5th International Scientific Conference on Physics and Control

Physcon 2011

León, Spain

September 5-8, 2011

Program

Junta de Castilla y León

MINISTERIO DE CIENCIA E INNOVACIÓN

universidad de León

SEMA

Roger Goulart

EPS

Program

Plenary Lectures

1. Plenary Lecture 1: Partial control of chaotic systems, James A. Yorke
2. Plenary Lecture 2: Quantum optimal control for quantum information processing, Tommaso Calarco
3. Plenary Lecture 3: Coupling of Eigenvalues with Applications in Physics and Mechanics, Alexander P. Seyranian
4. Plenary Lecture 4: Set-valued dynamics in problems of mathematical theory of control processes and state estimation, Tatiana F. Filippova
5. Plenary Lecture 5: Symmetry principles and applications in optimal control of closed and open quantum systems, Thomas Schulte-Herbrueggen
6. Plenary Lecture 6: Bringing quantum jumps under control, Howard M. Wiseman
7. Plenary Lecture 7: Convergence in stochastically switched dynamical systems, Martin Hasler

Invited Lectures

1. Invited Lecture 1: A variant of self-organizing map (SOM) for monitoring power consumption, Serafín Alonso
2. Invited Lecture 2: Assignable polynomials to a multi-input non-controllable system over a Bezout domain, Miguel Carriegos Vieira
3. Invited Lecture 3: Optimal control of multilink systems in a fluid, Felix L. Chernousko
4. Invited Lecture 4: Optimal harvesting problem in a simple age structure population, Efim Frisman
5. Invited Lecture 5: Spectrogram analysis using manifold learning, Francisco Javier García Fernández
6. Invited Lecture 6: Phase lead synchronization of chaotic oscillators, Kestutis Pyragas
7. Invited Lecture 7: Partial Control of Chaotic Transients and Escape Times, Miguel A. F. Sanjuán

Invited Minisymposia

1. Invited MS1: Control and synchronization of chaotic and complex systems
2. Invited MS2: Stability Problems with Applications in Physics and Mechanics
3. Invited MS3: Noise and Oscillations in Biological Systems
4. Invited MS4: Control of renewable energy generation systems
5. Invited MS5: Algebra and Its Applications in Physics and Control. In honor to Tomás Sánchez-Giralda
6. Invited MS6: Control of Networks

7. Invited MS7: Industrial applications of dimensionality reduction techniques

Minisymposia

1. MS1: Hybrid systems. Some aspects of control and stability
2. MS2: Control Problems: from Theory to Applications
3. MS3: Control of Cardiac Arrhythmias

Contributed Sessions

1. CS1: Stability in Mechanics and Similar Analysis Problems
2. CS2: Nonlinear control
3. CS3: Synchronization
4. CS4: Linear Systems
5. CS5: Nonlinear dynamics
6. CS6: Modeling and optimisation
7. CS7: Numerical methods

Schedule

	Sunday 4th	Monday 5th	Tuesday 6th	Wednesday 7th	Thursday 8th
8:00		Registration	Registration	Registration	
9:00		Opening Ceremony including Plenary Lecture 1			
9:30			Plenary Lecture 3	Plenary Lecture 5	MS2 & CS6
10:30		Plenary Lecture 2	Plenary Lecture 4	Plenary Lecture 6	MS2 & CS6
11:30		Coffee break			
12:00		Invited MS1,6 & MS1 Invited MS1 including Invited Lecture 7	Invited MS3,5,7 & CS1 Invited MS5 In Honor to **Tomás Sánchez-Giralda** including Invited Lecture 2 Invited MS7 including Invited Lecture 1,5	Invited MS1,2,3 & Invited Lectures 4,6	Closing Ceremony including Plenary Lecture 7
13:45		Lunch break			
15:00		Invited MS1,2 & MS3	Invited MS1,5 & MS2 & CS2 MS2 including Invited Lecture 3	Invited MS1,4 & MS2 & CS4	
16:45		Coffee break			
17:00	Registration	Poster Session & MS3			
17:15	Registration	Poster Session & MS3	Invited MS6,5 & MS2 & CS3	MS2 & CS5,6,7	
18:00	Registration	IPACS Meeting	Invited MS6,5 & MS2 & CS3	MS2 & CS5,6,7	
19:00	Registration & reception		Social Event		
20:00	Registration			Conference Banquet	

Sunday, September 4, 2011

17:00 **Registration** Reponsible M^{a} Isabel Domíguez García

Registration will be possible on Sunday afternoon. There will also be a reception on Sunday evening

Monday, September 5, 2011

Schedule			
Monday September 5, 2011			
8:00	Registration		
9:00	Opening Ceremony including Plenary Lecture 1: **James A. Yorke**		
10:30	Plenary Lecture 2: **Tommaso Calarco**		
11:30	Coffee break		
12:00	Invited MS1 including Invited Lecture 7: **Miguel A. F. Sanjuán**	Invited MS6	MS1
13:45	Lunch break		
15:00	Invited MS1	Invited MS2	MS3
16:45	Coffee break		
17:00	Poster session		MS3
18:00	IPACS meeting		

8:00 Registration

9:00 Opening Ceremony & Plenary Lecture 1

James A. Yorke

Partial control of chaotic systems

Room ?

