



4th International Scientific Conference on
Physics and Control - PhysCon2009

Organized by Univ. of Catania and IPACS, Catania, Italy, 1-4 September 2009
(www.physcon2009.diees.unict.it)



**SCIENTIFIC
PROGRAM**



4th International Scientific Conference on Physics and Control - PhysCon2009

Organized by Univ. of Catania and IPACS, Catania, Italy, 1-4 September 2009
(www.physcon2009.diees.unict.it)



Tuesday September 1, 2009			
8:30-9:00	Registration		
9:00-9:30	Opening ceremony		
9:30-10:30	Plenary session		
10:30-11:00	Coffee break		
11:00-12:40	Aula Magna - Nonlinear Dynamics I	D02 - Chaos	D03 - Quantum information and quantum control I
12:40-14:30	Lunch		
14:30-16:30	Aula Magna - Synchronization I	D02 - Microfluidics: Theory, Methods and Applications	D03 - Mathematical modelling of Dynamic Systems for Volcano Physics I
16:30-17:00	Coffee break		
17:00-19:00	Aula Magna - EU-funded Control Projects in the area of Control of Large-Scale Systems	D02 - Linear and matritial algebra, open problems related to control theory	D03 - Mathematical modelling of Dynamic Systems for Volcano Physics II

Wednesday September 2, 2009			
8:30-9:00	Registration		
9:00-10:00	Plenary session		
10:00-10:30	Coffee break		
10:30-12:30	Aula Magna - Synchronization II	D02 - Nonlinear Dynamics II	D03 - Control of Biomedical Systems
12:30-14:00	Lunch		
14:00-16:00	Aula Magna - Physics and Control in Fusion Plasma Devices I	D02 - Control in chemistry	D03 - Bifurcations and complex dynamics
16:00-16:30	Coffee break		
16:30-17:50	Aula Magna - Physics and Control in Fusion Plasma Devices II		D03 - Control problems for Dynamical Systems under Uncertainty and Conflict I
17:50-19:00	Poster session 1		
19:00-20:00	IPACS Meeting		



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Thursday September 3, 2009			
8:30-9:00	Registration		
9:00-10:00	Plenary session		
10:00-10:30	Coffee break		
10:30-12:30	Aula Magna - Nonlinear Control I	D02 - Modelling and control of coupled stochastic oscillators	D03 - Quantum information and quantum control II
12:30-14:00	Lunch		
14:00-16:00	Aula Magna - Control of aircrafts, flying robots and satellite dynamics I	D02 - Multistability in Natural and Laboratory-Scale Nonlinear Systems I	D03 - Control problems for Dynamical Systems under Uncertainty and Conflict II
16:00-16:30	Coffee break		
16:30-17:50	Aula Magna - Control of aircrafts, flying robots and satellite dynamics II	D02 - Multistability in Natural and Laboratory-Scale Nonlinear Systems II	D03 - Control problems for Dynamical Systems under Uncertainty and Conflict III
17:50-19:00	Poster session 2		
Conference dinner - departure h. 20:00			

Friday September 4, 2009			
8:30-9:00	Registration		
9:00-10:00	Aula Magna - IEEE Distinguished Lecture	D02 - Geometric control for quantum and classical models I	D03 - Multistability in Natural and Laboratory-Scale Nonlinear Systems III
10:00-10:30	Coffee break		
10:30-12:30	Aula Magna - Nonlinear circuits and self-organization	D02 - Geometric control for quantum and classical models II	D03 - Modeling and optimization of beam and plasma dynamics
12:30-14:00	Lunch		
14:00-16:00	Aula Magna - Nonlinear Control II	D02 - Identification and modelling	D03 - Numerical methods and image analysis
16:00-16:30	Coffee break		
16:30-18:30	Aula Magna - Control of oscillatory delayed-coupled networks	D02 - Localization of oscillations in dynamical systems	



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Program of Physics and Control 2009

Tuesday September 1, 2009

8:30-9:00 Registration

9:00-9:30 Opening ceremony

Welcome of Prof. Antonino Recca, Rector of the University of Catania

Welcome of Prof. Luigi Fortuna, Dean of the Engineering Faculty

9:30-10:30 Plenary session – Prof. LEONOV “Localization of hidden oscillations in dynamical systems”

Chairman: A. Fradkov

10:30-11:00 Coffee break

11:00-12:40 Parallel sessions

Aula Magna - Nonlinear dynamics I

Chairman: A. Rizzo

ID: 14; Title: Control of sandy bottom profile by strongly nonlinear surface waves.

Authors: A. Ezersky, F. Marin, T-D. Chu

ID: 185; Title: Periodic, Quasi-Periodic & Chaotic Motion In Mass-Spring Model

Authors: Nastaran Vasegh; Farhad Khellat

ID: 49; Title: Nonlinear Dynamics Of Plant Communities: Occurrence Of Spatial Heterogeneity (Spottiness)

Authors: Frisman E.Ya., Kolobov A.N.

