<table>
<thead>
<tr>
<th>Room</th>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>1</td>
<td>08:40</td>
<td>Opening Ceremony Plenary Lecture: Béla Bollobás</td>
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<tr>
<td>2</td>
<td>10:30</td>
<td>Stochastic Model Predictive Control</td>
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<tr>
<td>3</td>
<td>10:30</td>
<td>Information and Markov Dynamics</td>
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<td>4</td>
<td>10:30</td>
<td>Continuous-Time Model Identification</td>
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<td>Filtering, Estimation and Control</td>
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<td>Real Algebraic Geometry and Applications – 1</td>
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<tr>
<td>8</td>
<td>10:30</td>
<td>Systems Theory and the Economics of Pricing in New Markets</td>
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<tr>
<td>9</td>
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<td>Communication</td>
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<td>10</td>
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<td>Signal Processing</td>
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<td>11</td>
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<td>Piece-Wise Affine Systems</td>
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<td>Switched Systems</td>
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<td>13</td>
<td>10:30</td>
<td>Advanced Linear Algebra – 1</td>
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<tr>
<td>15</td>
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<td>Non-Linear Dynamics</td>
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<tr>
<td>16</td>
<td>10:30</td>
<td>New Results on Computation and Control</td>
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<td>17</td>
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<td>Interpolation and Approximation in Linear Systems – 1</td>
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<td>18</td>
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<td>Interpolation and Approximation in Linear Systems – 2</td>
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<tr>
<td>19</td>
<td>10:30</td>
<td>Linear Stochastic Systems, the White Noise Space, and Related Topics</td>
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<tr>
<td>20</td>
<td>10:30</td>
<td>Passive Network Synthesis</td>
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<tr>
<td>21</td>
<td>10:30</td>
<td>LDPC and Applications</td>
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<tr>
<td>22</td>
<td>10:30</td>
<td>New Mathematical Methods in Multidimensional Systems Theory – 1</td>
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<tr>
<td>23</td>
<td>10:30</td>
<td>Recent Developments in Multidimensional Systems, Control and Signals –</td>
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</tbody>
</table>

**Room 1**:
- **08.40 – 10.00**: Opening Ceremony Plenary Lecture: Béla Bollobás
- **10.30 – 12.30**: Stochastic Model Predictive Control

**Room 2**:
- **10.30 – 12.30**: Information and Markov Dynamics
- **14.00 – 15.00**: Semiplenary Lecture: Manfred Deistler

**Room 3**:
- **10.30 – 12.00**: Observers
- **15.30 – 17.30**: PDE Systems

**Room 4**:
- **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

**Room 6**:
- **10.30 – 12.30**: Real Algebraic Geometry and Applications – 1
- **15.30 – 17.30**: Systems Theory and the Economics of Pricing in New Markets

**Room 7**:
- **10.30 – 12.30**: Graph Processes
- **15.30 – 17.00**: Biological Networks

**Room 8**:
- **10.30 – 12.30**: Communication
- **15.30 – 17.00**: Signal Processing

**Room 9**:
- **10.30 – 12.30**: Piece-Wise Affine Systems
- **15.30 – 17.30**: Switched Systems

**Room 10**:
- **10.30 – 12.30**: Advanced Linear Algebra – 1
- **15.30 – 17.30**: Advanced Linear Algebra – 2

**Room 11**:
- **10.30 – 12.30**: Non-Linear Dynamics
- **15.30 – 17.30**: New Results on Computation and Control

**Room 12**:
- **10.30 – 12.30**: Interpolation and Approximation in Linear Systems – 1
- **15.30 – 17.30**: Interpolation and Approximation in Linear Systems – 2

**Room 13**:
- **10.30 – 12.30**: Linear Stochastic Systems, the White Noise Space, and Related Topics
- **15.30 – 17.00**: Passive Network Synthesis

