1		15.30 – 17.30 Advanced Linear Algebra – 2
<b>Room 11</b>		10.30 – 12.30 Non-Linear Dynamics		15.30 – 17.30 New Results on Computation and Control
<b>Room 12</b>		10.30 – 12.30 Interpolation and Approximation in Linear Systems – 1		15.30 – 17.30 Interpolation and Approximation in Linear Systems – 2
<b>Room 13</b>		10.30 – 12.30 Linear Stochastic Systems, the White Noise Space, and Related Topics		15.30 – 17.00 Passive Network Synthesis
<b>Room 14</b>		10.30 – 12.30 LDPC and Applications	14.00 – 15.00 Semi-plenary Lecture: Kenji Kashima	15.30 – 17.30 New Mathematical Methods in Multidimensional Systems Theory – 1
<b>Room 15</b>		10.30 – 12.30 2D Systems	14.00 – 15.00 Semi-plenary Lecture: George Weiss	15.30 – 17.30 Recent Developments in Multidimensional Systems, Control and Signals – Theory and Applications – 1

# Program at a Glance: Tuesday, 6 July

regular session  invited session

<b>Room 1</b>	09.00 – 10.00 Plenary Lecture: In memory of Christopher I. Byrnes	10.30 – 12.30 Distributed Parameter Systems I: System Structure	14.00 – 15.00 Semiplenary Lecture: Marco C. Campi	15.30 – 17.30 Distributed Parameter Systems II: System Theoretical Properties
<b>Room 2</b>		10.30 – 12.30 Probabilistic Methods		15.30 – 18.00 System Identification
<b>Room 3</b>		10.30 – 13.00 Behaviors		15.30 – 17.30 Structural Properties of Realizations
<b>Room 4</b>		10.30 – 12.30 Sigma-Delta Modulators		15.30 – 17.30 New Mathematical Methods in Multidimensional Systems Theory – 2
<b>Room 6</b>		10.30 – 12.30 Noncommutative Rational Functions and Noncommutative Convexity – 1 (Mini-Course)		15.30 – 17.30 Noncommutative Rational Functions and Noncommutative Convexity – 2 (Mini-Course)
<b>Room 7</b>		10.30 – 12.30 Multi-Agent Systems		15.30 – 17.30 Networked Systems
<b>Room 8</b>		10.30 – 12.30 Recent Developments in Multidimen- sional Systems, Control and Signals – Theory and Applications – 2		15.30 – 17.30 Observer Theory
<b>Room 9</b>		10.30 – 12.30 Stability and Switching		15.30 – 17.30 Sampled Control
<b>Room 10</b>		10.30 – 12.30 Algebraic Structures – 1		15.30 – 17.30 Algebraic Structures – 2
<b>Room 11</b>		10.30 – 12.30 Stability and Dissipativity		15.30 – 17.30 Delay Systems
<b>Room 12</b>		10.30 – 12.30 Mechanical Systems		15.30 – 17.30 Basic and Recent Results on Quantized Control
<b>Room 13</b>		10.30 – 12.30 Moment Problems, Maximum Entropy, and Covariance Extension		15.30 – 17.30 Control of Distributed Stochastic Systems
<b>Room 14</b>		10.30 – 12.30 Codes and Rings	14.00 – 15.00 Semiplenary Lecture: Malcolm C. Smith	15.30 – 17.30 Crypto and Applications
<b>Room 15</b>		10.30 – 12.30 Max-Plus, Tropical and Idempotent Methods in Control – 1	14.00 – 15.00 Semiplenary Lecture: Li Qiu	15.30 – 17.30 Max-Plus, Tropical and Idempotent Methods in Control – 2

# Program at a Glance: Wednesday, 7 July

<b>Room 1</b>	09.00 – 10.00 Plenary Lecture: Heide Glüsing- Lürssen	10.30 – 11.30 Semiplenary Lecture: Vivek S. Borkar	11.30 – 12.30 Distinguished Lecturer: László Lovász
<b>Room 2</b>			
<b>Room 3</b>			
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<b>Room 11</b>			
<b>Room 12</b>			
<b>Room 13</b>			
<b>Room 14</b>		10.30 – 11.30 Semiplenary Lecture: Raimund Ober	
<b>Room 15</b>		10.30 – 11.30 Semiplenary Lecture: Hitay Özbay	

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# Program at a Glance: Thursday, 8 July

regular session  invited session

<b>Room 1</b>	09.00 – 10.00 Plenary Lecture: Joseph A. Ball		14.00 – 15.00 Semiplenary Lecture: John S. Baras	
<b>Room 2</b>		10.30 – 12.30 New Developments in Stochastic System Identification		15.30 – 17.30 Stochastic Adaptive Systems
<b>Room 3</b>		10.30 – 12.30 Linear Matrix Inequalities		15.30 – 17.30 Algebraic Systems
<b>Room 4</b>		10.30 – 12.30 Optimization Methods in Systems and Control		15.30 – 17.30 New Mathematical Methods in Multidimensional Systems Theory – 3
<b>Room 6</b>		10.30 – 12.30 Real Algebraic Geometry and Applications – 2		15.30 – 17.30 Real Algebraic Geometry and Applications – 3
<b>Room 7</b>		10.30 – 12.30 The Semigroup Approach to DPS		15.30 – 17.30 Operator Theoretic Approaches to DPS
<b>Room 8</b>		10.30 – 12.30 Riccati and Sylvester-Equations		15.30 – 17.30 Treatable $H^2$ Optimization for Infinite- Dimensional Systems
<b>Room 9</b>		10.30 – 12.30 Network Stability		15.30 – 18.00 Systems on Graphs
<b>Room 10</b>		10.30 – 12.30 Stability		15.30 – 17.30 Applications of Differential Geometry
<b>Room 11</b>		10.30 – 12.30 Port-Hamiltonian Systems		15.30 – 17.30 Structured Non-Linear Systems
<b>Room 12</b>				
<b>Room 13</b>		10.30 – 12.30 Stochastic Control – 1		15.30 – 17.30 Stochastic Control – 2
<b>Room 14</b>		10.30 – 12.30 Algebraic Systems Theory, Behaviors, and Codes: Recent Approaches to New System Classes	14.00 – 15.00 Semiplenary Lecture: Laurent Baratchart	15.30 – 17.30 Finite Geometry and Network Codes
<b>Room 15</b>		10.30 – 12.30 Geometric Control Theory for Linear Systems–1 (Mini-Course)	14.00 – 15.00 Semiplenary Lecture: M. Vidyasagar	15.30 – 17.30 Geometric Control Theory for Linear Systems–2 (Mini-Course)

# Program at a Glance: Friday, 9 July

regular session  invited session

<b>Room 1</b>	09.00 – 10.00 Plenary Lecture: Hidde de Jong	10.30 – 12.30 Distributed Parameter Systems III: Optimal Control	14.00 – 15.00 Semiplenary Lecture: Ramon van Handel	15.30 – 17.30 Distributed Parameter Systems IV: Computational Issues
<b>Room 2</b>		10.30 – 12.30 Realization and Information		15.30 – 17.00 New Paradigms for Control
<b>Room 3</b>		10.30 – 13.00 Analysis of Physical Systems		15.30 – 16.30 Electrical Circuits
<b>Room 4</b>		10.30 – 12.30 Behavioral Systems and Control Theory		15.30 – 17.00 Computing
<b>Room 6</b>		10.30 – 12.30 Shadows of Multidimensionality: Multidimensional Systems with Applications to 1-D Systems – 1		15.30 – 17.30 Shadows of Multidimensionality: Multidimensional Systems with Applications to 1-D Systems – 2
<b>Room 7</b>		10.30 – 12.30 Systems on Graphs – Consensus		15.30 – 17.30 Consensus and Games
<b>Room 8</b>		10.30 – 13.00 Model Reduction		15.30 – 17.30 Robust Convex Control
<b>Room 9</b>		10.30 – 12.30 Networked Control – 1		15.30 – 17.00 Networked Control – 2
<b>Room 10</b>		10.30 – 12.00 Analytical Methods		15.30 – 17.30 Robust Control
<b>Room 11</b>		10.30 – 13.00 Quantum Systems		15.30 – 17.30 Quantum Systems and Control
<b>Room 12</b>		10.30 – 12.00 Applications in Medicine		15.30 – 17.30 Systems Biology
<b>Room 13</b>		10.30 – 12.30 Control for Markov and Nonlinear Markov Processes		15.30 – 17.00 Stochastic Control
<b>Room 14</b>		10.30 – 12.30 Algebraic Systems Theory, Behaviors, and Codes: Design, Analysis, and Decoding of Convolutional Codes	14.00 – 15.00 Semiplenary Lecture: Magnus Egerstedt	15.30 – 17.30 Economics and Systems Theory
<b>Room 15</b>		10.30 – 12.30 Differential Geometric Methods for Computational Engineering Applications – 1	14.00 – 15.00 Semiplenary Lecture: Ian R. Petersen	15.30 – 17.30 Differential Geometric Methods for Computational Engineering Applications – 2

# Detailed Program Listing

**Monday, 5 July**

## Opening Ceremony

**Room 1**

08.40 – 09.00

Welcome Addresses

## Plenary Lecture

**Room 1**

**Chair:** *Giorgio Picci*

09.00 – 10.00

Models of Real-World Networks: Inhomogeneous Random Graphs and Convergent Graph Sequences  
*Béla Bollobás*

## Stochastic Model Predictive Control (Invited Session)

**Room 1**

**Organizers:** *Peter Hokayem, Debasish Chatterjee, John Lygeros*

**Chair:** *Peter Hokayem*

10.30 – 11.00

Stochastic Tube MPC with State Estimation  
*Mark Cannon, Qifeng Cheng, Basil Kouvaritakis, Saša V. Raković*

11.00 – 11.30

Constrained Control Design – A Simulation-Based Scenario Approach  
*Maria Prandini, Marco C. Campi*

11.30 – 12.00

Stable Markov Decision Processes Using Simulation Based Predictive Control  
*Zhe Yang, Nikolas Kantas, Andrea Lecchini-Visintini, Jan M. Maciejowski*

12.00 – 12.30

Stable Stochastic Receding Horizon Control of Linear Systems with Bounded Control Inputs  
*Peter Hokayem, Debasish Chatterjee, Federico Ramponi, Georgios Chaloulos, John Lygeros*

## Information and Markov Dynamics (Regular Session)

**Room 2**

**Chair:** *Zsolt Talata*

10.30 – 11.00

Finite Memory Estimation of Infinite Memory Processes  
*Imre Csizsár, Zsolt Talata*

11.00 – 11.30

The Information Inequality on Function Spaces Given a Singular Information Matrix  
*Tzvetan Ivanov, Pierre-Antoine Absil, Michel Gevers*

11.30 – 12.00

Minimum Relative Entropy State Transitions in Linear Stochastic Systems: the Continuous Time Case  
*Igor G. Vladimirov, Ian R. Petersen*

12.00 – 12.30

Deconvolution of Quantized-Input Linear Systems: analysis via Markov Processes of a Low-Complexity Algorithm  
*Sophie M. Fossou, Paolo Tilli*

## Observers

(Regular Session)

**Room 3**

**Chair:** *José Mario Araújo*

10.30 – 11.00

Conditioned-Invariant Polyhedral Sets for Observers with Error Limitation in Discrete-Time Descriptor Systems  
*José Mario Araújo, Péricles Rezende Barros, Carlos Eduardo Trabuco Dórea*

11.00 – 11.30

Output Feedback Observers and Control under Non-Gaussian Types of Noise  
*Alexander B. Kurzhanski, Irina A. Digailova*

11.30 – 12.00

Internal Observers for Linear Systems with Time-Varying Delays  
*Mustapha Ait Rami, Jens Jordan, Michael Schönlein*