ID: 241; Title: SVD Analysis Of Complex Flow Patterns In Two-Phase Flows

Authors: L. Cantelli, A. Fichera, A. Pagano

ID: 126; Title: Asymptotical Symmetrization of Hamilton Systems

Authors: A.G. Petrov

D02 – Chaos

Chairman: A. Balestrino

ID: 60; Title: Dynamical analysis of a new statistically highly performant deterministic function for chaotic signals generation

Authors: Sébastien Hénaff, Ina Taralova, René Lozi

ID: 86; Title: On the use of the generalised entropy of curves to evaluate chaotic behaviours

Authors: Aldo Balestrino, Andrea Caiti, Emanuele Crisostomi

ID: 147; Title: Multiparametrical analysis and optimal chaos suppression in non-autonomous dynamic systems based on a two-stage parameter correction scheme

Authors: Yuri V. Talagaev, Andrey F. Tarakanov

ID: 161; Title: Phase transitions, chaos and dynamical anomalies in long-range models of coupled oscillators

Authors: Alessandro Pluchino and Andrea Rapisarda Dipartimento di Fisica e Astronomia, Università di Catania and Infn sezione di Catania, Italy

ID: 65; Title: Delayed Feedback Control Of Delayed Chaotic Systems

Authors: Nastaran Vasegh, Ali Khaki Sedigh



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D03 - Quantum information and quantum control I

Chairman: G. Falci

ID: 35; Title: Schroedinger bridges for classical and quantum discrete time Markovian evolutions
Authors: Michele Pavon and Francesco Ticozzi

ID: 91; Title: Superconducting Quantum Information Processors: Coherence, Control and Quantum Spectroscopy
Authors: E. Paladino, A. D'Arrigo and G. Falci

ID: 244; Title: Quantum Theory of Optimal Control and Quantum Nonlinear Filtering
Authors: V P Belavkin

ID: 123; Title: Dynamics of chiral quasiparticles in a noisy environment: towards quantum control
Authors: M. Berritta, E. Paladino, A. D'Arrigo and G. Falci

ID: 48; Title: Quantum Control for Bose Einstein Condensates
Authors: Quan-Fang Wang

12:40-14:30 Lunch

14:30-16:30 Parallel sessions

Aula Magna - Synchronization I

Chairman: M. Frasca

ID: 1; Title: Adaptive synchronization of nonlinear dynamical networks
Authors: Alexander Fradkov, Ibragim Junussov

ID: 42; Title: Modelling of the cooperative neural dynamics through map-based approach
Authors: V.I. Nekorkin, O.V. Maslennikov, L.V. Vdovin

ID: 171; Title: Chaos death and complete synchronization regime in conjugate coupled Rossler oscillators
Authors: Rajat Karnatak, Ram Ramaswamy, Awadhesh Prasad

ID: 11; Title: Phase relations in a harmonically excited chain of pendulums
Authors: Alexander L. Fradkov, Boris Andrievsky and Alexey Andrievsky

ID: 149; Title: Control of dynamical behaviour in networks
Authors: S. Vakulenko, I. Kotlyarov

D02 - Special session I5: Microfluidics: Theory, Methods and Applications

Chairman: M. Bucolo

ID: 117; Title: Wall influence on transport phenomena in microfluidic systems
Authors: Alessandra Adrover, Stefano Cerbelli, Fabio Garofalo, Massimiliano Giona

ID: 196; Title: Moving boundary problems for the BGK model of rarefied gas dynamics
Authors: Giovanni Russo

ID: 238; Title: Experimental Investigation on Parameters for the Control of Droplets Dynamics
Authors: F. Sapuppo, F. Schembri, M. Bucolo

ID: 240; Title: Rapid Prototyping Of Thiolene Microfluidic Chips
Authors: G. Mistura, D. Ferraro, A. Franzoi, D. Frizzo, A. Pacetti and M. Pierno

ID: 264; Title: Development Of An Integrated Inductive Sensor For Magnetic Immunoassay In Lab On Chip Device
Authors: Bruno Andò, Salvatore Baglio, Angela Beninato, Giorgio Fallica, Clelia Galati, Vincenzo Marletta, Lucio Renna



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D03 - Special session I6: Mathematical Modelling of Dynamic Systems for Volcano Physics I

Chairman: C. Del Negro

ID: 163; Title: Ground Deformation Inversion Scheme Using A 3d Fem-Based Model: An Application To Etna Volcano
Authors: Gilda Currenti, Ciro Del Negro, Danila Scandura, Charles Williams

ID: 164; Title: Integrated modelling of geophysical observations at Etna volcano
Authors: Rosalba Napoli, Gilda Currenti, Agnese Di Stefano, Filippo Greco, Danila Scandura, Ciro Del Negro