Chair: Miguel A. F. Sanjuan

10:30 Plenary Lecture 2

Tommaso Calarco

Quantum optimal control for quantum information processing

Room ?

Chair: Celso Grebogi

11:30 Coffee break

12:00 Invited MS 1,6 & MS 1

Invited MS 1

Room ?

Chair: Miguel A. F. Sanjuán

1. **Invited Lecture:** Partial control of chaotic transients and escape times, **Miguel A. F. Sanjuán**.
2. Efficient methods for parameter and state estimation, **Ulrich Parlitz**.
3. Nonlinear behavior of the mass spring model with non-smooth stiffness, **Jesús M. Seoane**, Samuel Zambrano, Miguel A. F. Sanjuán, Grzegorz Litak.

4. Controlling Chaos in a Synchronized Complex Network, Elbert E. N. Macau, Luiz Felipe R. Turci.
5. Periodic forcing on the oscillatory behavior of a reaction simulated by Monte Carlo, F. E. Gálvez, M. C. Lemos, **A. Córdoba**.

Invited MS 6

Room ?

Chair: Alexander Fradkov

1. Synchronized behavior of a random network of logistic maps controlled by delay heterogeneity, **Cristina Masoller**, F. M. Atay.
2. Single impulsive stabilization of complex dynamical networks, **Jianquan Lu**, Jürgen Kurths.
3. Nonstationary consensus problem in networks with imperfect information and delay, **Natalia Amelina**, Alexander Fradkov.
4. Network analysis of spatially extended systems, **Ulrich Parlitz**, Alexander Schlemmer, Sebastian Berg, Stefan Luther.
5. Zero-lag and cluster synchronization in delay-coupled FitzHugh-Nagumo networks, **Eckehard Schöll**, Judith Lehnert, Thomas Dahms, Philipp Hövel.
6. Adaptive synchronization for delay-coupled networks of Stuart-Landau oscillators, Anton Selivanov, Judith Lehnert, Thomas Dahms, Philipp Hoevel, Alexander Fradkov, **Eckehard Schoell**.

MS 1

Room ?

Chair: M. D. Magret

1. Reachability of Switched Linear Systems with a tree like structure, Miguel Carriegos Vieira, **Hector Díez-Machío**.
2. Switched linear systems. Geometric approach, M.Dolors Magret, **Eulalia Montoro**.
3. Switched singular linear systems and reachability, **Josep Clotet**, M.Dolors Magret.
4. Reachability of second-order switched linear systems, Josep Clotet, **M. Isabel García-Planas**, M. Dolors Magret.
5. Control of state-dependent impulse systems, Elena Goncharova, **Maxim Staritsyn**.

15:00 Invited MS 1,2 & MS 3

Invited MS 1

Room ?

Chair: Wei Lin

1. Search for optimal desynchronizing coordinated reset stimulation, **Oleksandr V. Popovych**, Borys Lysyansky, Peter A. Tass.
2. The problem of multivalued dynamical systems in economics: some tools and solutions, **Judy Kennedy**, Brian Raines, David Stockman, James Yorke.
3. Asymmetric periodic orbits in hamiltonians with square symmetry, **Fernando Blesa**, Roberto Barrio.
4. Synchronization of map-based neurons, **J. Used**, A. Wagemakers, M. A. F. Sanjuán.

5. Chaos in multi-valued dynamical systems, Zdenek Beran, **Sergej Celikovsky**.
6. Towards a general theory of covariant Lyapunov vectors: mathematical background and a new effective numerical method. Pavel V. Kuptsov, **Ulrich Parlitz**.

Invited MS 2

Room ?

Chair: Alexander P. Seyranian

1. Localization of the limit set for a class of nonlinear distributed parameter systems, **Alexander Zuyev**.
2. Solving disturbance decoupling for singular systems by p&d-feedback and p&d-output injection, **M. Isabel García-Planas**.
3. On Stability of Coplanar Libration Points in the Generalized Restricted Circular Tree-Bodies Problem, Vladimir V. Beletsky, **Alexander V. Rodnikov**.
4. On one method if analysis of Lagrange systems, **Larisa A.Burlakova**, Valentin D. Irtegov
5. Stability conditions for sample-data systems with variable sampling and delay, **Nataliya Sedov**.

MS 3

Room ?