**Room 14**:
- **10.30 – 12.30**: LDPC and Applications
- **14.00 – 15.00**: Semiplenary Lecture: Kenji Kashima

**Room 15**:
- **10.30 – 12.30**: 2D Systems
- **14.00 – 15.00**: Semiplenary Lecture: George Weiss

**Room 16**:
- **10.30 – 12.30**: Continuous-Time Model Identification

**Room 17**:
- **10.30 – 12.30**: New Mathematical Methods in Multidimensional Systems Theory – 1

**Room 18**:
- **10.30 – 12.30**: Recent Developments in Multidimensional Systems, Control and Signals – Theory and Applications – 1
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<thead>
<tr>
<th>Room</th>
<th>09.00 – 10.00</th>
<th>10.30 – 12.30</th>
<th>14.00 – 15.00</th>
<th>15.30 – 17.30</th>
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<tr>
<td>1</td>
<td>Plenary Lecture: In memory of Christopher I. Byrnes</td>
<td>Distributed Parameter Systems I: System Structure</td>
<td>Semiplenary Lecture: Marco C. Campi</td>
<td>Distributed Parameter Systems II: System Theoretical Properties</td>
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<td>10.30 – 12.30</td>
<td>Probabilistic Methods</td>
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<td>Behaviors</td>
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<td>10.30 – 12.30</td>
<td>Sigma-Delta Modulators</td>
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<td>6</td>
<td>10.30 – 12.30</td>
<td>Noncommutative Rational Functions and Noncommutative Convexity – 1 (Mini-Course)</td>
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<td>Multi-Agent Systems</td>
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<td>Recent Developments in Multidimensional Systems, Control and Signals – Theory and Applications – 2</td>
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<td>Stability and Switching</td>
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<td>Algebraic Structures – 1</td>
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<td>Mechanical Systems</td>
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<td>Basic and Recent Results on Quantized Control</td>
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<td>13</td>
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<td>Moment Problems, Maximum Entropy, and Covariance Extension</td>
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<td>Control of Distributed Stochastic Systems</td>
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<td>Codes and Rings</td>
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<td>Crypto and Applications</td>
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<td>Max-Plus, Tropical and Idempotent Methods in Control – 1</td>
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Program at a Glance: Tuesday, 6 July

regular session

invited session
Program at a Glance: Wednesday, 7 July

<table>
<thead>
<tr>
<th>Room</th>
<th>Time</th>
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<tr>
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<td>09.00 – 10.00</td>
<td>Plenary Lecture:</td>
<td>Heide Glüsing-Lürssen</td>
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<td>10.30 – 11.30</td>
<td>Semiplenary Lecture:</td>
<td>Vivek S. Borkar</td>
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<td>2</td>
<td>11.30 – 12.30</td>
<td>Distinguished Lecturer:</td>
<td>László Lovász</td>
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<td>4</td>
<td>10.30 – 11.30</td>
<td>Semiplenary Lecture:</td>
<td>Raimund Ober</td>
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<td>10.30 – 11.30</td>
<td>Semiplenary Lecture:</td>
<td>Hitay Özbay</td>
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<td>09.00 – 10.00</td>
<td>Plenary Lecture: Joseph A. Ball</td>
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<td>The Semigroup Approach to DPS</td>
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<td>Riccati and Sylvester-Equations</td>
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<td>Port-Hamiltonian Systems</td>
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<td>13</td>
<td>10.30 – 12.30</td>
<td>Algebraic Systems Theory, Behaviors, and Codes: Recent Approaches to New System Classes</td>
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<td>14</td>
<td>10.30 – 12.30</td>
<td>Geometric Control Theory for Linear Systems: 1</td>
<td>(Mini-Course)</td>
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# Program at a Glance: Friday, 9 July