ID: 166; Title: Wavelet multi-resolution analysis for the local separation of microgravity anomalies at Etna volcano
Authors: Filippo Greco, Gilda Currenti, Ciro Del Negro, Agnese Di Stefano, Rosalba Napoli, Antonio Pistorio, Danila Scandura, Gennaro Budetta, Maurizio Fedi

ID: 176; Title: Integrated Inversion of Numerical Geophysical Models Using Artificial Neural Networks
Authors: Agnese Di Stefano, Gilda Currenti, Ciro Del Negro, Luigi Fortuna, Giuseppe Nunnari

ID: 183; Title: Thermo-mechanical modelling of ground deformation in volcanic areas
Authors: Danila Scandura, Alessandro Bonaccorso, Gilda Currenti, Ciro Del Negro

ID: 190; Title: SPH modeling of lava flows with GPU implementation
Authors: Alexis Héroult, Giuseppe Bilotta, Ciro Del Negro, Giovanni Russo, Annamaria Vicari

16:30-17:00 Coffee break

17:00-18:40 Parallel sessions

Aula Magna - Special session I10: EU-funded Control Projects in the area of Control of Large-Scale Systems

Chairman: J. Pereira

ID: 275; Title: Current Challenges on the Control of Large Scale Power Systems
Authors: Gilney Damm, Wissan Dib

ID: 280; Title: Networked Embedded and Control Systems – Towards a Closer EU-Russian Collaboration
Authors: Svetlana Klessova, Elena Panteley, Franck Le Gall

ID: 299; Title: Complexity reduction for the design of the hybrid control systems: common rail fuel injection control for Diesel engines
Authors: E. Mazzi, L. Benvenuti, A. Ferrari, A. Sangiovanni Vincentelli

ID: 300; Title: D I S C - Distributed Supervisory Control of Large Plants
Authors: Prof. Antonio Solinas

ID: 301; Title: Control for wireless networked systems with an application to mining ventilation
Authors: Prof. Fortunato Santucci

ID: 302; Title: AEOLUS – Distributed control of large scale offshore wind farms
Authors: Prof. Thomas Bak



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D02 - Special session I3: Linear and matritial algebra, open problems related to control theory

Chairman: M. Isabel Garcia-Planas

ID: 52; Title: Disturbance decoupling for singular systems by proportional and derivate feedback and proportional and derivative output injection

Authors: M. Isabel Garcia-Planas

ID: 173; Title: A study of control systems from the geometry of ring of scalars II (partitions of elements of a monoid)

Authors: Miguel V. Carriegos

ID: 257; Title: Controllability of time-invariant singular linear systems

Authors: Sonia Tarragona, M. Isabel Garcia-Planas

ID: 260; Title: A canonical reduced form for singular time invariant linear systems

Authors: A. Diaz, M.I. Garcia-Planas

D03 - Special session I6: Mathematical Modelling of Dynamic Systems for Volcano Physics II

Chairman: C. Del Negro

ID: 186; Title: 3D dynamic model for canalized flows of lava with non linear rheology

Authors: M. Filippucci, A. Tallarico And M. Dragoni

ID: 199; Title: Clustering of infrasonic events as tool to detect and locate explosive activity at Mt. Etna volcano

Authors: G. Nunnari, E. Privitera, P. Montalto, A. Cannata, D. Patanè

ID: 201; Title: A clustering analysis of three dimensional ground deformation map estimated by integrating DInSAR and GPS dataset

Authors: G. Nunnari, G. Puglisi, A. Spata, F. Guglielmino, A. Bonforte and P. Montalto

ID: 202; Title: "Lava flow susceptibility map of Mt Etna based on numerical simulations"

Authors: Annalisa Cappello, Ciro Del Negro, Annamaria Vicari

ID: 208; Title: Automated detection and analysis of volcanic thermal anomalies through the combined use of SEVIRI and MODIS

Authors: G. Ganci, A. Vicari, C. Del Negro, L. Fortuna

ID: 263; Title: Modelling Volcanomagnetic dynamics by recurrent least-squares support vector machines

Authors: Stanislaw Jankowski, Gilda Currenti, Rosalba Napoli, Zbigniew Szymanski, Luigi Fortuna, Ciro Del Negro



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Wednesday September 2, 2009

8:30-9:00 Registration

9:00-10:00 Plenary session - Prof. VELARDE "Anharmonicity and soliton-mediated electric transport: is it possible a kind of superconduction at room temperature?"

Chairman: P. Arena

10:00-10:30 Coffee break

10:30-12:30 Parallel sessions

Aula Magna - Synchronization II

Chairman: H. Hein

ID: 24; Title: Can noise annihilate chaos?