## Algebraic Systems Theory, Behaviors, and Codes: Stabilization and Interconnection (Invited Session)

**Room 4**

**Organizers:** *Eva Zerz, Heide Glüsing-Lürssen*

**Chair:** *Eva Zerz*

10.30 – 11.00

A Behavioral Approach to Modeling Electrical Circuits  
*Jan C. Willems*

11.00 – 11.30

The Design and Parametrization of Stabilizing Feedback Compensators via Injective Cogenerator Quotient Signal Modules  
*Ingrid Blumthaler, Ulrich Oberst*

11.30 – 12.00

Control of 2D Behaviors by Partial Interconnection  
*Paula Rocha, Diego Napp Avelli*

12.00 – 12.30

Robustly Stable Multivariate Polynomials  
*Martin Scheicher*

## Real Algebraic Geometry and Applications – 1 (Invited Session)

**Room 6**

**Organizers:** *William J. Helton, Pablo Parrilo*

**Chair:** *William J. Helton*

10.30 – 11.00

Input-Output Systems Analysis Using Sum Of Squares Programming: a Decomposition Approach  
*James Anderson, Antonis Papachristodoulou*

11.00 – 11.30

The Grothendieck Problem With Rank Constraint  
*Jop Briët, Fernando Mário De Oliveira Filho, Frank Vallentin*

11.30 – 12.00

Programmable Antenna Design Using Convex Optimization  
*Javad Lavaei, Aydin Babakhani, Ali Hajimiri, John C. Doyle*

12.00 – 12.30

On the Real Multidimensional Rational  $K$ -Moment Problem  
*Jaka Cimprič, Murray Marshall, Tim Netzer*

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### Graph Processes (Regular Session)

**Room 7****Chair:** *Thomas P. Cason*

10.30 – 11.00

A Unified Framework for Affine Local Graph Similarity  
*Thomas P. Cason, Pierre-Antoine Absil, V.D. Blondel, Paul van Dooren*

11.00 – 11.30

Vulnerability Analysis for Complex Networks Using Aggressive Abstraction  
*Richard Colbaugh, Kristin Glass*

11.30 – 12.00

Analysis of Complex Networks  
*Angel Garrido*

12.00 – 12.30

Cost Optimisation of Electric Power Transmission Networks Using Steiner Tree Theory  
*Kevin Prendergast, Doreen Thomas*

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### Communication (Regular Session)

**Room 8****Chair:** *Doreen Thomas*

10.30 – 11.00

A New Algorithm for the Euclidean  $k$ -Bottleneck Steiner Problem  
*Marcus Brazil, Charl Ras, Doreen Thomas*

11.00 – 11.30

Delay-Based Connectivity of Wireless Networks  
*Martin Haenggi*

11.30 – 12.00

Covering Codes and Invariant Sets  
*Emerson L. Monte Carmelo*

12.00 – 12.30

Classification Results for Non-Mixed and Mixed Optimal Covering Codes: a Survey  
*Gerzson Kéri*

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### Piece-Wise Affine Systems (Regular Session)

**Room 9****Chair:** *Madalena Chaves*

10.30 – 11.00

Transition Probabilities for Piecewise Affine Models of Genetic Networks  
*Madalena Chaves, Etienne Farcot, Jean-Luc Gouzé*

11.00 – 11.30

Chaos via Two-Valued Interval Maps in a Piecewise Affine Model Example for Hysteresis  
*Rudolf Csikja, Barnabás M. Garay, János Tóth*

11.30 – 12.00

Temporal Logic Control for Piecewise-Affine Hybrid Systems on Polytopes  
*Luc Habets, Calin Belta*

12.00 – 12.30

Observability Reduction of Piecewise-Affine Hybrid Systems  
*Mihály Petreczky, Jan H. van Schuppen*

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### Advanced Linear Algebra – 1 (Regular Session)

**Room 10****Chair:** *Rodolphe Sepulchre*

10.30 – 11.00

Rank-Preserving Geometric Means of Positive Semi-Definite Matrices  
*Silvere Bonnabel, Rodolphe Sepulchre*

11.00 – 11.30

Gauss Elimination without Pivoting for Positive Semidefinite Matrices and an Application to Sum of Squares Representations  
*Carla Fidalgo*

11.30 – 12.00

Algorithm to Compute Minimal Nullspace Basis of a Polynomial Matrix  
*Swanand R. Khare, Harish K. Pillai, Madhu N. Belur*

12.00 – 12.30

On the Minimum Rank of a Generalized Matrix Approximation Problem in the Maximum Singular Value Norm  
*Kin Cheong Sou, Anders Rantzer*

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### Non-Linear Dynamics (Regular Session)

**Room 11****Chair:** *Luigi Fortuna*

10.30 – 11.00

Bergson's Time and Strange Attractors  
*Arturo Buscarino, Luigi Fortuna, Mattia Frasca*

11.00 – 11.30

Derived Cones to Reachable Sets of Semilinear Differential Inclusions  
*Aurelian Cernea*

11.30 – 12.00

Identification of Nonlinear Processes in Microfluidic Bubble Flow  
*Florinda Schembri, Francesca Sapuppo, Luigi Fortuna, Maide Bucolo*

12.00 – 12.30

Interconnection of Dirac Structures and Lagrange-Dirac Dynamical Systems  
*Hiroaki Yoshimura, Henry Jacobs, Jerrold E. Marsden*

**Interpolation and Approximation in Linear Systems – 1***(Invited Session)***Room 12****Organizers:** *Andrea Gombani, Martine Olivi***Chair:** *Andrea Gombani*

10.30 – 11.00

Minimal Symmetric Darlington Synthesis: the Real Case  
*Laurent Baratchart, Per Enqvist, Andrea Gombani, Martine Olivi*

11.00 – 11.30

Convergent Rational Interpolation to Cauchy Integrals on an Arc

*Laurent Baratchart, Maxim Yattselev*

11.30 – 12.00

Approximative Covariance Interpolation

*Per Enqvist*

12.00 – 12.30

LMI Conditions of Strictly Bounded Realness on a State-Space Realization to Bi-Tangential Rational Interpolation  
*Yohei Kuroiwa***Linear Stochastic Systems, the White Noise Space, and Related Topics***(Invited Session)***Room 13****Organizer:** *Daniel Alpay***Chair:** *Daniel Alpay*

10.30 – 11.00

An Introduction to White Noise Theory and Linear Stochastic Systems

*Daniel Alpay, David Levanony*

11.00 – 11.30

Discrete Multiscale Systems: Stability Results

*Daniel Alpay, Mamadou Mboup*

11.30 – 12.00

Stochastic integration for a Class of Gaussian Processes

*Daniel Alpay, Haim Attia, David Levanony*

12.00 – 12.30

On a Schur Class of Functions whose Values are Operators between Banach Spaces

*Dan Volok***LDPC and Applications***(Invited Session)***Room 14****Organizers:** *Joachim Rosenthal, Marcus Greferath***Chair:** *Joachim Rosenthal*

10.30 – 11.00

Exploration of AWGNC and BSC Pseudocodeword Redundancy

*Jens Zumbärgel, Mark F. Flanagan, Vitaly Skachek*

11.00 – 11.30

Cross-Correlation of Costas Arrays: the Current Status

*Konstantinos Drakakis, Scott Rickard*

11.30 – 12.00

LDPC Codes from Matrix Equations

*Ariel Amir, Abigail Mitchell, Joachim Rosenthal*

12.00 – 12.30

On Binary Self-Dual Extremal Codes

*Wolfgang Willems***2D Systems***(Invited Session)***Room 15****Organizers:** *Marek Majewski, Dariusz Idczak***Chair:** *Marek Majewski*

10.30 – 11.00

Positive Switched 2D Linear Systems Described by the Roesser Models

*Tadeusz Kaczorek*

11.00 – 11.30

A New Approach to Strong Practical Stability and Stabilization of Discrete Linear Repetitive Processes

*Pawel Dabkowski, Krzysztof Gałkowski, Olivier Bachelier, Eric Rogers, James Lam*

11.30 – 12.00

2D Systems with Controls and Some their Applications

*Dorota Bors, Stanisław Walczak*

12.00 – 12.30

Fractional Differential Repetitive Processes

*Dariusz Idczak, Rafał Kamocki***Semiplenary Lecture****Room 1****Chair:** *Floyd B. Hanson*

14.00 – 15.00

Modelling High Dimensional Time Series by Generalized Factor Models

*Manfred Deistler**(joint work with B.D.O. Anderson, A. Filler, W. Chen)***Semiplenary Lecture****Room 14****Chair:** *Yutaka Yamamoto*

14.00 – 15.00

Smith-Predictor Type Structure for a Class of Infinite-Dimensional Systems: Optimal Control and Performance Limitation Formula

*Kenji Kashima***Semiplenary Lecture****Room 15****Chair:** *Peter E. Caines*

14.00 – 15.00

Some Problems with Connecting Renewable Energy Sources to the Grid

*George Weiss, Qing-Chang Zhong*

**Continuous-Time Model Identification***(Invited Session)***Room 1****Organizer:** Toshiharu Sugie**Chair:** Toshiharu Sugie

15.30 – 16.00

Continuous-Time Model Identification and State Estimation Using Non-Uniformly Sampled Data

*Rolf Johansson*

16.00 – 16.30

Frequency Domain Total Least Squares Estimator of Time-Varying Systems

*John Lataire, Rik Pintelon*

16.30 – 17.00

EM Identification of Continuous-Time State Space Models from Fast Sampled Data

*Juan I. Yuz, Jared Alfaro, Juan C. Agüero, Graham C. Goodwin***Filtering, Estimation and Control***(Regular Session)***Room 2****Chair:** Lorenzo Finesso

15.30 – 16.00

Two-Step Nonnegative Matrix Factorization Algorithm for the Approximate Realization of Hidden Markov Models

*Lorenzo Finesso, Angela Grassi, Peter Spreij*

16.00 – 16.30

Recursive Identification of Continuous-Time Linear Stochastic Systems - An Off-Line Approximation

*László Gerencsér, Vilmos Prokaj*

16.30 – 17.00

Mean-Square Minimization in Mathematical Finance with Control and State Constraints

*Andrew J. Heunis*

17.00 – 17.30

Convergence of the MAP Path Estimator in HMMs with Continuous Hidden State Space

*Pavel Chigansky, Ya'acov Ritov***PDE Systems***(Regular Session)***Room 3****Chair:** Joao R. Branco

15.30 – 16.00

Integro-Differential IBVP versus Differential IBVP: Stability Analysis

*Joao R. Branco, José Augusto Ferreira*

16.00 – 16.30

Distributed Source Identification for Wave Equations: an Observer-Based Approach

*Marianne Chapouly, Mazyar Mirrahimi*

16.30 – 17.00

Block Preconditioned Methods in Solution of Hyperbolic Equations

*Ahmad Shayganmanesh (Golbabai), M.M. Arabshahi*

17.00 – 17.30

The Best State Space for the SCOLE Model

*Xiaowei Zhao, George Weiss***Algebraic Systems Theory, Behaviors, and Codes: New Developments Beyond Classical Algebraic Coding Theory***(Invited Session)***Room 4****Organizers:** Heide Glüsing-Lürssen, Eva Zerz**Chair:** Heide Glüsing-Lürssen

15.30 – 16.00

New Improvements on the Echelon-Ferrers Construction

*Anna-Lena Trautmann, Joachim Rosenthal*

16.00 – 16.30

On the Weight Hierarchy of Certain Grassmann Codes

*Arunkumar R. Patil, Harish K. Pillai*

16.30 – 17.00

The Shortest-Basis Approach to Minimal Realizations of Linear Systems

*G. David Forney Jr.*

17.00 – 17.30

Correlations in Stream Ciphers: a Systems Theory Point of View

*Sara Diaz Cardell, Gerard Maze, Joachim Rosenthal, Urs Wagner***Systems Theory and the Economics of Pricing in New Markets***(Invited Session)***Room 6****Organizers:** Robert Martin, Clyde F. Martin**Chair:** Robert Martin