Chair: Roman Grigoriev

1. Supernormal conduction in cardiac tissue promotes concordant alternans and action potential bunching, **Blas Echebarria**, Georg Röder, Harald Engel, Jörn Davidsen, Markus Bär.
2. Reconstruction of unmeasured quantities in models of cardiac action potential dynamics, **Laura Muñoz**, Niels Otani.
3. Model-based control of cardiac alternans in a model of Purkinje fibers, Alejandro Garzón, **Roman O. Grigoriev**.
4. Low-Energy Control of Cardiac Dynamics: Virtual Electrode Formation at Tissue Boundaries. **Philip Bittihn**, Daniel Hornung, Stefan Luther.
5. Synchronization and termination of cardiac arrhythmias using low energy far field stimulation. **F. H. Fenton**, S. Luther, E. M. Cherry, P. Bittihn, N. Otani, D. Hornung, A. Squires E. Bodenschatz, R. Gilmour Jr.
6. Application of bidomain model to the study of defibrillation in realistic heart ventricles, **Jean Bragard**, Flavio Fenton, Elizabeth Cherry.
7. Spatiotemporal chaos due to spiral waves core expansion and its elimination in excitable media, **H. Sabbagh**.
8. Low energy stimuli for spiral wave dynamics control, Jorge Castro, Matías Rafti, Alberto Albesa, Jorge Carballido-Landeira, Flavio H. Fenton, **Alberto P. Muñuzuri**.

17:00 Poster Session

Room ?

Chair: Maxim V. Shamolin

1. Attractor Localization of Dynamical “Solar Wind-Magnetosphere-Ionosphere” Model, Kuznetsov N.V., Leonov Gennady A., Seledzhi S.M., Starkov K.E.

2. Hovering and Forward Flight Control of a Ducted Fan Unmanned Aerial Vehicle Based on PID Control, Mohammad Saleh Ahmadi, Hamid Hajkarami, Afshin Manouchehri.
3. Surface topography evolution under the ion bombardment, A. N. Kulikov, D. A. Kulikov, A. V. Metlitskaya, A. S. Rudy.
4. Optimal production control method for tandem manufacturing lines, K.K. Starkov, V. Feoktistova, A.Y. Pogromsky, A. Matveev, J.E. Rooda.
5. Some means for informational support of the airliner pilot, Andrey M. Shevchenko.
6. Cases of complete integrability in transcendental functions in dynamics and certain invariant indices, Maxim V. Shamolin.
7. Transient processes in the duffing oscillator under harmonic exitation of variable frequency and Landau-Zenner tunneling, Leonid I. Manevitch, Elina L. Manevitch.
8. Estimation of Viscous Friction Parameters in Acrobot, Kamil Dolinskú, Sergej Čelikovský.
9. Continuum mechanical description of group robots, Teturo Itami.
10. Stabilizing saddle steady states of dynamical systems with partially uncertain model by means of proportional feedback, Arunas Tamaševičius, Ms. Elena Tamaševičiutė.
11. The hardware-software complex for teaching of fault-tolerant systems developers, Anatoliy S. Kulik, A.G. Chukhray, Juan Pablo M. Bastida.
12. Fault detection over sensor networks with distributed Kalman and Particle Filtering, Gerasimos G. Rigatos.
13. Limit cycle bifurcations of the classical Lienard polynomial system, Valery A. Gaiko.
14. Stellar-inertial Attitude Navigation of the Large-scale Information Satellites, Yevgeny Somov, Sergey Butyrin, Sergey Somov.
15. Relationship with self-organization of the photoluminescence of sol-gel phosphor, Nina M.Sergeeva, Natalia M.Shmidt.
16. Synchronization of two air bubble trains in viscous fluids, José C. Sartorelli, Felipe A. C. Pereira, Eduardo Colli.
17. Sea plane landing control by employing measured data of irregular sea waves. Alexander Nebylov, Vladimir Nebylov.
18. Experimental Confirmation of 3 and 4 Scroll Attractors from Laser Chua's Circuit, Fadhil Rahma Tahir.
19. Design of the organic current injection phase voltage inverter for metal air fuel cell off grid power systems, the kernel approach, Anil Bheemaiah.
20. Computer simulation of nonlinear dynamics of air flow in the human respiratory system, G. Lukyanov, A. Voronin, R. Neronov.
21. Control System designing of the Aerial Vehicle with Kalman Filter using the Neural Network for Adjustment of its Parameters, Poniatsky Valerij.
22. Thermoelastic damping in simply supported micro annular plate vibration, Ardeshir Karami mohammadi, Ali Garoosi, Vali Enjilela.
23. The ESA LISA Pathfinder Space-Craft as Dynamical System in Assisted Free-Fall, M. Armano, A. Grynagier, W. Fichter, T. Ziegler, M. Hueller, M Hewitson, P. McNamara.
24. Lyapunov functions in Hausdorff dimension estimates of cocycle attractors, Gennady A. Leonov, Volker Reitmann, Alexander S. Slepukhin.