Authors: Ü.Lepik and H. Hein

ID: 276; Title: Experimental study of chaotic systems synchronization over a limited capacity communication channel

Authors: Boris Andrievsky, Alexey Andrievsky

ID: 16; Title: Consensus in Networked Multi-Agent Systems with Random Packet Loss

Authors: Ya Zhang, Yu-Ping Tian

ID: 189; Title: The dynamics of a ring of coupled Phase-Locked loops

Authors: Shmelev A.V., Matrosov V.V.

D02 - Nonlinear dynamics II

Chairman: P. De Gregorio

ID: 40; Title: Limit Cycles Of A Population Dynamics Model

Authors: Valery A. Gaiko, Henk W. Broer, Wim T. van Horssen

ID: 197; Title: The employment of periodic Lyapunov functions for asymptotic analysis of multidimensional phase control systems

Authors: Aleksey A. Perkin, Vera B. Smirnova, Alexander I. Shepeljavyi, Natalia V. Utina

ID: 158; Title: Thermodynamic fluctuations in actively cooled resonators

Authors: Michele Bonaldi, Livia Conti, Paolo De Gregorio, Lamberto Rondoni, Gabriele Vedovato, Andrea Vinante

ID: 278; Title: Trojan Horse Method and the application to fusion reactors

Authors: C. Spitaleri, M. La Cognata, L. Lamia, R.G. Pizzone

ID: 57; Title: Self-Organised Voronoi Diagrams Generated by Single-shot Femtosecond Laser Ablation of Metal Surfaces.

Authors: E. L. Gurevich

ID: 170; Title: Phase Trajectories Of Aeroelastic Oscillations Of Surface Pipeline

Authors: Viktorija VOLKOVA



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D03 - Control in biomedical systems

Chairman: L. Goras

ID: 162; Title: SPR detection of single nanoparticles and viruses
Authors: A. Zybin, E. L. Gurevich, K. Niemax

ID: 210; Title: Automatic analysis for the early assessment of Alzheimer disease
Authors: Marco Favetta on behalf of the Magic5 collaboration

ID: 218; Title: Multidimensional Analysis toward the Identification of ECG Nonlinear Dynamics
Authors: M.Bucolo, F. Di Grazia, D. Nikolic, F. Sapuppo, B. Vuksanovic

ID: 262; Title: Preprocessing Method for Improving ECG Signal Classification and Compression Validation
Authors: Liviu Goras and Catalina Monica Fir

ID: 125; Title: A Mathematical Model Of Human Cochlea
Authors: A.G. Petrov, V.P. Varin

ID: 94; Title: Robustness of local forcing in inhibition of reentry
Authors: Ekaterina Zhuchkova and Harald Engel

12:30-14:00 Lunch

14:00-16:00 Parallel sessions

Aula Magna - Special session I11: Physics and Control in Fusion Plasma Devices I

Chairman: D. Mazon

ID: 98; Title: New Information Processing Methods for Feedback Control and Physical Understanding in Fusion.
Authors: A.Murari, J.Vega, G.Vagliasindi, D.Mazon, J.Svensson,

ID: 93; Title: Confinement Regime Identification in Nuclear Fusion via an Interpretable Fuzzy Logic Classifier
Authors: Guido Vagliasindi, Paolo Arena, Andrea Murari

ID: 113; Title: Inspection of Disruptive Behaviours at JET using Generative Topographic Maps
Authors: G. A. Rattá , J. Vega , A. Murari , G. Vagliasindi and JET-EFDA Contributors

ID: 194; Title: Maximizing radiofrequency heating on FTU via extremum seeking: parameter selection and tuning
Authors: A. Astolfi, L. Boncagni, D. Carnevale, C. Centioli, S. Podda, V. Vitale and L. Zaccarian

ID: 254; Title: EQUINOX: a real-time equilibrium code and its validation at JET
Authors: D. Mazon

ID: 206; Title: Optimal estimation of the particle sources in Tore Supra tokamak
Authors: WEYDERT Jacques; WITRANT Emmanuel; GONICHE Marc



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D02 - Control in chemistry

Chairman: V. Bobal

ID: 37; Title: Analysis and Temperatures Control in a Tubular Chemical Reactor
Authors: Petr Dostal, Vladimir Bobal, Jiri Vojtesek

ID: 83; Title: The bistable, but non-oscillatory electrochemical system with the negative differential resistance (NDR) generated by the potential-dependent convection at the liquid electrode|solution interface.
Authors: Marek Orlik, Maciej T. Gorzkowski, Rafal Jurczakowski

ID: 221; Title: Predictive Control of Asymmetric Heat Exchanger
Authors: Petr Chalupa, Jakub Novák, Vladimír Bobál

ID: 274; Title: Adaptive Decoupling Control of Three – Tank – System
Authors: Marek Kubalcik, Vladimir Bobal

ID: 39; Title: Effect of bounding wall vibrations on a flow of simple fluid passing through flat nano – channels
Authors: Andrey K. Abramyan and Leonid V. Mirantsev