15.30 – 16.00

Systems and Markets: Instability and Irrationality

*Robert Martin, Clyde F. Martin, Xuyao Lin*

16.00 – 16.30

A General Theory of Markovian Time Inconsistent Stochastic Control Problems

*Tomas Björk, Agatha Murgoci*

16.30 – 17.00

A Model for Multiscaling and Clustering of Volatility in Financial Indexes

*Alessandro Andreoli, Francesco Caravenna, Paolo Dai Pra, Gustavo Posta*

17.00 – 17.30

Arbitrage-Free Multifactor Term Structure Models: a Theory Based on Stochastic Control

*Andrea Gombani, Wolfgang J. Runggaldier***Biological Networks***(Regular Session)***Room 7****Chair:** Siamak Taati

15.30 – 16.00

Gene Regulatory Networks: the Impact of Distance between Genes

*Gilles Bernot, Jean-Paul Comet, Enrico Formenti, Siamak Taati*

16.00 – 16.30

Controlling Gene Regulatory Networks by Means of Control Systems Theory Principles and Microfluidic Devices

*Filippo Menolascina, Mario di Bernardo, Diego di Bernardo*

16.30 – 17.00

Estimation of Protein Networks for Cell Cycle in Yeast Based on Least-Squares Method Using Periodic Signals  
*Noriko Takahashi, Takehito Azuma, Shuichi Adachi*

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**Signal Processing**  
(Regular Session)

**Room 8**

**Chair:** *Kenadall Gillies*

15.30 – 16.00

Convergence of Bayesian Posterior Distributions  
*Kenadall Gillies, Robert Martin, Shan Sun, Clyde F. Martin*

16.00 – 16.30

High Resolution Analysis via Sparsity-Inducing Techniques: Spectral Lines in Colored Noise  
*Lipeng Ning, Tryphon T. Georgiou, Allen R. Tannenbaum*

16.30 – 17.00

Probabilistic Current-State Opacity is Undecidable  
*Anooshiravan Saboori, Christoforos N. Hadjicostis*

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**Switched Systems**  
(Regular Session)

**Room 9**

**Chair:** *Koichi Kobayashi*

15.30 – 16.00

Free-Variable Analysis of Finite Automata Representations for Hybrid Systems Control  
*Koichi Kobayashi, Jun-ichi Imura*

16.00 – 16.30

Disturbance Decoupling Problems with Quadratic Stability for Switched Linear Systems via State Feedback  
*Naohisa Otsuka*

16.30 – 17.00

Output Feedback Stabilizing Control and Passification of Switching Diffusion Systems  
*Pavel V. Pakshin, Dimitri Peaucelle*

17.00 – 17.30

On Well-Posedness of Piecewise Affine Bimodal Dynamical Systems  
*Le Q. Thuan, Kanat Camlibel*

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**Advanced Linear Algebra – 2**  
(Regular Session)

**Room 10**

**Chair:** *Christophe Fonte*

15.30 – 16.00

Conditions for Interpolation of Stable Polynomials  
*Christophe Fonte, Cédric Delattre*

16.00 – 16.30

Convexity of Higher Dimensional Numerical Ranges  
*Michael Karow*

16.30 – 17.00

Real Radius of Controllability for the Systems Described by Polynomial Matrices: SIMO Case  
*Swanand R. Khare, Harish K. Pillai, Madhu N. Belur*

17.00 – 17.30

Computing the Controllability Radius for Higher Order Systems Using Semidefinite Programming  
*Bogdan C. Scleriu, Bogdan Dumitrescu*

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**New Results on Computation and Control**  
(Invited Session)

**Room 11**

**Organizer:** *Bijoy K. Ghosh*

**Chair:** *Bijoy K. Ghosh*

15.30 – 16.00

Periodic and Recursive Control Theoretic Smoothing Splines  
*Maja Karasalo, Xiaoming Hu, Clyde F. Martin*

16.00 – 16.30

Smoothing Splines on the Torus  
*F. Egebrand, Magnus Egerstedt, Clyde F. Martin*

16.30 – 17.00

Control Aspects of a Finite Length Hubbard Chain  
*F. Assaad, Gunther Dirr, F. Goth, Uwe Helmke*

17.00 – 17.30

To Tilt Your Head or Not To: Potentially  
*Bijoy K. Ghosh, Indika B. Wijayasinghe*

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**Interpolation and Approximation in Linear Systems – 2**  
(Invited Session)

**Room 12**

**Organizers:** *Andrea Gombani, Martine Olivi*

**Chair:** *Martine Olivi*

15.30 – 16.00

Parametrization of Matrix-Valued Lossless Functions Based on Boundary Interpolation  
*Ralf Peeters, Martine Olivi, Bernard Hanzon*

16.00 – 16.30

On the Partial Realization Problem  
*Andrea Gombani, György Michaletzky*

16.30 – 17.00

On Tangential Matrix Interpolation  
*Paul A. Fuhrmann*

17.00 – 17.30

Polynomial Structure of  $3 \times 3$  Reciprocal Inner Matrices  
*David Avanesoff, Martine Olivi, Fabien Seyfert*

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**Passive Network Synthesis**  
(Invited Session)

**Room 13**

**Organizer:** *Malcolm C. Smith*

**Chair:** *Malcolm C. Smith*

15.30 – 16.00

Passive Synthesis of the Terminal Behavior of Circuits  
*Jan C. Willems*

16.00 – 16.30

Redundancies in Transformerless Network Synthesis  
*Jason Zheng Jiang, Malcolm C. Smith*

16.30 – 17.00

Network Optimization and Synthesis Using a Combined Mechanical and Electrical System: Application to Vehicle Suspension Control  
*Fu-Cheng Wang, Hsiang-An Chan*

**New Mathematical Methods in Multidimensional Systems Theory – 1**

(Invited Session)

**Room 14**

**Organizers:** Alban Quadrat, Thomas Cluzeau

**Chair:** Alban Quadrat

15.30 – 16.00

Further Results on Serre's Reduction of Multidimensional Linear Systems

Mohamed S. Boudellioua, Alban Quadrat

16.00 – 16.30

Serre's Reduction of Linear Partial Differential Systems Based on Holonomy

Thomas Cluzeau, Alban Quadrat

16.30 – 17.00

Purity Filtration of 2-Dimensional Linear Systems

Alban Quadrat

17.00 – 17.30

A Polynomial-Algebraic Approach to Lyapunov Stability Analysis of Higher-Order 2-D Systems

Paolo Rapisarda, Kiyotsugu Takaba, Chiaki Kojima

**Recent Developments in Multidimensional Systems, Control and Signals – Theory and Applications – 1**

(Invited Session)

**Room 15**

**Organizer:** Krzysztof Galkowski

**Chair:** Krzysztof Galkowski

15.30 – 16.00

On a Nonlinear Two-Directionally Continuous Repetitive Process

Marek Majewski

16.00 – 16.30

Controllability, Observability and Disturbance Attenuation by Boundary Control of Repetitive Processes with Smoothing

Teresa Azevedo-Perdicoulis, Gerhard Jank

16.30 – 17.00

On Asymptotically Reconstructing Local-State Trajectories for 2-D Systems without Exploiting Input Information

Lorenzo Ntogramatzidis, Michael Cantoni

17.00 – 17.30

LQ Parametrization of Robust Stabilizing Static Output Feedback Controllers for 2D Continuous Roesser Systems

Pavel V. Pakshin, Krzysztof Galkowski, Eric Rogers

**Tuesday, 6 July**

**Plenary Lecture**

**Room 1**

**Chair:** Joseph A. Ball

09.00 – 10.00

In memory of Christopher I. Byrnes

Alberto Isidori, Joachim Rosenthal, Anders Lindquist, Giorgio Picci

**Distributed Parameter Systems I: System Structure**

(Invited Session)

**Room 1**

**Organizers:** Birgit Jacob, Michael Demetriou, Miroslav Krstic, Kirsten Morris, Hans Zwart

**Chair:** Birgit Jacob

10.30 – 11.00

Second-Order Systems with Acceleration Measurement

Birgit Jacob, Kirsten Morris

11.00 – 11.30

Riesz Basis for Strongly Continuous Groups

Hans Zwart

11.30 – 12.00

Optimal Control of Fractional Systems: a Diffusive Formulation

Denis Matignon

12.00 – 12.30

Infinite Structure for Infinite-Dimensional Systems: a Directional Approach

Petteri Laakkonen, Seppo Pohjolainen

**Probabilistic Methods**

(Regular Session)

**Room 2**

**Chair:** Pavel Shcherbakov

10.30 – 11.00

Boundary Oracles for Control-Related Matrix Sets

Pavel Shcherbakov

11.00 – 11.30

Potentials and Limitations to Speed up MCMC Methods Using Non-Reversible Chains

Balázs Gerencsér

11.30 – 12.00

A Stochastic Paradox in a Model for Reflected Brownian Motion?

Erik I. Verriest

12.00 – 12.30

Distribution-Dependent Performance of the Good-Turing Estimator for the Missing Mass

Mesrob I. Ohannessian, Munther A. Dahleh

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**Behaviors**  
 (Regular Session)

Room 3

**Chair:** Paolo Rapisarda

10.30 – 11.00

State Maps from Bilinear Differential Forms  
Paolo Rapisarda, Arjan J. van der Schaft

11.00 – 11.30

On the Problem of Model Reduction in the Gap Metric  
Mark Mutsaers, Siep Weiland

11.30 – 12.00

The Behavioral Approach to Simultaneous Stabilization  
Osamu Kaneko

12.00 – 12.30

Deterministic Identification of Lossless and Dissipative Systems

Paolo Rapisarda, Harry Trentelman

12.30 – 13.00

Passive Behaviors and their Passive State/Signal Realizations in Continuous Time

Damir Z. Arov, Mikael Kurula, Olof J. Staffans

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**Sigma-Delta Modulators**

(Invited Session)

Room 4

**Organizer:** Paolo Rapisarda**Chair:** Paolo Rapisarda

10.30 – 11.00

Incremental Data Converters

Gabor C. Temes, Yan Wang, Wenhuan Yu, Janos Markus

11.00 – 11.30

A Constraint in Single-Feedback Sigma Delta Force-Feedback Loops with a Discrete-Time Loop Filter

Pieter Rombouts, Johan Raman, Ludo Weyten

11.30 – 12.00

Quantization Noise Conditioning Techniques for Digital Delta-Sigma Modulators

Sudhakar Pamarti

12.00 – 12.30

Dynamics-Level Design for Discrete- and Continuous-Time Band-Pass Sigma-Delta-Modulators for Micro-Machined Accelerometers

Jian Luo, Paolo Rapisarda, Michael Kraft

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**Noncommutative Rational Functions and Noncommutative Convexity – 1**

(Mini-Course)

Room 6

**Organizers:** William J. Helton, Dmitry S. Kaliuzhnyi-Verbovetskyi, Igor Klep, Victor Vinnikov

10.30 – 12.30

Noncommutative Rational Functions and Noncommutative Convexity

William J. Helton, Dmitry S. Kaliuzhnyi-Verbovetskyi, Igor Klep, Victor Vinnikov

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**Multi-Agent Systems**

(Regular Session)

Room 7

**Chair:** Magnus Egerstedt

10.30 – 11.00

Sustainable Group Sizes for Multi-Agent Search-and-Patrol Teams

Musad Haque, Magnus Egerstedt, Clyde F. Martin

11.00 – 11.30

Dynamic Spectral Clustering

Amy LaViers, Amir Rahmani, Magnus Egerstedt

11.30 – 12.00

Bounds and Approximations on the Reliability of Large Networks

Tamás Szántai, József Bukszár, Edith Kovács

12.00 – 12.30

On the Geometry and Deformation of Switching Manifolds for Autonomous Hybrid Systems