18:00 IPACS Meeting

Room ?

Tuesday, September 6, 2011

Schedule				
Tuesday September 6, 2011				
8:30	Registration			
9:30	Plenary Lecture 3: **Alexander P. Seyranian**			
10:30	Plenary Lecture 4: **Tatiana F. Filippova**			
11:30	Coffee break			
12:00	Invited MS3	Invited MS5 In Honor to **Tomás Sánchez-Giralda** Invited Lecture 2: **M. Carriegos**	Invited MS7 including Invited Lecture 1: **Serafín Alonso** Invited Lecture 5: **Francisco J. García**	CS1
13:45	Lunch break			
15:00	Invited MS1	Invited MS5	MS2 Invited Lecture 3:**F. Chernousko**	CS2
16:45	Coffee break			
17:15	Invited MS6	Invited MS5	MS2	CS3
19:00	Social Event			

8:30 Registration

9:30 Plenary Lecture 3

Alexander P. Seyranian

Coupling of Eigenvalues with Applications in Physics and Mechanics

Room ?

Chair: M. I. García-Planas

10:30 Plenary Lecture 4

Tatiana F. Filippova

Set-valued dynamics in problems of mathematical theory of control processes and state estimation

Room ?

Chair: Sergej Čelikovský

11:30 Coffee break

12:00 Invited MS 3,5,7, & CS 1

Invited MS 3

Room ?

Chair: Ekkehard Ullner

1. Delayed coupling in multicellular systems: period and stability of the segmentation clock, **Saúl Ares**, Luis G. Morelli, Leah Herrgen, Christian Schröter, Frank Jülicher, Andrew C. Oates.

2. Effect of noise and asymmetry on decision in genetic regulatory networks **Alexey Zaikin**.
3. The Stochastic Multicellular repressilator: A prototype for multi-functional synthetic genetic networks, **Matthew Fryett**, Ekkehard Ullner.
4. Mixed feedback loops greatly improve the adjustability of genetic oscillators, **Ernesto M. Nicola**, Saul Ares, Luis G. Morelli.
5. Stochastic bifurcations in biological systems, **Anna Zakharova**, Aneta Koseska, Jürgen Kurths, Tatyana Vadivasova.

Invited MS 5, In honor to Tomás Sánchez Giralda

Room ?

Chair: Ángel Hermida

1. **Invited Lecture:** Assignable polynomials to a multi-input non-controllable system over a Bezout domain, **Miguel Carriegos**.
2. Feedback classification of single-input systems over von Neumann regular rings, **Andrés Sáez-Schwedt**.
3. Stability of a pipeline hydraulic fluid with one end fixed, **Begoña Mediano-Valiente**, M. Isabel García-Planas.
4. The dynamic feedback equivalence of linear systems over commutative rings as isomorphism of a monoidal category, Miguel V. Carriegos, **M. Trobajo de las Matas**.
5. Output controllability and steady-output controllability analysis of fixed speed, **J.L. Domínguez-García**, M.I. García-Planas.

Invited MS 7

Room ?

Chair: Manuel Domínguez

1. **Invited Lecture:** A variant of self-organizing map (SOM) for monitoring power consumption, **Serafín Alonso**.
2. **Invited Lecture:** Spectrogram analysis using manifold learning, **Francisco Javier García Fernández**.
3. Time series for fault detection in an industrial pilot plant, **A. Morán**, S. Alonso, M. A. Prada, R. García, J. J. Fuertes.
4. Dimensionality reduction for damage detection in engineering structures, **Miguel Ángel Prada**, Antonio Morán, Serafín Alonso, Juan José Fuertes.
5. Visual analysis of residuals from data-based models in complex industrial processes, **Daniel González Ordóñez**, Abel A. Cuadrado, Ignacio Díaz, Francisco Javier García Fernández, Alberto B. Díez, Juan José Fuertes.
6. Visual analysis of electrical power consumption patterns using manifold learning, **Daniel Pérez López**, Ignacio Díaz Blanco, Francisco Javier García Fernández, Pablo Barrientos.

CS 1

Room ?

Chair: M. Montserrat López-Cabeceira

1. On problem of stability with respect to a part of the variables, **Julia G. Martyshenko**, Vladimir I. Vorotnikov.

2. Autoresonance control of nuclear magnetization, **Leonid Kalyakin**, Miniakhat Shamsutdinov.
3. Design of amplitude death in time-delay oscillators coupled by a delayed connection, **Luan Ba Le**, Keiji Konishi, Naoyuki Hara.
4. The Leier Elevator for an Asteroid, **Alexander V. Rodnikov**.

15:00 Invited MS 1,5 MS 2 & CS 2

Invited MS 1

Room ?