ID: 32; Title: Possibilities Of Presence Of Schlögl Quasichemical Reactions In An Atmosphere Of Own Silicon Defects
Authors: E.P.Prokopiev

D03 - Bifurcations and complex dynamics

Chairman: V.D. Irtegov

ID: 99; Title: On Bifurcations In Conservative Systems
Authors: V.D. Irtegov

ID: 174; Title: Chatter and grazing bifurcations and chaotic invariant sets of impact systems
Authors: S.G.Kryzhevich

ID: 129; Title: Complex modes of population number dynamics with age and sex structures
Authors: Oksana Revutskaya, Galina Neverova, Efim Frisman

ID: 198; Title: Chaotic attractors and bifurcations in double-diffusive convection.
Authors: Sibgatullin, I.N. Gertsenstein, S.Ya.

ID: 251; Title: High Speed Algorithms for the Full Penetration Hole Detection in Laser Beam Welding Processes by Cellular Neural Networks
Authors: L. Nicolosi, R. Tetzlaff, F. Abt, A. Blug, H. Höfler

ID: 21; Title: Complex Dynamics and Bifurcation in a Two-Ring System With Phase Control
Authors: Valerie P. Ponomarenko

16:00-16:30 Coffee break



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16:30-17:50 Parallel sessions

Aula Magna - Special session I11: Physics and Control in Fusion Plasma Devices II

Chairman: G. Vagliasindi

ID: 121; Title: Plasma Scenarios and Magnetic Control in FAST

Authors: R. Albanese, G. Ambrosino, G. Artaserse, G. Calabrò, V. Cocilovo, F. Crisanti, A. Cucchiaro, M. Mattei, F. Maviglia, G. Mazzitelli, A. Pironti, A. Pizzuto, G. Ramogida, C. Rita, F. Zonca

ID: 118; Title: Performing Real-Time Reconstruction of the Magnetic Flux in FTU Feedback Control Loop using Multi-Polar Current Moments Expansion in RTAI Virtual Machine

Authors: Yahya Sadeghi, Luca Boncagni, Giuseppe Calabro, Flavio Crisanti, Giuseppe Ramogida, Enzo Vitale, Luca Zaccarian

ID: 245; Title: Model-Based Plasma State Control in Tokamaks

Authors: D. Moreau, D. Mazon, Y. Adachi, Y. Takase, Y. Sakamoto, S. Ide, T. Suzuki

ID: 252; Title: Overview of the control system for the MHD modes in the Reversed Field Pinch RFX-mod

Authors: A. Luchetta, G. Marchiori, G. Manduchi, L. Marrelli, P. Piovesan, L. Piron, A. Soppelsa, C. Taliercio, P. Zanca

D03 - Special session I8: Control problems for Dynamical Systems under Uncertainty and Conflict I

Chairman: T. F. Filippova

ID: 27; Title: Control of Dynamical Systems on a Final Interval of Time by Means of Stability Theory Methods

Authors: I. M. Ananievski

ID: 29; Title: Stochastic Comparison of Ellipsoidal and Interval Error Estimation in Vector Operations

Authors: Alexander Ovseevich

ID: 41; Title: Refined Asymptotics for Singularly Perturbed Reachable Sets

Authors: Elena Goncharova Alexander Ovseevich

ID: 50; Title: Convective Stirring Of Stratified Surfactant Solution By Oscillatory Solutocapillary Flow

Authors: K.G. Kostarev, A.L. Zuev, A. Viviani

17:50-19:00 Poster session 1

19:00-20:00 Aula Magna – IPACS Meeting

Chairman: A. Fradkov



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Thursday September 3, 2009

8:30-9:00 Registration

9:00-10:00 Plenary session - Prof. TAVSANOGLU "On the Simulation Issues of Spatio-Temporal Filters"
Chairman: L. Fortuna

10:00-10:30 Coffee break

10:30-12:30 Parallel sessions

Aula Magna - Nonlinear control I

Chairman: R. Meucci

ID: 23; Title: Precise Control Of Dynamic Nonstationary Objects On The Base Of Model Reference Adaptive Approach
Authors: S.D. Zemlyakov and V.Yu. Rutkovsky

ID: 45; Title: Autoresonant Excitation And Control Of Nonlinear Vibration Modes
Authors: V.I.Babitsky

ID: 135; Title: Projective Synchronization of the Nonlinear Bloch Equations
Authors: U. E. Vincent, J. A. Laoye and F. Ayedun

ID: 222; Title: Adams-Bashforth Approximations for Digital Control of Complex Vehicle Dynamics
Authors: Mario Alberto JORDÁN and Jorge Luis BUSTAMANTE

ID: 155; Title: Control of noisy multistable systems by periodic perturbation
Authors: B. K. Goswami, S. Euzzor, K. Al Naimee, A. Geltrude, R. Meucci and F. T. Arecchi

D02 - Special session II: Modelling and control of coupled stochastic oscillators