Farzin Taringoo, Peter E. Caines

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**Recent Developments in Multidimensional Systems, Control and Signals – 2**

(Invited Session)

Room 8

**Organizer:** Krzysztof Gałkowski**Chair:** Krzysztof Gałkowski

10.30 – 11.00

Existence of Optimal Solutions of Two-Directionally Continuous Repetitive Process under Convexity Assumption

Marek Majewski

11.00 – 11.30

Distributed Stabilization of Spatially Invariant Systems: Positive Polynomial Approach

Petr Augusta, Zdeněk Hurak

11.30 – 12.00

An Output Control of a Class of Discrete Second-order Repetitive Processes

Pawel Dabkowski, Krzysztof Gałkowski, Biswa Datta

12.00 – 12.30

Approximation of ND Systems with Multiple Dependent Variables

Femke van Belzen, Siep Weiland

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**Stability and Switching**

(Regular Session)

Room 9

**Chair:** Vahid S. Bokharaie

10.30 – 11.00

On the D-Stability of Linear and Nonlinear Positive Switched Systems

Vahid S. Bokharaie, Oliver Mason, Fabian Wirth

11.00 – 11.30

On the Stabilizability of Discrete-Time Positive Switched Systems

Ettore Fornasini, Maria Elena Valcher

11.30 – 12.00

Stability Criteria for Planar Linear Systems with State Reset  
*Svetlana Polenkova, Jan Willem Polderman, Rom Langerak*

12.00 – 12.30

On the Preservation of Co-Positive Lyapunov Functions under Padé Discretization for Positive Systems  
*Annalisa Zappavigna, Patrizio Colaneri, Stephen Kirkland, Robert Shorten*

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**Algebraic Structures – 1**

(Regular Session)

**Room 10**

**Chair:** Néstor Thome

10.30 – 11.00

Nonnegativity of Descriptor Systems of Index 1  
*Alicia Herrero, Francisco J. Ramirez, Néstor Thome*

11.00 – 11.30

Approximation of Non-Negative Integer-Valued Matrices with Application to Hungarian Mortality Data  
*Márton Ispány, György Michaletzky, Jenő Reiczigel, Gábor Tusnády, Paula Tusnády, Katalin Varga*

11.30 – 12.00

Explicit Parameterization of All Solutions of Linear Periodic Systems with Real-Valued Coefficients  
*Ichiro Jikuya, Ichijo Hodaka*

12.00 – 12.30

Factorizations for Some Classes of Matrices Related to Positivity  
*Juan M. Peña*

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**Stability and Dissipativity**

(Regular Session)

**Room 11**

**Chair:** Masaki Ogura

10.30 – 11.00

Dissipativity of Pseudorational Behaviors  
*Masaki Ogura, Yutaka Yamamoto*

11.00 – 11.30

Cyclodissipativity and Power Factor Improvement for Full Nonlinear Loads  
*Dunstano del Puerto-Flores, Romeo Ortega, Jacquelin M.A. Scherpen*

11.30 – 12.00

On Copositive Lyapunov Functions for a Class of Monotone Systems  
*Björn S. Rüffer, Christopher M. Kellett, Peter M. Dower*

12.00 – 12.30

Stability of Fluid Network Models and Lyapunov Functions  
*Michael Schönlein, Fabian Wirth*

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**Mechanical Systems**

(Regular Session)

**Room 12**

**Chair:** Yoshiro Fukui

10.30 – 11.00

Real-Time Obstacle Avoidance of a Two-Wheeled Mobile Robot via the Minimum Projection Method  
*Yoshiro Fukui, Hisakazu Nakamura, Hirokazu Nishitani*

11.00 – 11.30

Dynamics and Control of 2D SpiderCrane: a RHC Approach  
*Atul K. Kamath, Faruk Kazi, Navdeep M. Singh*

11.30 – 12.00

Sampled-Data Cross-Track Control for Underactuated Ships  
*Hitoshi Katayama*

12.00 – 12.30

Intelligent Multiple AUV Path Planning  
*P.B. Sujit, João de Sousa, Bernardo Maciel*

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**Moment Problems, Maximum Entropy, and Covariance Extension**

(Invited Session)

**Room 13**

**Organizer:** Giorgio Picci

**Chair:** Giorgio Picci

10.30 – 11.00

A Maximum Entropy Approach to the Covariance Extension Problem for Reciprocal Processes  
*Francesca Carli, Augusto Ferrante, Michele Pavon, Giorgio Picci*

11.00 – 11.30

On the Factorization Approach to Band Extension of Block-Circulant Matrices  
*Francesca Carli, Giorgio Picci*

11.30 – 12.00

Graphical Models of Autoregressive Moving-Average Processes  
*Enrico Avventi, Anders Lindquist, Bo Wahlberg*

12.00 – 12.30

On the Maximum Entropy Completion of Circulant Covariance Matrices  
*Francesca Carli, Tryphon T. Georgiou*

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**Codes and Rings**

(Invited Session)

**Room 14**

**Organizers:** Joachim Rosenthal, Marcus Greferath

**Chair:** Marcus Greferath

10.30 – 11.00

On the Parameters of Two-Weight Codes over Rings  
*Alfred Wassermann*

11.00 – 11.30

Predictable Degree Property and Row Reducedness for a System over a Semi Simple Ring  
*Mohammed El Oued, Patrick Solé*

11.30 – 12.00

A New Series of  $Z_4$ -Linear Codes of High Minimum Lee Distance Derived from the Kerdock Codes  
*Michael Kiermaier, Johannes Zwanzger*

12.00 – 12.30

Constructions of Two-Weight Codes over Finite Rings  
*Eimear Byrne, Alison Sneyd*

**Max-Plus, Tropical and Idempotent Methods in Control – 1**

(Invited Session)

**Room 15**

**Organizers:** John S. Baras, William M. McEneaney

**Chair:** John S. Baras

10.30 – 11.00

Routing in Equilibrium

João Luís Sobrinho, Timothy G. Griffin

11.00 – 11.30

Stochastic Perturbations of Deterministic Optimization Problems with Applications to a Spin Control Problem (Control of a Two-Level Atom)

Vassili N. Kolokoltsov

11.30 – 12.00

Asymptotic Values of Zero Sum Repeated Games: Evolution Equations in Discrete and Continuous Time

Guillaume Vigeral

12.00 – 12.30

Local Pruning for Information Dissemination in Dynamic Networks for Solving the Idempotent Semiring Algebraic Path Problem

Kiran K. Somasundaram, John S. Baras

**Semiplenary Lecture**

**Room 1**

**Chair:** László Gerencsér

14.00 - 15.00

Variable Robustness Control: Principles and Algorithms

Marco C. Campi, Simone Garatti

**Semiplenary Lecture**

**Room 14**

**Chair:** Lars Grüne

14.00 - 15.00

Synthesis of Electrical and Mechanical Networks

Malcolm C. Smith

**Semiplenary Lecture**

**Room 15**

**Chair:** Uwe Helmke

14.00 - 15.00

Quantify the Unstable

Li Qiu

**Distributed Parameter Systems II: System Theoretical Properties**

(Invited Session)

**Room 1**

**Organizers:** Birgit Jacob, Michael Demetriou, Miroslav Krstic, Kirsten Morris, Hans Zwart

**Chair:** Birgit Jacob

15.30 – 16.00

Non-Dissipative Boundary Feedback for Elastic Beams

Chris Guiver, Mark R. Opmeer

16.00 – 16.30

Absolute Stability of a System with Distributed Delays Modeling Cell Dynamics in Leukemia

Hitay Özbay, Houda Benjelloun, Catherine Bonnet, Jean Clairambault

16.30 – 17.00

Admissibility for Volterra Systems with Scalar Kernels

Bernhard H. Haak, Birgit Jacob

17.00 – 17.30

Multiscale Dynamics Optimal Control of Parabolic PDE with Time Varying Spatial Domain (Crystal Growth Process)

James Ng, Ilyasse Aksikas, Stevan Dujljevic

**System Identification**

(Regular Session)

**Room 2**

**Chair:** Ignat Domanov

15.30 – 16.00

Enhanced Line Search for Blind Channel Identification Based on the Parafac Decomposition of Cumulant Tensors

Ignat Domanov, Lieven De Lathauwer

16.00 – 16.30

Quantification of Model Uncertainty for a State-Space System

Wafa Farah, Guillaume Mercère, Thierry Poinot, Jan-Willem van Wingerden

16.30 – 17.00

On Asymptotic Properties of MOESP-Type Closed-Loop Subspace Model Identification

Hiroshi Oku

17.00 – 17.30

Regularized Parametric Models of Nonstationary Processes

Daniel Rudoy, Tryphon T. Georgiou

17.30 – 18.00

Coupled Segmentation for Anatomical Structures by Combining Shape and Relational Spatial Information

Ivan Kolesov, Vandana Mohan, Gregory Sharp, Allen R. Tannenbaum

**Structural Properties of Realizations**

(Regular Session)

**Room 3**

**Chair:** W. Steven Gray

15.30 – 16.00

On the Rationality of the Feedback Connection

W. Steven Gray

16.00 – 16.30

On the Existence of Various Realizations

Jana Němcová, Jean-Baptiste Pomet

16.30 – 17.00

External Dynamical Equivalence of Time-Varying Nonlinear Control Systems on Time Scales

Zbigniew Bartosiewicz, Ewa Pawluszewicz

17.00 – 17.30

Spaces of Nonlinear and Hybrid Systems Representable by Recognizable Formal Power Series

Mihály Petreczky, Ralf Peeters

**New Mathematical Methods in Multidimensional Systems Theory – 2**

(Invited Session)

**Room 4**

**Organizers:** Alban Quadrat, Thomas Cluzeau  
**Chair:** Thomas Cluzeau

15.30 – 16.00

Frobenius Method for Computing Power Series Solutions of Linear Higher-Order Differential Systems  
*Moulay Barkatou, Thomas Cluzeau, Carole El Bacha*

16.00 – 16.30

Controllability and Differential Flatness of Linear Analytic Ordinary Differential Systems  
*Alban Quadrat, Daniel Robertz*

16.30 – 17.00

Extendability of Multidimensional Linear Systems  
*Alban Quadrat*

17.00 – 17.30

Module Structure of Classical Multidimensional Systems Appearing in Mathematical Physics  
*Thomas Cluzeau, Alban Quadrat*

**Noncommutative Rational Functions and Noncommutative Convexity – 2**

(Mini-Course)

**Room 6**

**Organizers:** William J. Helton, Dmitry S. Kaliuzhnyi-Verbovetskyi, Igor Klep, Victor Vinnikov

15.30 – 17.30

Noncommutative Rational Functions and Noncommutative Convexity  
*William J. Helton, Dmitry S. Kaliuzhnyi-Verbovetskyi, Igor Klep, Victor Vinnikov*

**Networked Systems**

(Regular Session)

**Room 7**

**Chair:** Thomas E. Gorochowski

15.30 – 16.00

A Dynamical Approach to the Evolution of Complex Networks  
*Thomas E. Gorochowski, Mario di Bernardo, Claire S. Grierson*

16.00 – 16.30

Betweenness Centrality Dynamics in Networks of Changing Density  
*László Gulyás, Gábor Horváth, Tamás Cséeri, Zalán Szakolczi, George Kampis*

16.30 – 17.00

Motion Programs for Multi-Agent Control: From Specification to Execution  
*Patrick Martin, Magnus Egerstedt*

17.00 – 17.30

Minimal-time Uncertain Output Final Value of Unknown DT-LTI Systems with Application to the Decentralised Network Consensus Problem  
*Ye Yuan, Guy-Bart Stan, Ling Shi, Mauricio Barahona, Jorge Gonçalves*

**Observer Theory**

(Invited Session)