Chair: Elbert E. N. Macau

1. Automatic search of extended safe for partial control of chaotic systems, **Juan Sabuco**, Samuel Zambrano, Miguel A.F. Sanjuán
2. Reducing a fluctuation in burst firing of a square-wave burster silicon neuron model, **Takashi Kohno**, Kazuyuki Aihara
3. Predictability through finite time Lyapunov exponents in two coupled systems, **Juan C. Vallejo**, Miguel A.F. Sanjuán.
4. Engineering synchronization of chaotic oscillators, **E.Padmanaban**, Syamal K.Dana.
5. When partial control is applied every k iterations. **Samuel Zambrano**, Juan Sabuco and Miguel A. F. Sanjuán.
6. Occurrence of mass synchronization and control in neuronal populations, **Jane H. Sheeba**, V. K. Chandrasekar, Muthusamy Lakshmanan.

Invited MS 5

Room ?

Chair: Miguel Carriegos

1. Generalized controllability subspaces for time-invariant singular linear systems, **M. Isabel García-Planas**.
2. Output observability of time-invariant singular linear systems, M. Isabel García-Planas, **S. Tarragona**.
3. Reduced minimax filtering by means of Differential-Algebraic equations, Vivien Mallet,**Sergey Zhuk**.
4. Factorization of the transfer matrix of a singular linear systems, M.I. García-Planas, **M.M. López-Cabeceira**.
5. Error correcting codes under linear systems point of view, **L.E. Um**, El M. Mamoun, M. I. García-Planas.

MS 2

Room ?

Chair: Tatiana Filippova

1. **Invited Lecture:** Optimal control of multilink systems in a fluid, **Felix L. Chernousko**.
2. Geometric control approach for the Foucault pendulum, **Felipe Monroy-Perez**, A.Anzaldo-Meneses.
3. A modified Galerkin approach to adaptive control design in heat transfer problems with parameter uncertainties, Vasily V. Saurin, **Georgy V. Kostin**.

4. Movement of a rigid body through the boundary of a viscous media, **Dmitrii S. Zavalishchin**.
5. Design of optimal boundary control for elastic beam motions based on an integrodifferential approach, **Georgy V. Kostin**, Vasily V. Saurin.

CS 2

Room ?

Chair: Mattia Frasca

1. Comparison for two regulation types of growth of a simple age structure population, Efim Frisman, Galina Neverova, **Oksana Revutskaya**.
2. The interplay of physical and chemical factors as a source of luminescent travelling fronts in the H2O2-SCN–OH–Cu2+ oscillatory system, **Marek Orlik**, Albin Wisniewski, Katarzyna Pekala, Rafal Jurczakowski.
3. Mixed-mode and chaotic oscillations via canard explosions in light-emitting diodes, **Marzena Ciszak**, Francesco Marino, Sora F. Abdalah, Kais Al-Naimee, Riccardo Meucci, Tito F. Arecchi.
4. A new discharge management system for the Frascati tokomak upgrade, **Arturo Buscarino**, Luigi Fortuna, Mattia Frasca, Giuseppe Mazzitelli, Maurizio Panella.

17:00 Invited MS 6,5 & MS 2, & CS 3

Invited MS 6

Room ?

Chair: Eckehard Schoell

1. Multiagent network control for the group of UAVs, **Konstantin Amelin**, Oleg Granichin.
2. Adaptive synchronization of networks with bounded disturbances or delays under incompleteness of measurement and control. A.Selivanov, G.Grigoriev, **Alexander Fradkov**.
3. Speed-gradient control of an invariant for multispecies populations, **Irina Pchelkina**, Alexander Fradkov.
4. Analysis of synchronisation in networks with time-delayed coupling, **Yuliya Kyrychko**, Philipp Hoevel, Konstantin Blyuss, Eckehard Schoell.
5. Average consensus in symetric nonlinear multi-agent networks with non.homogeneous delays, **Anton Proskurnikov**.
6. On formulation and solution of a control problem for mine ventilation networks, **Andrey Valuev**.

Invited MS 5

Room ?

Chair: Andrés Sáez-Schwedt

1. A primer on the classification of parametrized families of linear control systems, **R.M. García Fernández**, M. Carriegos Vieira.
2. Improvement in transient response in a multirate control system, **Takao Sato**, Yoshiki Hattori, Nozomu Araki, Yasuo Konishi.
3. On invariants by feedback of a family of linear dynamical systems, **R.M. García Fernández**, M. Carriegos Vieira.

4. Continuous approximation of the complex dynamics of a discontinuous system, **José Castro**, Joaquín Alvarez, Fernando Verduzco.

MS 2

Room ?