Chairman: G. Rigatos

ID: 74; Title: Feedback-dependent control of stochastic synchronization in coupled neural systems
Authors: Philipp Hoevel, Sarang A. Shah, Markus A. Dahlem, and Eckehard Schoell

ID: 111; Title: Dynamics of cavity QED in stochastic field in interacting Fock space
Authors: P.K.Das

ID: 153; Title: Delayed Feedback Control in Stochastic Excitable Networks
Authors: Natalia Janson, Sandhya Patidar, Andrey Pototsky

ID: 156; Title: The Modeling of Fuzzy Systems based on Lee-Oscillatory Chaotic Fuzzy Model (LoCFM)
Authors: Max H. Y. WONG, Dennis T. F. SHUM, Edward H. Y. LIM, Raymond S. T. LEE, James N. K. LIU and Jane J. YOU

ID: 215; Title: Stochastic Resonance in two Coupled Underdamped Bistable Systems.
Authors: Anatole Kenfack and Kamal P. Singh

ID: 112; Title: Optimal control of two-level quantum system with energy cost functional
Authors: P.K.Das



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D03 - Quantum information and quantum control II

Chairman: G. Falci

ID: 139; Title: Quantum phase transitions in an effective Hamiltonian
Authors: I. Saenz, A.B. Klimov, Luis Roa

ID: 154; Title: Feedback Error Correction Method of Creating Pseudo-Pure States for NMR Quantum Computers
Authors: Minaru Kawamura

ID: 122; Title: Hamiltonian models for some quantum memory qubit-channels
Authors: A. D'Arrigo, E. De Leo, E. Paladino, G. Benenti, G. Falci

ID: 246; Title: Optimal Control Algorithms for Quantum Systems and their Limitations
Authors: S. G. Schirmer, P. L. Becq de Fouquieres, Xiaoting Wang

12:30-14:00 Lunch

14:00-16:00 Parallel sessions

Aula Magna - Control of aircrafts, flying robots and satellite dynamics I

Chairman: F. Zhang

ID: 18; Title: Influence Of Nonlinearity Of Model Of Free-Flying Space Robot On Its Dynamics When Controlling A Manipulator
Authors: V.Yu. Rutkovsky, V.M. Sukhanov, V.M. Glumov

ID: 34; Title: A New Linear Programming Algorithm for Optimal Estimation and Correction of an Aircraft Trajectory
Authors: Boris Bakhshiyani, Alexander Goryainov

ID: 73; Title: Guidance and Control of a Land-survey Spacecraft with a Smooth Conjugation of Boundary Conditions
Authors: Ye.I. Somov, S.A. Butyrin, S.Ye. Somov

ID: 103; Title: Stabilization of a Nonlinear Prototypical Wing Section with Self-Improvement of Control Performance
Authors: Fan Zhang, and Dirk Söffker

D02 - Special session I2: Multistability in Natural and Laboratory-Scale Nonlinear Systems I

Chairman: U. Feudel

ID: 227; Title: Generalized multistability: past and future
Authors: F. T. Arecchi and R. Meucci

ID: 225; Title: Multi-stability and chaotic transient LFF dynamics in semiconductor lasers with time-delayed optical feedback
Authors: Cristina Masoller

ID: 226; Title: Semiconductor Quantum-Dot Lasers with Optical Feedback
Authors: C. Otto, K. Lüdge, E. Schöll

ID: 228; Title: Bistability and synchronization in an ensemble of continuous one-dimensional stochastic elements with time delayed mean field coupling
Authors: Andrey Pototsky and Natalia Janson

ID: 230; Title: Delay induced multistability in parallel polarized Nd:YAG laser
Authors: V.M.Nandakumaran, M.R.Parvathi, S.Rajesh, M.P.John and Bindu.M.Krishna

ID: 231; Title: The interplay of multistability and synchronization: uncertain destination dynamics
Authors: Calistus Ngonghala, Ulrike Feudel, Kenneth Showalter



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D03 - Special session I8: Control problems for Dynamical Systems under Uncertainty and Conflict II

Chairman: T. F. Filippova

ID: 51; Title: Multiestimates for Linear-Gaussian Continuous Systems under Communication Constraints
Authors: Boris I. Anan'ev

ID: 53; Title: Estimation Problem for Linear Impulsive Control Systems under Uncertainty
Authors: Oxana G. Matviychuk

ID: 54; Title: On Numerical Methods of Solving Some Optimal Path Problems on the Plane
Authors: Vladimir N. Ushakov, Alexander R. Matviychuk, Alexey G. Malev

ID: 66; Title: On Efficiency Of The Grid Optimal Synthesis To Control Problems Of Prescribed Duration
Authors: Nina N. Subbotina, Timofey B. Tokmantsev

ID: 71; Title: Quantile Optimization Problem with Incomplete Information
Authors: Galina A. Timofeeva