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<th>Time</th>
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<tr>
<td>1</td>
<td>09.00 – 10.00</td>
<td>Plenary Lecture: Hidde de Jong</td>
<td>10.30 – 12.30</td>
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<td>14.00 – 15.00</td>
<td>Distributed Parameter Systems III: Optimal Control</td>
<td>15.30 – 17.30</td>
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<td>10.30 – 12.30</td>
<td>Distributed Parameter Systems III: Optimal Control</td>
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<td>14.00 – 15.00</td>
<td>Semiplenary Lecture: Ramon van Handel</td>
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<td>10.30 – 12.30</td>
<td>Realization and Information</td>
<td>Room 2</td>
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<td>14.00 – 15.00</td>
<td>New Paradigms for Control</td>
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<td>10.30 – 13.00</td>
<td>Analysis of Physical Systems</td>
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<td>14.00 – 15.00</td>
<td>Electrical Circuits</td>
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<td>5</td>
<td>10.30 – 12.30</td>
<td>Behavioral Systems and Control Theory</td>
<td>Room 4</td>
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<td>15.30 – 17.30</td>
<td>Shadows of Multidimensionality: Multidimensional Systems with Applications to 1-D Systems – 1</td>
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<td>10.30 – 12.30</td>
<td>Shadows of Multidimensionality: Multidimensional Systems with Applications to 1-D Systems – 1</td>
<td>Room 5</td>
<td>7</td>
<td>15.30 – 17.30</td>
<td>Consensus and Games</td>
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<td>10.30 – 12.30</td>
<td>Systems on Graphs – Consensus</td>
<td>Room 6</td>
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<td>15.30 – 17.30</td>
<td>Robust Convex Control</td>
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<td>Model Reduction</td>
<td>Room 7</td>
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<td>15.30 – 17.30</td>
<td>Networked Control – 2</td>
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<td>Room 8</td>
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<td>15.30 – 17.30</td>
<td>Robust Control</td>
<td>Room 8</td>
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<td>10.30 – 12.00</td>
<td>Analytical Methods</td>
<td>Room 9</td>
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<td>15.30 – 17.30</td>
<td>Quantum Systems and Control</td>
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<td>Quantum Systems</td>
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<td>15.30 – 17.30</td>
<td>Systems Biology</td>
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<td>Applications in Medicine</td>
<td>Room 11</td>
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<td>15.30 – 17.00</td>
<td>Stochastic Control</td>
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<td>Control for Markov and Nonlinear Markov Processes</td>
<td>Room 12</td>
<td>14</td>
<td>15.00 – 15.00</td>
<td>Economics and Systems Theory</td>
<td>Room 12</td>
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<td>14</td>
<td>10.30 – 12.30</td>
<td>Algebraic Systems Theory, Behaviors, and Codes: Design, Analysis, and Decoding of Convolutional Codes</td>
<td>Room 13</td>
<td>15</td>
<td>15.00 – 15.00</td>
<td>Differential Geometric Methods for Computational Engineering Applications – 1</td>
<td>Room 13</td>
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## Detailed Program Listing

**Monday, 5 July**

### Opening Ceremony

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<tbody>
<tr>
<td>08.40 – 09.00</td>
<td>Welcome Addresses</td>
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### Plenary Lecture

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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>09.00 – 10.00</td>
<td>Models of Real-World Networks: Inhomogeneous Random Graphs and Convergent Graph Sequences by Béla Bollobás</td>
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### Stochastic Model Predictive Control (Invited Session)

<table>
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<tbody>
<tr>
<td>10.30 – 11.00</td>
<td>Stochastic Tube MPC with State Estimation by Mark Cannon, Qifeng Cheng, Basil Kouvaritakis, Saša V. Raković</td>
</tr>
<tr>
<td>11.00 – 11.30</td>
<td>Constrained Control Design – A Simulation-Based Scenario Approach by Maria Prandini and Marco C. Campi</td>
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### Observers (Regular Session)