Chair: Boris I. Ananiev

1. Design of feedback controls for dynamical systems by using common Lyapunov functions, **Igor M. Ananievski**, Alexander I. Ovseevich.
2. Limit shapes of reachable sets of Singularly perturbed linear systems, **Elena Goncharova**, Alexander Ovseevich.
3. On Lyapunov's direct method in control problems for nonlinear systems, **Alexander S. Andreev**.
4. Birth of the shape of a reachable set, **Elena Goncharova**, Alexander Ovseevich.
5. Strongly and weakly monotone Lyapunov functions and global optimality conditions in control problems, **Vladimir Dykhta**, Stepan Sorokin.
6. Multistability of torus in model of laser with large delay, S. Kaschenko, I. Kaschenko, **E. Grigorieva**.

CS 3

Room ?

Chair: M. Teresa Trobajo de las Matas

1. Long-range synchronization and rhythmic patterns control via coupling delay, **Vladimir Klinshov**, Vladimir Nekorkin.
2. Phase entrainment in coupled time-delay systems, **Senthilkumar D. V.**, Kurths J.
3. Desynchronization of coupled oscillators using chaos, G. Mykolaitis, **E. Tamaševičius**, A. Tamaševičius, R. Stoop.

Wednesday, September 7, 2011

Schedule				
Wednesday September 7, 2011				
8:30	Registration			
9:30	Plenary Lecture 5: **Thomas Schulte-Herbrueggen**			
10:30	Plenary Lecture 6: **Howard M. Wiseman**			
11:30	Coffee break			
12:00	Invited MS1	Invited MS2	Invited MS3	Invited Lectures 4,6: **Efim Frisman** **Kestutis Pyragas**
13:45	Lunch break			
15:00	Invited MS1	Invited MS4	MS2	CS4
16:45	Coffee break			
17:15	CS5	CS6	MS2	CS7
20:00	Conference Banquet			

8:30 Registration

9:30 Plenary Lecture 5

Thomas Schulte-Herbrueggen

Symmetry principles and applications in optimal control of closed and open quantum systems

Room ?

Chair: Miguel Carriegos

10:30 Plenary Lecture 6

Howard M. Wiseman

Bringing quantum jumps under control

Room ?

Chair: Eckehard Schoell

11:30 Coffee break

12:00 Invited MS 1,2,3

Invited MS 1

Room ?

Chair: Muthusamy Lakshmanan

1. Partial control of escapes in chaotic scattering, **Mattia Coccolo**, Samuel Zambrano, Jesús M. Seoane, Miguel A.F. Sanjuán.
2. Noise induced synchronization in a nonlinear stochastic array, José M. Casado Vazquez, J. Gómez Ordonez, **M. Morillo**.

3. Scaling law in saddle-node bifurcations for one dimensional maps: a complex variable approach, **Jorge Duarte**, Cristina Januário, Nuno Martins, Josep Sardanyés.
4. Phase Transitions in Complex Networks of Active and Inactive Oscillators,**Gouhei Tanaka**, Kai Morino, Kazuyuki Aihara.
5. Frequency and amplitude modulations of biological oscillators, **Wei Lin**.
6. Controlling spiking behavior in FitzHugh-Nagumo circuits by means of feedback, **R. Meucci**, S. Euzzor, A. Geltrude, K. Al-Naimee, F. T. Arecchi.

Invited MS 4

Room ?

Chair: Oriol Gomis

1. Power system stabilizer control for wind power to enhance power system stability, **J.L.Domínguez-García**, O.Gomis-Bellmunt, F.Bianchi, A. Sumper.
2. Predictive control system for modulated supply of PV Energy, **J.A. Souto**, A. Rodríguez, S. Saavedra, J.J. Casares, A. García-Loureiro, R. Varela, M.J. Legarreta, J. Rodríguez-Aneiros.
3. On energy dissipation influence over dynamical characteristics of the system width-pulse modulation and control signal storage, **Olga G. Antonovskaya**, Vladimir I. Goryunov.
4. Analysis of the italian power grid based on Kuramoto-like model, Luigi Fortuna, Mattia Frasca, **Angelo Sarra Fiore**, Vito Latora.
5. Power control of voltage source converter for distributed generation, **J.L. Domínguez-García**, O.Gomis-Bellmunt, F. Bianchi, A.Sudrià-Andreu.

Invited MS 3

Room ?

Chair: Alexey Zaikin

1. The molecular biology of circadian oscillations: gene expression rhythms, cellular coupling, and the regulation of cell division, **T. Katherine Tamai**, P.Cormie, Alexey Zaikin, David Whitmore.
2. Symmetry and synchronization in models of antigenic variation, **Konstantin Blyuss**.
3. Two redundant negative feedback loops in the genetic network of the zebrafish segmentation clock, Luis G. Morelli, Saul Ares, Christian Schröter, Korneel J. I. Hens, Sebastian J. Maerkl, Bart Deplancke, Andrew C. Oates, and Frank Jülicher.
4. Noise-induced rhythmicity in the circadian clock **E. Ullner**, J. García-Ojalvo, T. Cambras Riu and A. Díez Noguera.