**Room 8**

**Organizer:** Jochen Trumpp  
**Chair:** Jochen Trumpp

15.30 – 16.00

Functional T-Observers  
*Ingrid Blumthaler*

16.00 – 16.30

$H_\infty$  Observers Design for a Class of Continuous Nonlinear Singular Systems  
*Mohamed Darouach, Latifa Boutat-Baddas, Mohamed Zerrougui*

16.30 – 17.00

Observability of Partial States of Invariant Systems  
*Christian Lageman*

17.00 – 17.30

Error Models for Nonlinear Observers  
*Jochen Trumpp, Robert Mahony, Stefano Stramigioli*

**Sampled Control**

(Regular Session)

**Room 9**

**Chair:** Emilia Fridman

15.30 – 16.00

Sampled-Data Stabilization of a Class of Parabolic Systems  
*Emilia Fridman, Anatoly Blighovsky*

16.00 – 16.30

Truncated Norms and Limitations on Signal Reconstruction  
*Gjerrit Meinsma, Hanumant Singh Shekhawat*

16.30 – 17.00

On the Consistency of  $L^2$ -Optimal Sampled Signal Reconstructors  
*Gjerrit Meinsma, Leonid Mirkin*

17.00 – 17.30

Stability Analysis of Aperiodic Sampled-Data Control Systems: an Improved Approach Using Matrix Uncertainty  
*Yasuaki Oishi, Hisaya Fujioka*

**Algebraic Structures – 2**

(Regular Session)

**Room 10**

**Chair:** Kenji Fujimoto

15.30 – 16.00

Variational Symmetry of Discrete-Time Hamiltonian Systems and Learning Optimal Control  
*Kenji Fujimoto, Soraki Ogawa*

16.00 – 16.30

Reproducing Kernels Preserving Algebraic Structure: a Duality Approach  
*Tzvetan Ivanov, Balázs Csanád Csáji*

16.30 – 17.00

A Spinor Approach to Port-Hamiltonian Systems  
*Johannes G. Maks*

17.00 – 17.30

On Computing Normalized Coprime Factorizations of Periodic Systems  
*András Varga*

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**Delay Systems**

(Regular Session)

**Room 11**

**Chair:** Lars Naujok

15.30 – 16.00

Lyapunov-Razumikhin and Lyapunov-Krasovskii Theorems for Interconnected ISS Time-Delay Systems  
*Sergey Dashkovskiy, Lars Naujok*

16.00 – 16.30

Monodromy Operator Approach to Time-Delay Systems: Fast-Lifting Based Treatment of Operator Lyapunov Inequalities  
*Tomomichi Hagiwara*

16.30 – 17.00

Monodromy Operator Approach to Time-Delay Systems: Numerical Method for Solving Operator Lyapunov Inequalities  
*Tomomichi Hagiwara, Takayuki Inui*

17.00 – 17.30

Well-Posedness of Problems Involving Time-Varying Delays  
*Erik I. Verriest*

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**Basic and Recent Results on Quantized Control**

(Invited Session)

**Room 12**

**Organizers:** Toshiharu Sugie, Shun-ichi Azuma

**Chair:** Toshiharu Sugie

15.30 – 16.00

Coarseness in Quantization for Stabilization of Linear Systems over Networks  
*Hideaki Ishii, Koji Tsumura, Tomohisa Hayakawa*

16.00 – 16.30

Stabilising Stochastic Linear Plants via Erroneous Channels  
*Girish N. Nair, Kartik Venkat*

16.30 – 17.00

Introduction on Bit Memory Systems: approximation and Stabilization  
*Koji Tsumura*

17.00 – 17.30

Global Optimal Control of Quantized Systems  
*Lars Grüne, Florian Müller*

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**Control of Distributed Stochastic Systems**

(Invited Session)

**Room 13**

**Organizers:** Jan H. van Schuppen, Charalambos D. Charalambous

**Chair:** Jan H. van Schuppen

15.30 – 16.00

Decentralized Detection with Signaling  
*Ashutosh Nayyar, Demosthenis Teneketzis*

16.00 – 16.30

Performance Evaluation of Multi-Agent Distributed Collaborative Optimization under Random Communication Topologies  
*Ion Matei, John S. Baras*

16.30 – 17.00

On the Optimal Reconstruction Kernel of Causal Rate Distortion Function  
*Charalambos D. Charalambous, Christos K. Kourtellis, Photios A. Stavrou*

17.00 – 17.30

Control of the Observation Matrix for Control Purposes  
*René K. Boel, Jan H. van Schuppen*

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**Crypto and Applications**

(Invited Session)

**Room 14**

**Organizers:** Joachim Rosenthal, Marcus Greferath

**Chair:** Marcus Greferath

15.30 – 16.00

Problems Related to Combinatorial Configurations with Applications to P2P-User Private Information Retrieval  
*Maria Bras-Amorós, Klara Stokes, Marcus Greferath*

16.00 – 16.30

On Binary Sequences Generated by Self-Clock Controlled LFSR  
*Michele Elia, Guglielmo Morgari, Maria Spicciola*

16.30 – 17.00

On the Number of Linear Feedback Shift Registers with a Special Structure  
*Srinivasan Krishnaswamy, Harish K. Pillai*

17.00 – 17.30

Codes as Ideals over Some Pointed Hopf Algebras  
*Juan Cuadra, Jose M. García-Rubira, Juan A. López-Ramos*

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**Max-Plus, Tropical and Idempotent Methods in Control – 2**

(Invited Session)

**Room 15**

**Organizers:** John S. Baras, William M. McEneaney

**Chair:** William M. McEneaney

15.30 – 16.00

The Correspondence between Tropical Convexity and Mean Payoff Games  
*Marianne Akian, Stéphane Gaubert, Alexander Guterman*

16.00 – 16.30

A Max-Plus Approach to the Approximation of Transient Bounds for Systems with Nonlinear  $L_2$ -Gain  
*Huan Zhang, Peter M. Dower*

16.30 – 17.00

Idempotent Methods for Control of Diffusions  
*Ben G. Fitzpatrick, Li Liu*

17.00 – 17.30

Curse-of-Dimensionality-Free Control Methods for the Optimal Synthesis of Quantum Circuits  
*Srinivas Sridharan, William M. McEneaney, Matthew R. James*

## Wednesday, 7 July

### Plenary Lecture

Room 1

**Chair:** Joachim Rosenthal

09.00 – 10.00

Codes, Trellis Representations and the Interplay of System Theory and Coding Theory  
*Heide Glüsing-Lürssen*

### Semiplenary Lecture

Room 1

**Chair:** William M. McEneaney

10.30 – 11.30

Learning Algorithms for Risk-Sensitive Control  
*Vivek S. Borkar*

### Semiplenary Lecture

Room 14

**Chair:** Lorenzo Finesso

10.30 – 11.30

Challenges of Tracking Single Molecules in Live Cells  
*Raimund Ober*

### Semiplenary Lecture

Room 15

**Chair:** Hans Zwart

10.30 – 11.30

Coping with Time Delays in Networked Control Systems  
*Hitay Özbay*

### Distinguished Lecturer

Room 1

**Chair:** György Michaletzky

11.30 – 12.30

The Mathematical Challenge of Large Networks  
*László Lovász*

## Thursday, 8 July

### Plenary Lecture

Room 1

**Chair:** William J. Helton

09.00 – 10.00

Robust Control, Multidimensional Systems and Multivariable Function Theory: Commutative and Noncommutative Settings  
*Joseph A. Ball, Sanne ter Horst*

### New Developments in Stochastic System Identification (Invited Session)

Room 2

**Organizer:** Yoshito Ohta

**Chair:** Yoshito Ohta

10.30 – 11.00

A Prediction-Error Identification Framework for Linear Parameter-Varying Systems  
*Roland Tóth, Peter S.C. Heuberger, Paul M.J. Van den Hof*

11.00 – 11.30

Continuous-Time Subspace Identification in Closed-Loop  
*Marco Bergamasco, Marco Lovera*

11.30 – 12.00

Spectral Density Function under Observation Outliers  
*Hideyuki Tanaka, Jaafar ALMutawa, Yoshito Ohta*

12.00 – 12.30

Bias-Compensated State Space Model Identification  
*Kenji Ikeda, Yoshio Mogami, Takao Shimomura*

### Linear Matrix Inequalities (Regular Session)

Room 3

**Chair:** Christian Ebenbauer

10.30 – 11.00

Linear Matrix Inequalities for Normalizing Matrices  
*Christian Ebenbauer*

11.00 – 11.30

LMI Conditions for the Stability of 2D State-Space Models  
*Djillali Bouagada, Paul van Dooren*

11.30 – 12.00

Dynamic Quantizer Synthesis Based on Invariant Set Analysis for SISO Systems with Discrete-Valued Input  
*Kenji Sawada, Seiichi Shin*

12.00 – 12.30

Fixed-Order Output-Feedback Control Design for LTI Systems: a New Algorithm to Reduce Conservatism  
*Emile Simon, Pedro Rodriguez-Ayerbe, Cristina Stoica, Didier Dumur, Vincent Wertz*

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**Optimization Methods in Systems and Control**  
(Invited Session)

**Room 4**

**Organizer:** Lars Grüne  
**Chair:** Lars Grüne

10.30 – 11.00

A Sparse Stability Test for Sparse Matrices  
*Anders Rantzer*

11.00 – 11.30

Delay-Optimal Global Feedbacks for Quantized Networked Event Systems  
*Stefan Jerg, Oliver Junge*

11.30 – 12.00

Efficient Model Predictive Control for Linear Periodic Systems  
*Andreas Feuer, Marcus Reble, Christoph Böhm, Frank Allgöwer*

12.00 – 12.30

Simple Homothetic Tube Model Predictive Control  
*Saša V. Raković, Basil Kouvaritakis, Rolf Findeisen, Mark Cannon*

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**Real Algebraic Geometry and Applications – 2**  
(Invited Session)

**Room 6**

**Organizers:** William J. Helton, Pablo Parrilo  
**Chair:** William J. Helton

10.30 – 11.00

It is Convexity and Positivity of Polynomials  
*Pablo Parrilo*

11.00 – 11.30

Recent Progress on Obtaining Matrix Convexity when the Variables are Matrices  
*William J. Helton*

11.30 – 12.00

A Nullstellensatz for a Class of Two Sided Ideals of Noncommutative Polynomials  
*Victor Vinnikov*

12.00 – 12.30

Relaxing LMI Domination Matricially  
*Igor Klep*

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**The Semigroup Approach to DPS**  
(Invited Session)

**Room 7**

**Organizer:** George Weiss  
**Chair:** George Weiss

10.30 – 11.00

Analytic Properties of Matrix Riccati Equation Solutions  
*Ruth Curtain, Leiba Rodman*

11.00 – 11.30

Structurally Damped Plate Equations with Random Point Force  
*Roland Schnaubelt*

11.30 – 12.00

A Spectral Approach to the Null-Controllability of Diffusion Processes  
*Gérald Tenenbaum, Marius Tucsnak*

12.00 – 12.30

Observers for DPS Back and Forth in Time  
*George Weiss, Karim Ramdani, Marius Tucsnak*

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**Riccati and Sylvester-Equations**  
(Regular Session)

**Room 8**

**Chair:** Timo Reis

10.30 – 11.00

Lur'e Equations and Singular Optimal Control  
*Timo Reis*

11.00 – 11.30

Reduction of State Variables Based on Regulation and Filtering Performances  
*Hidenori Shingiri, Yoshito Ohta*

11.30 – 12.00

An Explicit Dynamic Programming Solution for a Decentralized Two-Player Optimal Linear-Quadratic Regulator  
*John Swigart, Sanjay Lal*

12.00 – 12.30

A State-Space Solution of Bilateral Diophantine Equations over  $RH_\infty$   
*Maxim Kristalny, Leonid Mirkin*

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**Network Stability**  
(Regular Session)