#### Room 3

<table>
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<th>Event</th>
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<tbody>
<tr>
<td>10.30 – 11.00</td>
<td>Conditioned-Invariant Polyhedral Sets for Observers with Error Limitation in Discrete-Time Descriptor Systems by José Mario Araújo, Péreicles Rezende Barros, Carlos Eduardo Trabuco Dórea</td>
</tr>
<tr>
<td>11.00 – 11.30</td>
<td>Output Feedback Observers and Control under Non-Gaussian Types of Noise by Alexander B. Kurzhanski, Irina A. Digalova</td>
</tr>
<tr>
<td>11.30 – 12.00</td>
<td>Internal Observers for Linear Systems with Time-Varying Delays by Mustapha Ait Rami, Jens Jordan, Michael Schönlein</td>
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### Algebraic Systems Theory, Behaviors, and Codes: Stabilization and Interconnection (Invited Session)

<table>
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<th>Event</th>
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<tr>
<td>10.30 – 11.00</td>
<td>A Behavioral Approach to Modeling Electrical Circuits by Jan C. Willems</td>
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<tr>
<td>11.00 – 11.30</td>
<td>The Design and Parametrization of Stabilizing Feedback Compensators via Injective Cogenerator Quotient Signal Modules by Ingrid Blumthaler and Ulrich Oberst</td>
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<td>11.30 – 12.00</td>
<td>Control of 2D Behaviors by Partial Interconnection by Paula Rocha, Diego Napp Avelli</td>
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### Information and Markov Dynamics (Regular Session)

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<td>10.30 – 11.00</td>
<td>Finite Memory Estimation of Infinite Memory Processes by Imre Csiszár and Zsolt Talata</td>
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<td>11.00 – 11.30</td>
<td>The Information Inequality on Function Spaces Given a Singular Information Matrix by Tzvetan Ivanov, Pierre-Antoine Absil, Michel Gevers</td>
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<tr>
<td>11.30 – 12.00</td>
<td>Minimum Relative Entropy State Transitions in Linear Stochastic Systems: the Continuous Time Case by Igor G. Vladimirov and Ian R. Petersen</td>
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### Real Algebraic Geometry and Applications – 1 (Invited Session)

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<td>Time</td>
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</table>
| 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* |

**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*

**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*

**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*

**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*

**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

### 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 Galkowski, Olivier Bachelier, Eric Rogers, James Lam

- **11.30 – 12.00**  
  2D Systems with Controls and Some their Applications  
  Dorota Bors, Stanislaw Walczak

- **12.00 – 12.30**  
  Fractional Differential Repetitive Processes  
  Dariusz Idczak, Rafał Kamocki

### 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 Zumbrägel, 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

### 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:** João R. Branco

**15.30 – 16.00**  
Integro-Differential IBVP versus Differential IBVP: Stability Analysis  
João R. Branco, José Augusto Ferreira

**16.00 – 16.30**  
Distributed Source Identification for Wave Equations: an Observer-Based Approach  
Marianne Chapouly, Maziyar 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-Lürsen, Eva Zerz  
**Chair:** Heide Glüsing-Lürsen

**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 Díaz 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  
Tomás 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

**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

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

**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. Șicleru, Bogdan Dumitresco

**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

**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 x 3 Reciprocal Inner Matrices
David Avanesoff, Martine Olivi, Fabien Seyfert