Invited Lectures 4,6

Room ?

Chair: Miguel Carriegos

1. Optimal harvesting problem in a simple age structure population, Oksana Revutskaya, Galina Neverova, **Efim Frisman**.
2. Phase lead synchronization of chaotic oscillators, **Tatjana Pyragiene**, Kestutis Pyragas.

15:00 Invited MS 1,2, MS 2 & CS 4

Invited MS 1

Room ?

Chair: Jesús M. Seoane

1. Phase control of chaos on the bouncing ball systems, **Sijo K. Joseph**, Inés P. Mariño, Miguel A.F. Sanjuán.
2. Optimal Multiparametrical Correction of Dynamic Systems: Analysis and Optimal Chaos Suppression, **Yury Talagaev**, Andrey Tarakanov.
3. Dynamical and statistical analysis of a new Lozi function for random numbers generation, **Andrea Espinel**, Ina Taralova, René Lozi.
4. CMOS Implementation of a Spiking Neuron Circuit, **Alexandre Wagemakers**, Miguel A.F. Sanjuán.
5. Electric polarization as a basis for the formation of self-organizing fields on the self-affine structures, A.Kopyltsov, **G. Lukyanov**.
6. Improved Phase Control of Chaos, **R. Meucci**, S. Euzzor, A. Geltrude, K. Al-Naimee, F. T. Arecchi.

Invited MS 2

Room ?

Chair: Alexei Mailybaev

1. Singularities of stability boundaries and paradox of Nicolai, **A.A.Mailybaev**, A.P. Seyranian.
2. Stability od SISO nonlinear systems with parameters disturbances, **Shpilevaya Olga**.
3. Andronov-Hopf bifurcation in the nonconcervative problem of the free gyro, **Sergey Agafonov**, Tatiana Muratova.
4. Rotational solutions for elliptically excited pendulum, **Anton O. Belyakov**.
5. Nonlinear bifurcations of damped visco-elastic planar beams under simultaneous gravitational and follower forces, **A. Luongo**, F. D'Annibale.

MS 2

Room ?

Chair: Tatiana Filippova

1. Formalization of solution for nonlinear differential equations of neutral type with impulse control, **Alexander N. Sesekin**, Yana A. Veshkurova.
2. L-functions for nonlinear impulsive control systems: monotonicity conditions and applications, **Olga N. Samsonyuk**.
3. On the numerical synthesis of optimal controllers, **Jorge Estrela da Silva**, João Borges de Sousa.
4. Control of vibratory systems: flatness approach, **Cutberto Romero-Meléndez**, Felipe Monroy-Pérez, Benjamin Vázquez-González.
5. Control of chaotic photoassociation in the driven Morse oscillator, **Emanuel Fernandes de Lima**.
6. A new parameter estimation method via center manifold theory with application to unknown parameter estimation in a chaos system, **N. Sakamoto**, R. Fujimoto, S. Yamagishi, B. Rehak.

CS 4

Room ?

Chair: J.L. Domínguez

1. Inverse Problem of Anisotropy-Based Performance Analysis, Alexander Kurdyukov, Victor Timin, **Michael Tchaikovsky**.
2. Pole placement of linear multi-variable time-varying discrete non-lexicographically-fixed systems, Yasuhiko Mutoh, **Tomohiro Hara**.
3. A novel adaptive unscented Kalman filter for pico satellite attitude estimation, Halil Ersin Soken and **Chingiz Hajiyev**.
4. Design of dynamic controller for rejection of persistent disturbances, **Mikhail V. Khlebnikov**, Boris T. Polyak.
5. Nonlinear robust adaptive EKF for identification of EMAs parameters in the presence of sensor faults, **Chingiz Hajiyev**.

17:00 MS 2 & CS 5,6,7

CS 5

Room ?

Chair: Takao Sato

1. Boundary Controls and Interconnection for Scalable Hamiltonian Systems Governed by Molecular Dynamics, **Gou Nishida**, Ryojun Ikeura.
2. Localizing bounds and the nonexistence conditions for compact invariant sets of some Hamiltonian systems, **Konstantin E. Starkov**.
3. Filtering and parameters estimation in gyros with an elastic suspension, **Alexander Panferov**, Valery Ponomarev.
4. Precise Stabilization of Optical Image at a Space Astronomical Telescope by a Fine Piezo-driver with Physical Hysteresis, **Yevgeny Somov**, Sergey Butyrin.
5. Computational Experience with Structure-preserving Hamiltonian Solvers in Complex Spaces, **Vasile Sima**.
6. Speed-gradient approach to feedback control of dissociation of a quantum jodine molecule, **Ananyevskiy Mikhail S.**
7. Angular rate sensors based on the mems ring resonators Leonid Severov, **Alexander Panferov**, Valery Ponomarev.