**Room 9**

**Chair:** Ulf T. Jönsson

10.30 – 11.00

Primal and Dual Criteria for Robust Stability  
*Ulf T. Jönsson*

11.00 – 11.30

Guaranteed Cost for Control of Networked Control Systems with Small Time-Varying Delays  
*Marc Jungers, Laurentiu Hetel, Jamal Daafouz*

11.30 – 12.00

A Novel Discontinuous Lyapunov Functional Approach to Networked-Based Stabilization  
*Kun Liu, Vladimir Suplin, Emilia Fridman*

12.00 – 12.30

A Multichannel IOPs Small-Gain Theorem for Large Scale Systems  
*Rudolf Sailer, Fabian Wirth*

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**Stability**  
(Regular Session)

**Room 10**

**Chair:** Svyatoslav S. Pavlichkov

10.30 – 11.00

Further Remarks on Global Stabilization of Generalized Triangular Systems  
*Sergey Dashkovskiy, Svyatoslav S. Pavlichkov*

11.00 – 11.30

Invariance Results Involving Non-Monotonic Lyapunov Functions with Applications  
*Anthony N. Michel, Ling Hou*

11.30 – 12.00

A New Characterisation of Exponential Stability  
*Elena Panteley, Antonio Loría*

12.00 – 12.30

Sufficient Conditions for Local Asymptotic Stability and Stabilization for Discrete-Time Varying Systems  
*Angeliki Stamati, John Tsinias*

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### Port-Hamiltonian Systems (Regular Session)

**Room 11****Chair:** *Arjan J. van der Schaft*

10.30 – 11.00

Port-Hamiltonian Systems on Open Graphs  
*Arjan J. van der Schaft, Bernhard M. Maschke*

11.00 – 11.30

Adaptive Control of Port-Hamiltonian Systems  
*Daniel A. Dirksz, Jacquelin M.A. Scherpen*

11.30 – 12.00

Model Reduction of Port-Hamiltonian Systems as Structured Systems  
*Rostyslav V. Polyuga, Arjan J. van der Schaft*

12.00 – 12.30

Modeling for Control of an Inflatable Space Reflector, the Linear 2-D Case  
*Thomas Voss, Jacquelin M.A. Scherpen*

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### Stochastic Control – 1 (Invited Session)

**Room 13**

**Organizers:** *Bozenna Pasik-Duncan, Tyrone E. Duncan*  
**Chair:** *Bozenna Pasik-Duncan*

10.30 – 11.00

Social Certainty Equivalence in Mean Field LQG Control: Social, Nash and Centralized Strategies  
*Minyi Huang, Peter E. Caines, Roland P. Malhamé*

11.00 – 11.30

Idempotent Algorithms for Continuous-Time Stochastic Control  
*Hidehiro Kaise, William M. McEneaney*

11.30 – 12.00

Tuning the TCP Timeout Mechanism in Wireless Networks to Maximize Throughput via Stochastic Stopping Time Methods  
*George Papageorgiou, John S. Baras*

12.00 – 12.30

Control of Linear Systems with Fractional Brownian Motions  
*Tyrone E. Duncan, Bozenna Pasik-Duncan*

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### Algebraic Systems Theory, Behaviors, and Codes: Recent Approaches to New System Classes

*(Invited Session)***Room 14**

**Organizers:** *Eva Zerz, Heide Glüsing-Lürssen*  
**Chair:** *Eva Zerz*

10.30 – 11.00

Elimination, Fundamental Principle and Duality for Analytic Linear Systems of Partial Differential-Difference Equations with Constant Coefficients  
*Henri Bourlès, Ulrich Oberst*

11.00 – 11.30

Symmetries, Parametrizations and Potentials of Multidimensional Linear Systems  
*Thomas Cluzeau, Alban Quadrat*

11.30 – 12.00

Degree Structures of Polynomial Vector Modules with Applications to Systems over Fields and Rings  
*Margreta Kuijper*

12.00 – 12.30

On Periodic Solutions of Linear Difference Equations  
*Eva Zerz*

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### Geometric Control Theory for Linear Systems–1 (Mini-Course)

**Room 15**

**Organizers:** *Giovanni Marro, Fabio Morbidi, Lorenzo Ntogramatzidis, Domenico Prattichizzo*

10.30 – 12.30

Geometric Control Theory for Linear Systems  
*Giovanni Marro, Fabio Morbidi, Lorenzo Ntogramatzidis, Domenico Prattichizzo*

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### Semiplenary Lecture

**Room 1****Chair:** *Michael A. Demetriou*

14.00 – 15.00

Dynamic "Magic" Graphs in Cooperative Networked Systems  
*John S. Baras*

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### Semiplenary Lecture

**Room 14****Chair:** *Tryphon T. Georgiou*

14.00 – 15.00

Orthogonal Rational Functions and Non-Stationary Stochastic Processes: a Szegő Theory  
*Laurent Baratchart*  
*(based on joint work with L. Golinskii, S. Kupin, M. Olivi and V. Lunot)*

**Semiplenary Lecture**

**Room 15**

**Chair:** *Andrea Gombani*

14.00 – 15.00

Mathematical Finance with Heavy-Tailed Distributions  
*Mathukumalli Vidyasagar*

**Stochastic Adaptive Systems**

(Regular Session)

**Room 2**

**Chair:** *Mario di Bernardo*

15.30 – 16.00

Synchronization and Pinning Control of Networks via  
Adaptation and Edge Snapping  
*Pietro DeLellis, Mario di Bernardo, Maurizio Porfiri*

16.00 – 16.30

Networked Adaptive Model Predictive Control  
*João M. Lemos*

16.30 – 17.00

Approximate Solution to Nonlinear Optimal Regulator  
Problem Using Quantum and Stochastic Theories  
*Yuki Nishimura, Yuji Wakasa, Kanya Tanaka*

17.00 – 17.30

A New Unscented Kalman Filter with Higher Order Moment-  
Matching  
*Ksenia Ponomareva, Paresh Date, Zidong Wang*

**Algebraic Systems**

(Regular Session)

**Room 3**

**Chair:** *Tobias Brüll*

15.30 – 16.00

Linear Quadratic Optimal Control, Dissipativity, and Para-  
Hermitian Matrix Polynomials  
*Tobias Brüll*

16.00 – 16.30

Algebraic Properties of Riccati Equations  
*Ruth F. Curtain*

16.30 – 17.00

Parametrization of Stabilizing Controllers with Fixed  
Precompensators  
*Kazuyoshi Mori*

17.00 – 17.30

Output Regulation of Distributed Parameter Systems with  
Time-Periodic Exosystems  
*Lassi Paunonen, Seppo Pohjolainen*

**New Mathematical Methods in Multidimensional  
Systems Theory – 3**

(Invited Session)

**Room 4**

**Organizers:** *Alban Quadrat, Thomas Cluzeau*

**Chair:** *Alban Quadrat*

15.30 – 16.00

Conley Index Theory  
*Mohamed Barakat, Stanislaus Maier-Paape*

16.00 – 16.30

The Significance of Gabriel Localization for Stability and  
Stabilization of Multidimensional Input/Output Behaviors  
*Ulrich Oberst*

16.30 – 17.00

Purity Filtration and the Fine Structure of Autonomy  
*Mohamed Barakat*

17.00 – 17.30

Controlled Invariant Varieties of Polynomial Control  
Systems  
*Eva Zerz, Sebastian Walcher, Fadime Güçlü*

**Real Algebraic Geometry and Applications – 3**

(Invited Session)

**Room 6**

**Organizers:** *William J. Helton, Pablo Parrilo*

**Chair:** *William J. Helton*

15.30 – 16.00

A Class of Forms which are PSD iff are SOS  
*Carla Fidalgo, Alexander Kovačec*

16.00 – 16.30

Positivity in Power Series Rings  
*Salma Kuhlmann*

16.30 – 17.00

Relationship between Nonnegative Forms, Convex Forms  
and Sums of Squares: Faces and Volumes  
*Grigoriy Blekherman*

17.00 – 17.30

Semidefinite Representation of Convex Hulls of Rational  
Varieties  
*Didier Henrion*

**Operator Theoretic Approaches to DPS**

(Invited Session)

**Room 7**

**Organizer:** *George Weiss*

**Chair:** *George Weiss*

15.30 – 16.00

Operator Splitting and Evolution Equations  
*Andras Batkai, Petra Csomos, Balint Farkas, Klaus-Jochen  
Engel, Gregor Nickel*

16.00 – 16.30

The Weiss Conjecture and Katos Method for the Navier-  
Stokes Equations  
*Bernhard H. Haak, Peer Chr. Kunstmann*

16.30 – 17.00

The Reciprocal Symmetry in State/Signal Systems in  
Continuous Time  
*Olof J. Staffans*

17.00 – 17.30

An  $H_\infty$  Calculus of Admissible Operators  
*Hans Zwart*

**Treatable  $H^2$  Optimization for Infinite-Dimensional Systems***(Invited Session)***Room 8****Organizers:** Yoshito Ohta, Leonid Mirkin**Chair:** Yoshito Ohta

15.30 – 16.00

 $H^2$  Performance on Multiple Preview Compensation and Internal State Setting

Akira Kojima, Kazuki Yokoyama

16.00 – 16.30

On the  $H^2$  Two-Side Model Matching Problem with Preview

Maxim Kristalny, Leonid Mirkin

16.30 – 17.00

Optimal Signal Reconstruction from a Series of Recurring Delayed Measurements

Gjerrit Meinsma, Leonid Mirkin

17.00 – 17.30

A Unified Solution of a Class of Continuous/Discrete-Time  $H^2$  Control

Kotaro Hashikura, Yoshito Ohta

**Systems on Graphs***(Regular Session)***Room 9****Chair:** Giacomo Como

15.30 – 16.00

Persistence of Disagreement in Social Networks

Daron Acemoglu, Giacomo Como, Fabio Fagnani, Asuman Ozdaglar

16.00 – 16.30

Efficient Communication Infrastructures for Distributed Control and Decision Making in Networked Stochastic Systems

John S. Baras, Pedram Hovareshti

16.30 – 17.00

Spread of Epidemics in Time-Dependent Networks

Vahid S. Bokharaie, Oliver Mason, Fabian Wirth

17.00 – 17.30

On Robust Stability of the Belief Propagation Algorithm for LDPC Decoding

Björn S. Rüdger, Peter M. Dower, Christopher M. Kellett, Steven R. Weller

17.30 – 18.00

The PABTEC Algorithm for Passivity-Preserving Model Reduction of Circuit Equations

Tatjana Stykel, Timo Reis

**Applications of Differential Geometry***(Regular Session)***Room 10****Chair:** Markus Schöberl

15.30 – 16.00

System Parametrization Using Affine Derivative Systems

Markus Schöberl, Karl Rieger, Kurt Schlacher

16.00 – 16.30

Impulsive Transfer of Elliptical Orbits for Consensus of Two Spacecraft with Conservation of System Areal Velocity

Kazunori Furusawa, Tomohisa Hayakawa

16.30 – 17.00

Integrability and Optimal Control

Claudiu C. Remsing

17.00 – 17.30

Accessibility and Observability for a Class of First-Order PDE Systems with Boundary Control and Observation

Karl Rieger, Kurt Schlacher

**Structured Non-Linear Systems***(Regular Session)***Room 11****Chair:** László Gerencsér

15.30 – 16.00

Change Detection for Hidden Markov Models

László Gerencsér, Cecilia Prosdocimi

16.00 – 16.30

Three Dimensional Multi-Scale Modeling of Brain Tumor Progression

Francisco Gamaliel Vital-Lopez, Costas D. Maranas, Antonios Armaou

16.30 – 17.00

Global Analysis of Firing Maps

Alexandre Mauroy, Julien M. Hendrickx, Alexandre Megretski, Rodolphe Sepulchre

17.00 – 17.30

Intraoperative Prediction of Tumor Cell Concentration from Mass Spectrometry Imaging