ID: 75; Title: Estimates of Trajectory Tubes in Control Problems under Uncertainty
Authors: Tatiana F. Filippova

16:00-16:30 Coffee break

16:30-17:50 Parallel sessions

Aula Magna - Control of aircrafts, flying robots and satellite dynamics II

Chairman: A. Rodnikov

ID: 134; Title: Helicopter Rotor Blade Vibration Control on the Basis of Active/Passive Piezoelectric Damping Approach
Authors: S. Shevtsov, A. Soloviev, V. Acopyan, S. Bragin

ID: 175; Title: On Dynamics of a Dumbbell Satellite with a Small Load on the Leier
Authors: Alexander V. Rodnikov

ID: 207; Title: Sea Plane Landing Control By Employing Measured Data Of Irregular Sea Waves
Authors: V. A. Nebylov F. S. Voronin

D02 - Special session I2: Multistability in Natural and Laboratory-Scale Nonlinear Systems II

Chairman: B.K. Goswami

ID: 232; Title: Multistability: fractal basins, attractor hopping and control
Authors: Ulrike Feudel

ID: 233; Title: Development of phase multistability in diffusively coupled arrays
Authors: A. Shabunin, U. Feudel, and V. Astakhov

ID: 234; Title: Multistability of semiconductor lasers with integrated delayed optical feedback
Authors: A. Loose, B. K. Goswami, H.-J. Wunsche, and F. Henneberger



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D03 - Special session I8: Control problems for Dynamical Systems under Uncertainty and Conflict III

Chairman: T. F. Filippova

ID: 79; Title: Control Problems for a Body Movement in the Viscous Medium
Authors: Dmitry S. Zavalishchin

ID: 92; Title: Differential Equations with Aftereffect Perturbed by Impulses
Authors: J.V. Fetisova

ID: 102; Title: Cooperative Path Planning in the Presence of Adversarial Behavior
Authors: João Borges de Sousa and Jorge Estrela

ID: 168; Title: Nonlinear Control Design with Inequality Constraints: Application to Magnetic Levitation System
Authors: Catalin-Stefan Teodorescu

17:50-19:00 Poster session 2



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Friday September 4, 2009

8:30-9:00 Registration

9:00-10:00 Parallel sessions

Aula Magna – IEEE Distinguished Lecture - Prof. A. Rizzo “Soft Sensors and Artificial Intelligence with Applications to Nuclear Fusion Experiments”
Chairman: V. Latora

D02 - Special session I7: Geometric control for quantum and classical models I
Chairman: U. Boscain

ID: 36; Title: Time-reversal and strong H-theorem for quantum discrete-time Markov channels
Authors: Francesco Ticozzi and Michele Pavon

ID: 38; Title: Controllability of Damped Multidimensional Rigid Body
Authors: Andrey Sarychev

ID: 85; Title: Generic controllability properties for the bilinear Schroedinger equation
Authors: Mario Sigalotti, Paolo Mason, Ugo Boscain, Thomas Chambrion

D03 - Special session I2: Multistability in Natural and Laboratory-Scale Nonlinear Systems III
Chairman: B.K. Goswami

ID: 236; Title: Logical Stochastic Resonance and Chaos Computing
Authors: William Ditto, Sudeshna Sinha

ID: 255; Title: Feedback control of the fluorescence light squeezing
Authors: Alberto Barchielli, Matteo Gregoratti

ID: 261; Title: Multistability in a semiconductor laser subject to optical feedback from a Fabry-Perot filter
Authors: H. Erzgräber, and B. Krauskopf

10:00-10:30 Coffee break

10:30-12:30 Parallel sessions

Aula Magna - Nonlinear circuits and self-organization
Chairman: P. Arena

ID: 44; Title: Implementation of Synchronized Generalized Chua’s Circuits by Field Programmable Gate Array
Authors: Can Eroğlu F. Acar Savacı

ID: 97; Title: A Testbed of 2D Locally Coupled Relaxation Oscillators for Spiral Waves Generation
Authors: R. Yenicieri and M. E. Yalcin

ID: 116; Title: Toward All-Organic Embedded Systems
Authors: L. Fortuna, S. Graziani, M. La Rosa, D. Nicolosi, G. Sicurella, E. Umana

ID: 211; Title: Learning sequences with Neural Gas for robot motion planning
Authors: Ignazio Aleo, Paolo Arena, Luca Patanè

ID: 148; Title: Self-Organizing, Synchronization And Self-Alignment In The Living And Inanimate Objects
Authors: G. Lukyanov

ID: 203; Title: Analysis of self-organized criticality in the Olami-Feder-Christensen model and in real earthquakes
Authors: A.Pluchino, A.Rapisarda



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D02 - Special session I7: Geometric control for quantum and classical models II

Chairman: A. Sarychev

ID: 87; Title: Sub-Riemannian approach for the Foucault pendulum
Authors: Alfonso Anzaldo-Meneses Felipe Monroy-Perez