CS 6

Room ?

Chair: Oksana Revutskaya

1. Dynamics of transition to chaos in structured biological populations, **Oksana Zhdanova**, Efim Frisman.
2. Optimal feedback control of traveling wave in a piecewise linear FHN model, **Masashi Takeuchi**, Keiji Konishi, Naoyuki Hara.
3. Bounds for compact invariant sets of one system arisen in studies of plasma dynamics models, **Konstantin E. Starkov**, Diana Gamboa Loaiza.
4. Dynamics modes of population with a simple age structure under limitation of birth rate, **Galina Neverova**, Oksana Revutskaya, Efim Frisman.

5. Signal analysis and classification using ordinal patterns. **Ulrich Parlitz**.
6. Hysteresis modeling of a class of RC-OTA hysteretic-chaotic generators, **L. Acho**, Y. Vidal.

CS 7

Room ?

Chair: Héctor Díez Machío

1. Analysis of a viscoelastic structure vibration, **Botir Sh. Usmonov**.
2. Gate control of single electron spins through Lande g-factor in InAs quantum dots, Sanjay Prabhakar, **Roderick Melnik**.
3. Multiagent systems: from the Van Loan scheme to simple linear algorithms, **Pavel Shcherbakov**.

MS 2

Room ?

Chair: Alexander I. Ovseevich

1. Stopping times and problems of motion correction, **Boris I. Ananiev**.
2. A minimax terminal control problem in the hierarchical nonlinear discrete-time dynamical system with incomplete information, **Andrey F. Shorikov**.
3. A state estimation problem for Markov chain model, Nicolay A. Timofeev, **Galina A. Timofeeva**.
4. Structural properties of guaranteed control-estimation problems for hierarchical systems, **Sergey V. Kruglikov**.
5. Methods and Instruments for Beam Lines Global Optimization, Serge Andrianov, **Eugeny Podzyvalov**, Andrew Ivanov.
6. Gradient-like properties of distributed and discrete phase systems,**Aleksey A. Perkin**, Vera B. Smirnova, Alexander I. Shepeljavyi.

Thursday, September 8, 2011

Schedule		
Thursday September 8, 2011		
9:30	CS6	MS2
11:30	Coffee break	
12:00	Closing Ceremony including closing Plenary Lecture Plenary Lecture 7: **Martin Hasler**	

9:30 CS 6 & MS 2

CS 6

Room ?

Chair: Galina Neverova

1. Dynamics of population size and genetic structure in two-aged population with pleiotropic locus, **Oksana Zhdanova**, Dina Bazhina.
2. Time-resolved luminescent spectrometry with application to excitation of high-current electron beams, **V.M. Lisitsyn**, V.I. Korepanov, V.I. Oleshko, E.F. Polisadova.
3. Dynamics of spatio-temporal defects in a spiral pattern, **N. Abcha**, O. Crumeyrolle, A. Ezersky, I. Mutaba.
4. Analysis of Raman spectroscopy laser signals using Artificial Neural Networks, Eva **Martínez-Rodríguez**.
5. Principal Component Analysis applied to laser signal Spectrography, Cecilia Pérez-Castrillo.

MS 2

Room ?

Chair: Alexander I. Ovseevich

1. Necessary Conditions of Optimality for Constrained Infinite Horizon Differential Inclusions, **Fernando Lobo Pereira**, Geraldo Nunes da Silva.
2. Stabilization of play state by external signal in multimode lasers. **Elena V. Grigorieva**.
3. Manifold Learning Approach for Reconstructing Internal States from Partially Observed Data: An Application to Assimilating Series of Events Generated from Nonlinear Dynamical Systems, **H. Suetani**, A. Ideta, S. Akaho, D. Engster, U. Parlitz.
4. Optimal control of quantum mechanical system with weighted energy cost functional, **P.K.Das**.
5. A Vision-Based Sensor of Position and Rate for Path Tracking of Autonomous Underwater Vehicles in Environments with Regular Patterns, **Mario A. Jordán**, Carlos Berger, Jorge L. Bustamante.
6. An Approach to a Digital Adaptive Controller for guidance of Unmanned Vehicles, **Mario A. Jordán**, Jorge L. Bustamante.
7. A Model Reference Adaptive Control for Longitudinal Vehicle Dynamics, N. Karami Mohammadi, S. Azadi, **A. Karami Mohammadi**.

8. A Real-time Approach to Optimal Energy-Consumption for Autonomous Underwater Vehicles in Unknown Time-Varying Flow Fields, **Mario Jordán**, Jorge L. Bustamante.

11:30 Coffee break

12:00 Closing Ceremony and Plenary Lecture 7

Martin Hasler

Convergence in stochastically switched dynamical systems

Room ?

Chair: Alexander Fradkov

Thank you for your attention