**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
Tuesday, 6 July

**New Mathematical Methods in Multidimensional Systems Theory – 1**
*(Invited Session)*

**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)*

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

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-Perdicoúlis, 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 Gałkowski, 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
<table>
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<tr>
<th>Time</th>
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| 10.30 – 11.00 | **Behaviors** (Regular Session)  
Chair: Paolo Rapisarda  
State Maps from Bilinear Differential Forms  
Paolo Rapisarda, Arjan J. van der Schaft  
On the Problem of Model Reduction in the Gap Metric  
Mark Mutsaers, Siep Weiland  
The Behavioral Approach to Simultaneous Stabilization  
Osamu Kaneko  
11.30 – 12.00 | Deterministic Identification of Lossless and Dissipative Systems  
Paolo Rapisarda, Harry Trentelman  
12.00 – 13.00 | Passive Behaviors and their Passive State/Signal Realizations in Continuous Time  
Damir Z. Arov, Mikael Kurula, Olof J. Staffans |
| 10.30 – 11.00 | **Multi-Agent Systems** (Regular Session)  
Chair: Magnus Egerstedt  
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 |
| 10.30 – 11.00 | **Sigma-Delta Modulators** (Invited Session)  
Organizer: Paolo Rapisarda  
Chair: Paolo Rapisarda  
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 |
| 10.30 – 11.00 | **Recent Developments in Multidimensional Systems, Control and Signals – Theory and Applications – 2** (Invited Session)  
Organizer: Krzysztof Galkowski  
Chair: Krzysztof Galkowski  
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 Galkowski, Biswa Datta  
12.00 – 12.30 | Approximation of ND Systems with Multiple Dependent Variables  
Femke van Belzen, Siep Weiland |
| 10.30 – 11.00 | **Noncommutative Rational Functions and Noncommutative Convexity – 1** (Mini-Course)  
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  
| 10.30 – 11.00 | **Stability and Switching** (Regular Session)  
Chair: Vahid S. Bokharaie  
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 |

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Tuesday, 6 July

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

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

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
Cyclodiissipativity and Power Factor Improvement for Full Nonlinear Loads
Dunstano del Puerto-Flores, Romeo Ortega, Jacquelyn 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

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 SpiderCrate: 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

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

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 $\mathbb{Z}_4$-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

**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 Cséri, Zalán Szakolczy, George Kamps*  
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 Trumpf  
**Chair:** Jochen Trumpf  
15.30 – 16.00  
Functional T-Observers  
*Ingrid Blumthaler*  
16.00 – 16.30  
H₂ 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 Trumpf, 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 Bligheovsky*  
16.00 – 16.30  
Truncated Norms and Limitations on Signal Reconstruction  
*Gjerrit Meinsma, Hanumant Singh Shekhawat*  
16.30 – 17.00  
On the Consistency of L²-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*
### Delay Systems  
*(Regular Session)*

**Chair:** Lars Naujok  
15.30 – 16.00  
Lyaunov-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  
Tomomi Hagiwara

16.30 – 17.00  
Tomomi Hagiwara, Takayuki Inui

17.00 – 17.30  
Well-Posedness of Problems Involving Time-Varying Delays  
Erik I. Verriest

### Basic and Recent Results on Quantized Control  
*(Invited Session)*

**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

### Control of Distributed Stochastic Systems  
*(Invited Session)*

**Organizers:** Jan H. van Schuppen, Charalampos D. Charalambous  
**Chair:** Jan H. van Schuppen

15.30 – 16.00  
Decentralized Detection with Signaling  
Ashutosh Nayar, 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  
Charalampos D. Charalambous, Christos K. Kourtellaris, Photos A. Stavrou

17.00 – 17.30  
Control of the Observation Matrix for Control Purposes  
René K. Boel, Jan H. van Schuppen

### Crypto and Applications  
*(Invited Session)*

**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 Morgan, 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. Garcia-Rubira, Juan A. Lopez-Ramos