Vandana Mohan, Ivan Kolesov, Ferenc A. Jolesz, Nathalie Y.R. Agar, Allen R. Tannenbaum

**Stochastic Control – 2***(Invited Session)***Room 13****Organizers:** Bozenna Pasik-Duncan, Tyrone E. Duncan**Chair:** Tyrone E. Duncan

15.30 – 16.00

Convergence Rates of Markov Chain Approximation Methods for Controlled Regime-Switching Diffusions with Stopping

Qingshuo Song, George Yin

16.00 – 16.30

Existence of Strict Optimal Controls for Long-Term Average Stochastic Control Problems

Francois Dufour, Richard H. Stockbridge

16.30 – 17.00

The Beneš-Problem and Related Problems Revisited

Kurt L. Helmes, Richard H. Stockbridge

17.00 – 17.30

Calculus of Expected Present Value Operators and Comparative Statics in Real Option Theory

Svetlana Boyarchenko, Sergei Levendorskii

**Finite Geometry and Network Codes***(Invited Session)***Room 14****Organizers:** Joachim Rosenthal, Marcus Greferath**Chair:** Joachim Rosenthal

15.30 – 16.00

Two-Intersection Sets in Projective Hjelmslev Spaces

Thomas Honold

16.00 – 16.30

Construction of Codes for Network Coding  
*Andreas-Stephan Elsenhans, Axel Kohnert, Alfred Wassermann*

16.30 – 17.00

Linear Codes from Projective Spaces  
*Michel Lavrauw, Leo Storme, Geertrui van de Voorde*

17.00 – 17.30

On the Normality of (Non-Mixed and Mixed) Optimal Covering Codes  
*Gerzson Kéri*

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**Geometric Control Theory for Linear Systems–2**  
(Mini-Course)

**Room 15**

**Organizers:** *Giovanni Marro, Fabio Morbidi, Lorenzo Ntogramatzidis, Domenico Prattichizzo*

15.30 – 17.30

Geometric Control Theory for Linear Systems  
*Giovanni Marro, Fabio Morbidi, Lorenzo Ntogramatzidis, Domenico Prattichizzo*

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**Friday, 9 July**

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**Plenary Lecture**

**Room 1**

**Chair:** *Jan H. van Schuppen*

09.00 – 10.00

From Qualitative to Quantitative Models of Gene Regulatory Networks in Bacteria  
*Hidde de Jong*

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**Distributed Parameter Systems III: Optimal Control**

(Invited Session)

**Room 1**

**Organizers:** *Birgit Jacob, Michael Demetriou, Miroslav Krstic, Kirsten Morris, Hans Zwart*

**Chair:** *Hans Zwart*

10.30 – 11.00

Representation of Solutions of Riccati Equations for Well-Posed Systems  
*Mark R. Opmeer, Orest V. Iftime*

11.00 – 11.30

LQ-Optimal Control for a Class of Time-Varying Coupled PDEs-ODEs System  
*Amir Alizadeh Moghadam, Ilyasse Aksikas, J. Fraser Forbes, Stevan Djuljevic*

11.30 – 12.00

Design of Optimal Deterministic Output Estimators for Distributed Parameter Systems  
*Jochem Vissers, Siep Weiland*

12.00 – 12.30

Linear-Quadratic Differential Games Revisited  
*Michel C. Delfour*

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**Realization and Information**

(Regular Session)

**Room 2**

**Chair:** *Charalambos D. Charalambous*

10.30 – 11.00

Rate Distortion Function for a Class of Relative Entropy Sources  
*Farzad Rezaei, Charalambos D. Charalambous, Photios A. Stavrou*

11.00 – 11.30

Stochastic Realization of Binary Exchangeable Processes  
*Lorenzo Finesso, Cecilia Prosdocimi*

11.30 – 12.00

Stochastic Input-Output Realization of Bilinear Systems  
*György Terdik, József Bokor*

12.00 – 12.30

Weakly Operator Harmonizable Processes in Complete Correlated Actions  
*Dan Popovici*

**Analysis of Physical Systems***(Regular Session)***Room 3****Chair:** Hans Zwart

10.30 – 11.00

Analysis of the Three Dimensional Heat Conduction in Nano- or Microscale

*Hanif Heidari, Hans Zwart, Alaeddin Malek*

11.00 – 11.30

Well-Posedness, Regularity and Exact Controllability for the Problem of Transmission of the Schrödinger Equation

*Salah-Eddine Rebiai*

11.30 – 12.00

Hamiltonian Evolution Equations of Inductionless Magnetohydrodynamics

*Andreas Siuka, Markus Schöberl, Kurt Schlacher*

12.00 – 12.30

Instantaneous Control of the Linear Wave Equation

*Nils Altmüller, Lars Grüne, Karl Worthmann*

12.30 – 13.00

Hybrid Modeling, Control and Estimation in ABS Applications Based on In-Wheel Electric Motors

*Ricardo de Castro, João de Sousa, Rui Esteves Araújo, Fernando Pereira, Diamantino Freitas***Behavioral Systems and Control Theory***(Invited Session)***Room 4****Organizer:** Paolo Rapisarda**Chair:** Paolo Rapisarda

10.30 – 11.00

A Polynomial Approach to the Realization of  $J$ -Lossless Behaviours*Shodhan Rao, Paolo Rapisarda, Lewis Moody*

11.00 – 11.30

Pseudorational Behaviors and Bezoutians

*Yutaka Yamamoto, Jan C. Willems, Masaki Ogura*

11.30 – 12.00

Tracking and Regulation in the Behavioral Framework

*Shaik Fiaz, Kiyotsugu Takaba, Harry Trentelman*

12.00 – 12.30

Ports and Terminals

*Jan C. Willems***Shadows of Multidimensionality: Multidimensional Systems with Applications to 1-D Systems – 1***(Invited Session)***Room 6****Organizers:** Joseph A. Ball, Victor Vinnikov**Chair:** Victor Vinnikov

10.30 – 11.00

Structured Noncommutative Multidimensional Linear Systems and Scale-Recursive Modeling

*Tanit Malakorn, Joseph A. Ball*

11.00 – 11.30

Controllability of Autonomous Behaviors and Livšic Overdetermined Systems as 2D Behaviors with Pure Autonomy Degree One

*Grant Boquet, Joseph A. Ball*

11.30 – 12.00

The  $H^\infty$ -Problem in Multidimensional Control Theory: State-Space versus Frequency-Domain Formulation*Joseph A. Ball, Sanne ter Horst*

12.00 – 12.30

Linear State Space Theory in the White Noise Space Setting

*Daniel Alpay, David Levanony, Ariel Pinhas***Systems on Graphs – Consensus***(Regular Session)***Room 7****Chair:** Enrico Lovisari

10.30 – 11.00

A Resistance-Based Approach to Performance Analysis of the Consensus Algorithm

*Enrico Lovisari, Federica Garin, Sandro Zampieri*

11.00 – 11.30

Notes on the Deficiency One Theorem: Single Linkage Class

*Balázs Boros*

11.30 – 12.00

Optimal Finite-Time Distributed Linear Averaging

*Qing Hui*

12.00 – 12.30

Dilatability of Linear Cellular Automata

*Adriana Popovici, Dan Popovici***Model Reduction***(Regular Session)***Room 8****Chair:** André Schneider

10.30 – 11.00

Balanced Truncation Model Order Reduction for LTI Systems with many Inputs or Outputs

*Peter Benner, André Schneider*

11.00 – 11.30

Balanced Truncation for Linear Interconnected Systems: the State Feedback Case

*Kenji Fujimoto, Sayaka Ono, Yoshikazu Hayakawa*

11.30 – 12.00

Numerical Algorithm for Structured Low Rank Approximation Problem

*Swanand R. Khare, Harish K. Pillai, Madhu N. Belur*

12.00 – 12.30

Finite Time System Operator and Balancing for Model Reduction and Decoupling

*Erik I. Verriest*

12.30 – 13.00

Model Order Reduction of Nonlinear Circuits

*Andreas Steinbrecher*

**Networked Control – 1***(Regular Session)***Room 9****Chair:** Karl Mårtensson

10.30 – 11.00

Sub-Optimality Bound on a Gradient Method for Iterative Distributed Control Synthesis  
*Karl Mårtensson, Anders Rantzer*

11.00 – 11.30

The Logarithmic Quantiser is Not Optimal for LQ Control  
*Jean-Charles Delvenne*

11.30 – 12.00

Distributed Inequality Constrained Kalman Smoother  
*Simone Del Favero, Gianluigi Pillonetto, Bradley M. Bell*

12.00 – 12.30

MIMO Encoder and Decoder Design for Signal Estimation  
*Erik Johannesson, Andrey Ghulchak, Anders Rantzer, Bo Bernhardsson*

**Analytical Methods***(Regular Session)***Room 10****Chair:** Tamás Kalmár-Nagy

10.30 – 11.00

Random Walk on a Rooted, Directed Husimi Cactus  
*Tamás Kalmár-Nagy*

11.00 – 11.30

Scalable Decentralized Control and the Davis-Wielandt Shell  
*Ioannis Lestas*

11.30 – 12.00

Characterization of Shift Invariant Subspace of Matrix-valued Hardy Space  
*Yohei Kuroiwa*

**Quantum Systems***(Regular Session)***Room 11****Chair:** Francesca Albertini

10.30 – 11.00

Methods of Control Theory for the Analysis of Quantum Walks on Graphs  
*Francesca Albertini, Domenico D'Alessandro*

11.00 – 11.30

Parameter Estimation of Quantum Processes Using Convex Optimization  
*Gábor Balló, Attila Magyar, Katalin M. Hangos*

11.30 – 12.00

Martingale Approach in Quantum State Estimation Using Indirect Measurements  
*László Ruppert, Katalin M. Hangos*

12.00 – 12.30

The Energy Minimization Problem for Two-Level Dissipative Quantum Systems  
*Dominique Sugny, Bernard Bonnard*

12.30 – 13.00

On a Canonical QR Decomposition and Feedback Control of Discrete-Time Quantum Dynamics  
*Francesco Ticozzi, Saverio Bolognani*

**Applications in Medicine***(Regular Session)***Room 12****Chair:** Andras Balogh

10.30 – 11.00

Bifurcation Control in an Infectious Disease Model  
*Andras Balogh, Roberto Castillo, Noel Cavazos Jr.*

11.00 – 11.30

Identifiability Analysis of an Epidemiological PDE Model  
*Antoine Perasso, Béatrice Laroche, Suzanne Touzeau*

11.30 – 12.00

Unification of Accelerated and Proportional Hazard Rate Models and Application for Data of the Hungarian National Cancer Registry  
*Lidia Rejtő*

**Control for Markov and Nonlinear Markov Processes***(Invited Session)***Room 13****Organizers:** William M. McEneaney, Vassili N. Kolokoltsov**Chair:** Vassili N. Kolokoltsov

10.30 – 11.00

Nonlinear Markov Games  
*Vassili N. Kolokoltsov*

11.00 – 11.30

Stochastic Adaptive Nash Certainty Equivalence Control: Self-Identification Case  
*Arman C. Kizilkale, Peter E. Caines*

11.30 – 12.00

Stopping Problems of Markov Processes with Discontinuous Functionals  
*Lukasz Stettner*

12.00 – 12.30

Observation Process Control in Support of Stochastic Tasking Operations  
*William M. McEneaney, Ali Oran*

**Algebraic Systems Theory, Behaviors, and Codes: Design, Analysis, and Decoding of Convolutional Codes***(Invited Session)***Room 14****Organizers:** Heide Glüsing-Lürssen, Eva Zerz**Chair:** Heide Glüsing-Lürssen

10.30 – 11.00

Decoding of a Class of Convolutional Codes  
*Heide Glüsing-Lürssen, Uwe Helmke, José Ignacio Iglesias Curto*

11.00 – 11.30

On the Determination of an Input-State-Output Realization of a Secure McEliece-Like Cryptosystem Based on Convolutional Codes  
*Joan Josep Climent, Victoria Herranz, Carmen Perea, Virtudes Tomás*

11.30 – 12.00

Reverse-Maximum Distance Profile Convolutional Codes over the Erasure Channel  
*Virtudes Tomás, Joachim Rosenthal, Roxana Smarandache*

12.00 – 12.30

Column Distances for 2D-Convolutional Codes  
*Diego Napp Avelli, Carmen Perea, Raquel Pinto*

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**Differential Geometric Methods for Computational Engineering Applications – 1**  
*(Invited Session)*

**Room 15**

**Organizers:** *Knut Hüper, Christian Lageman*  
**Chair:** *Knut Hüper*

10.30 – 11.00

Adaptive Filtering for Estimation of a Low-Rank Positive Semidefinite Matrix  
*Silvère Bonnabel, Gilles Meyer, Rodolphe Sepulchre*

11.00 – 11.30

Intrinsic Newton's Method on Oblique Manifolds for Overdetermined Blind Source Separation  
*Martin Kleinsteuber, Hao Shen*

11.30 – 12.00

A Geometric Revisit to the Trace Quotient Problem  
*Hao Shen, Klaus Diepold, Knut Hüper*

12.00 – 12.30

Local Minima of the Best Low Multilinear Rank Approximation of Tensors  
*Mariya Ishteva, Pierre-Antoine Absil, Sabine van Huffel, Lieven de Lathauwer*

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**Semiplenary Lecture**

**Room 1**

**Chair:** *Tyrone E. Duncan*

14.00 – 15.00

Nonlinear Filtering and Systems Theory  
*Ramon van Handel*

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**Semiplenary Lecture**

**Room 14**

**Chair:** *Clyde F. Martin*

14.00 – 15.00

Controllability of Networked Systems  
*Magnus Egerstedt*

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**Semiplenary Lecture**

**Room 15**

**Chair:** *Doreen Thomas*

14.00 – 15.00

Quantum Linear Systems Theory  
*Ian R. Petersen*

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**Distributed Parameter Systems IV: Computational Issues**  
*(Invited Session)*

**Room 1**

**Organizers:** *Birgit Jacob, Michael Demetriou, Miroslav Krstic, Kirsten Morris, Hans Zwart*  
**Chair:** *Hans Zwart*

15.30 – 16.00

Numerical Approximation of Exact Controls for Vibrating Systems  
*Nicolae Cîrdea, Sorin Micu, Marius Tucsnak*

16.00 – 16.30

Robust Output Controller Design Based on Adaptive Model Reduction for Parabolic PDE Systems  
*Sivakumar Pitschaiah, Antonios Armaou*

16.30 – 17.00

Overview of Consensus Filters for Distributed Parameter Systems Utilizing Sensor Networks  
*Michael A. Demetriou*

17.00 – 17.30

Sensor Network Design for Inverse Problems  
*Dariusz Uciński*

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**New Paradigms for Control**  
*(Regular Session)*

**Room 2**

**Chair:** *Fritz Colonius*

15.30 – 16.00

Minimal Data Rates and Invariance Entropy  
*Fritz Colonius*

16.00 – 16.30

Fast Controls and Their Calculation  
*Alexander Daryin, Yulia Minaeva*

16.30 – 17.00

Optimal Event-Triggered Control under Costly Observations  
*Adam Molin, Sandra Hirche*

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**Electrical Circuits**

*(Regular Session)*

**Room 3**

**Chair:** *Luigi Fortuna*

15.30 – 16.00

Chaos Control in Inductor-Based Chaotic Oscillators  
*Arturo Buscarino, Luigi Fortuna, Mattia Frasca, Gregorio Sciuto*

16.00 – 16.30

A Reduced Model of Reflectometry for Wired Electric Networks  
*Mohamed Oumri, Qinghua Zhang, Michel Sorine*

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**Computing**

*(Regular Session)*

**Room 4**

**Chair:** *Pierre-Antoine Absil*

15.30 – 16.00

An Efficient BFGS Algorithm for Riemannian Optimization  
*Chunhong Qi, Kyle A. Gallivan, Pierre-Antoine Absil*

16.00 – 16.30

Properties of a Parameterized Model Reduction Method  
*Aivar Sootla*

16.30 – 17.00

A Notion of Approximation for Systems Over Finite Alphabets  
*Danielle C. Tarraf*

**Shadows of Multidimensionality:  
Multidimensional Systems with Applications to  
1-D Systems – 2**  
(Invited Session)

**Room 6**

**Organizers:** Joseph A. Ball, Victor Vinnikov  
**Chair:** Joseph A. Ball

15.30 – 16.00

Multievolution Scattering Systems and the Multivariable Schur Class  
*Dmitry S. Kaliuzhnyi-Verbovetskyi*

16.00 – 16.30

Overdetermined Systems on Lie Groups and Their Transfer Functions  
*Eli Shamovich*

16.30 – 17.00

On the Class *RST* of Rational Schur Functions Intertwining Solutions of Linear Differential Equations  
*Daniel Alpay, Andrey Melnikov, Victor Vinnikov*

17.00 – 17.30

On Ranks of Noncommutative Polynomials  
*Victor Vinnikov*

**Consensus and Games**  
(Regular Session)

**Room 7**

**Chair:** Xiaoming Hu

15.30 – 16.00

Optimal Output Consensus Control and Outlier Detection  
*Johan Thunberg, Xiaoming Hu*

16.00 – 16.30

Distributed Consensus Under Limited Information  
*Haopeng Zhang, Qing Hui*

16.30 – 17.00

Emergence of Lévy Flights in Distributed Consensus Systems  
*Jing Wang, Nicola Elia*

17.00 – 17.30

Anti-Palindromic Pencil Formulation for Open-Loop Stackelberg Strategy in Discrete-Time  
*Marc Jungers, Cristian Oară*

**Robust Convex Control**  
(Regular Session)

**Room 8**

**Chair:** Debraj Chakraborty

15.30 – 16.00

Bang-Bang Solutions to the Open Loop Maximal Time Problem  
*Debraj Chakraborty*

16.00 – 16.30

Robust Stabilization with Real Parametric Uncertainty via Linear Programming  
*Svetlana Iantchenko, Andrey Ghulchak*

16.30 – 17.00

Treatment of Systems Nonlinearities by a Multiplier Method  
*Éva Gyurkovics, Tibor Takács*

17.00 – 17.30

Gain-Scheduled  $H_2$  Filter Synthesis via Polynomially Parameter-Dependent Lyapunov Functions with Inexact Scheduling Parameters  
*Masayuki Sato*

**Networked Control – 2**  
(Regular Session)

**Room 9**

**Chair:** Shivkumar V. Iyer

15.30 – 16.00

Application of Graph Theory in Stability Analysis of Meshed Microgrids  
*Shivkumar V. Iyer, Madhu N. Belur, Mukul C. Chandorkar*

16.00 – 16.30

Power-Aware Sensor Coverage: an Optimal Control Approach  
*Patrick Martin, Rosalba Galvan-Guerra, Magnus Egerstedt, Vadim Azhmyakov*

16.30 – 17.00

Distributed Electrical Power Distribution Using Evolutionary Variational Inequalities  
*Abubakr Muhammad*

**Robust Control**  
(Regular Session)

**Room 10**

**Chair:** Didier Henrion

15.30 – 16.00

Convex Inner Approximations of Nonconvex Semialgebraic Sets Applied to Fixed-Order Controller Design  
*Didier Henrion, Christophe Louembet*

16.00 – 16.30

Stability Analysis of Discrete-Time Systems with Time-Varying Delays via Integral Quadratic Constraints  
*Chung-Yao Kao*

16.30 – 17.00

Robust Stability Analysis of Inverse LQ Regulator for Linear Systems with Input Delay  
*Takao Fujii, Osamu Kaneko*

17.00 – 17.30

Periodically Time-Varying Controller Synthesis for Multiobjective  $H_2/H_\infty$  Control of Discrete-Time Systems and Analysis of Achievable Performance  
*Yoshio Ebihara, Jun Yamaguchi, Tomomichi Hagiwara*

**Quantum Systems and Control**  
(Regular Session)

**Room 11**

**Chair:** Francesco Ticozzi

15.30 – 16.00

Schrödinger Bridges for Discrete-Time, Classical and Quantum Markovian Evolutions  
*Michele Pavon, Francesco Ticozzi*

16.00 – 16.30

A Unified Approach to Controllability of Closed and Open Quantum Systems  
*Indra Kurniawan, Gunther Dirr, Uwe Helmke*

16.30 – 17.00

Symmetry in Quantum System Theory of Multi-Qubit Systems  
*Robert Zeier, Uwe Sander, Thomas Schulte-Herbrüggen*

17.00 – 17.30

Quantum Stochastic Stability and Weak-\* Convergence of System Observables  
*Ram Somaraju, Ian R. Petersen*

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### Systems Biology (Regular Session)

**Room 12****Chair:** *Krisztina Kiss*

15.30 – 16.00

Prey and Polyphagous Predator Species with Diffusion  
*Zsuzsanna Barta, Krisztina Kiss*

16.00 – 16.30

Robust Dynamical Network Reconstruction  
*Ye Yuan, Guy-Bart Stan, Sean Warnick, Jorge Gonçalves*

16.30 – 17.00

MAPK Module: Biological Basis, Structure, Mathematical Model and Dynamical Analyse  
*Nataša A. Kablar*

17.00 – 17.30

Estimation of Efficacy of HIV Nucleoside-Analogue Reverse Transcriptase Inhibitor (AZT) via Stochastic Modeling  
*Samira Khalili, James M. Monaco, Antonios Armaou*

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### Stochastic Control (Regular Session)

**Room 13****Chair:** *Alexander Yu. Mazurov*

15.30 – 16.00

Risk-Sensitive Dissipativity and Relevant Control Problems  
*Alexander Yu. Mazurov, Pavel V. Pakshin*

16.00 – 16.30

Hardy-Schatten Norms of Systems, Output Energy Cumulants and Linear Quadro-Quartic Gaussian Control  
*Igor G. Vladimirov, Ian R. Petersen*

16.30 – 17.00

Anisotropy-Based Bounded Real Lemma  
*Alexander P. Kurdyukov, Eugene A. Maximov, Michael M. Tchaikovsky*

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### Economics and Systems Theory (Regular Session)

**Room 14****Chair:** *Giacomo Como*

15.30 – 16.00

On Robustness Analysis of Large-Scale Transportation Networks  
*Giacomo Como, Ketan Savla, Daron Acemoglu, Munther A. Dahleh, Emilio Frazzoli*

16.00 – 16.30

Combining the Frisch Scheme and Yule-Walker Equations for Identifying Multivariable Errors-in-Variables Models  
*Roberto Diversi, Roberto Guidorzi*

16.30 – 17.00

Recursive Estimation of GARCH Processes  
*László Gerencsér, Zsanett Orlovits, Balázs Torma*

17.00 – 17.30

Stochastic Calculus of Heston's Stochastic-Volatility Model  
*Floyd B. Hanson*

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### Differential Geometric Methods for Computational Engineering Applications – 2 (Invited Session)

**Room 15**

**Organizers:** *Knut Hüper, Christian Lageman*  
**Chair:** *Christian Lageman*

15.30 – 16.00

A Filtering Technique on the Grassmann Manifold  
*Quentin Rentmeesters, Pierre-Antoine Absil, Paul van Dooren*

16.00 – 16.30

Rotation Averaging and Weak Convexity  
*Richard Hartley, Jochen Trumppf, Yuchao Dai*

16.30 – 17.00

On the Computation of Means on Grassmann Manifolds  
*Knut Hüper, Uwe Helmke, Sven Herzberg*

17.00 – 17.30

Joint Subspace Intersections as a Fitting Problem  
*Christian Lageman, Knut Hüper*