### Max-Plus, Tropical and Idempotent Methods in Control – 2  
*(Invited Session)*

**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 L²-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-Lürrsen

**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

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**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 Töth, 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, Yoshih 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
<table>
<thead>
<tr>
<th>Session Title</th>
<th>Room</th>
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<th>Talks</th>
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| Optimization Methods in Systems and Control      | Room 4 | 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 Freuer, 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 |
| Riccati and Sylvester-Equations                  | Room 8 | 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 Shingin, Yoshito Ohta  
11.30 – 12.00  
An Explicit Dynamic Programming Solution for a Decentralized Two-Player Optimal Linear-Quadratic Regulator  
John Swigart, Sanjay Lall  
12.00 – 12.30  
A State-Space Solution of Bilateral Diophantine Equations over $\mathcal{RH}_\infty$  
Maxim Kristalny, Leonid Mirkin |
| Real Algebraic Geometry and Applications – 2     | Room 6 | 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 |
| Network Stability                                | Room 9 | 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 |
| The Semigroup Approach to DPS                    | Room 7 | 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 |
| Stability                                        | Room 10 | 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 |
Thursday, 8 July

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

**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, Jacquelien 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, Jacquelien M.A. Scherpen

**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

**Algebraic Systems Theory, Behaviors, and Codes: Recent Approaches to New System Classes**
(Invited Session) Room 14

*Organizers:* Eva Zerz, Heide Glüsing-Lürrsen

*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

**Geometric Control Theory for Linear Systems – 1**
(Mini-Course) Room 15

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

*Chair:* Michael A. Demetriou

14.00 – 15.00
Dynamic “Magic” Graphs in Cooperative Networked Systems
John S. Baras

**Semiplenary Lecture** Room 1

*Chair:* Tryphon T. Georgiou

14.00 – 15.00
Orthogonal Rational Functions and Non-Stationary Stochastic Processes: a Szegö Theory
Laurent Baratchart
(based on joint work with L. Golinskii, S. Kupin, M. Olivi and V. Lunot)
### Detailed Program Listing

#### 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  
Kazu Yoshi 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 Hovareshi

16.30 – 17.00  
Spread of Epidemics in Time-Dependent Networks  
Vahid S. Bokharaei, Oliver Mason, Fabian Wirth

17.00 – 17.30  
On Robust Stability of the Belief Propagation Algorithm for LDPC Decoding  
Björn S. Rüffer, 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 Proisocimi

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  

**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

**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**

**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

**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 Dubljevic

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*

### 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*

### 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*
 Detailed Program Listing

**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 Johansson, Andrey Ghulchak, Anders Rantzer, Bo Bernhardsson*

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**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*

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**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*

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**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*

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**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*

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**Algebraic Systems Theory, Behaviors, and Codes: Design, Analysis, and Decoding of Convolutional Codes**  
*(Invited Session)*

**Room 14**

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

10.30 – 11.00
Decoding of a Class of Convolutional Codes
*Heide Glüsing-Lürrsen, 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

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

Semiplenary Lecture
Room 1

Chair: Tyrone E. Duncan
14.00 – 15.00
Nonlinear Filtering and Systems Theory
Ramon van Handel

Semiplenary Lecture
Room 14

Chair: Clyde F. Martin
14.00 – 15.00
Controllability of Networked Systems
Magnus Egerstedt

Semiplenary Lecture
Room 15

Chair: Doreen Thomas
14.00 – 15.00
Quantum Linear Systems Theory
Ian R. Petersen

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
Nicola Cindea, Sorin Micu, Marius Tucsnak
16.00 – 16.30
Robust Output Controller Design Based on Adaptive Model Reduction for Parabolic PDE Systems
Sivakumar Pitchaih, 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

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

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

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
Alvar 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. Kaluzhnyi-Verbovetskyi*

**16.00 – 16.30**
Overdetermined Systems on Lie Groups and Their Transfer Functions
*Eli Shamovich*

**16.30 – 17.00**
On the Class RSI of Rational Schur Functions Intertwining Solutions of Linear Differential Equations
*Dmitry S. Kaluzhnyi-Verbovetskyi*, *Andrey Meintrup*, *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 Ghalchak*

**16.30 – 17.00**
Treatment of Systems Nonlinearities by a Multiplier Method
*Eva Gyurkovics, Tibor Takács*

**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 H2/H∞ 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

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
Natasa 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

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

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