ID: 101; Title: Time-optimal control of a spin 1/2 particle with radiation damping and relaxation effects
Authors: D. Sugny

ID: 119; Title: What can we hope about output tracking of bilinear quantum systems?
Authors: Thomas Chambrion, Paolo Mason, Mario Sigalotti and Ugo Boscain

ID: 132; Title: Controllability of the rotation of a quantum planar molecule
Authors: U. Boscain, T. Chambrion, P. Mason, M. Sigalotti, D. Sugny

ID: 172; Title: Controllability issues for continuous-spectrum systems and ensemble controllability of Bloch Equations
Authors: Karine Beauchard, Jean-Michel Coron, Pierre Rouchon

ID: 181; Title: Controllability of nonlinear Schroedinger equations
Authors: Holger Teismann

D03 - Special session I13: Modeling and optimization of beam and plasma dynamics

Chairman: A. Ovsyannikov

ID: 249; Title: Joint optimization of program and disturbed motions for dynamical systems of special type.
Authors: Alexander Ovsyannikov, Igor Antropov

ID: 253; Title: Parametric Optimization for Tokamak Plasma Control System
Authors: Sergey Zavadsky, Alexander Ovsyannikov, Noboru Sakamoto

ID: 256; Title: Optimization of the initial conditions of the plasma discharge in the ITER tokamak.
Authors: Maria Mizintseva, Alexander Ovsyannikov, Evgeny Suhov

ID: 137; Title: Some Problems of Global Optimization for Beam Lines
Authors: Serge Andrianov, Nikolay Edamenko, Eugeny Podzivalov

ID: 131; Title: Multi-objective optimization for beam lines
Authors: Andrey Chernyshev

ID: 151; Title: Mathematical Modeling of Fringe Fields in Beam Line Control Systems
Authors: Yury V. Tereshonkov

12:30-14:00 Lunch



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14:00-15:40 Parallel sessions

Aula Magna - Nonlinear control II

Chairman: **K. Lurie**

ID: 157; Title: On the stabilization of the gyroscopic system by means of non-linear dissipative and circulatory forces
Authors: S.A. Agafonov, I.A. Kostyashko

ID: 165; Title: Control of a Shaped Metal Deposition Process
Authors: F. Bonaccorso, C. Bruno, L. Cantelli, D. Longo, G. Muscato

ID: 195; Title: Bidirectionality in IP based teleoperation
Authors: Miguel Diaz-Cacho, Antonio Barreiro, Matias G. Rivera

ID: 184; Title: Discontinuous Wave Propagation through Dynamic Materials with Formation of Clots
Authors: Konstantin Lurie

ID: 224; Title: A Digital Version of the Adaptive Speed-Gradient-based Control for Complex Vehicle Dynamics
Authors: Mario Alberto JORDÁN and Jorge Luis BUSTAMANTE

D02 - Identification and modelling

Chairman: **S. Graziani**

ID: 237; Title: A Scalable Fractional Model for IPMC actuator
Authors: P. Brunetto, R. Caponetto, G. Dongola, L. Fortuna, S. Graziani

ID: 67; Title: Onboard Alignment Identification of a Space Telescope and a Star Tracker Cluster
Authors: Ye. Somov, S. Butyrin

ID: 223; Title: Complete Dynamic Model of a Stewart version Parallel Manipulator
Authors: António M. Lopes

ID: 200; Title: Mathematical Modelling Of Interaction Of Electromagnetic Radiation With The Surface Having The Self-Affine Bas-Relief
Authors: G. Lukyanov A. Kopyltsov

D03 - Numerical methods and image analysis

Chairman: **A. I. Matasov**

ID: 26; Title: Nonoptimality Levels in Numerical Implementation of the Least Absolute Deviations Method
Authors: P.A. Akimov, A.I. Matasov

ID: 279; Title: Dynamic Programming Approaches to the Hamilton-Jacobi-Bellman Theory of Energy Systems
Authors: Piotr Kuran and Stanislaw Sieniutycz

ID: 205; Title: Successive approximation algorithm for center manifolds and its applications
Authors: Hidetoshi Suzuki, Noboru Sakamoto, Ryu Fujimoto

ID: 17; Title: Functionalization method in motion image analysis
Authors: P.K. Kuznetsov, B.V. Martemyanov, V.I. Semavin, V.K. Skirmunt

ID: 30; Title: Design and implementation of coupled chaotic maps in watermarking
Authors: S. Behnia, S. Ahadpour, P. Ayubi.

15:40-16:10 Coffee break



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16:10-18:10 Parallel sessions

Aula Magna - Special session I12: Control of oscillatory delayed-coupled networks

Chairman: C. Masoller

ID: 19; Title: Chaos synchronization with time-delayed couplings
Authors: Wolfgang Kinzel Anja Englert Ido Kanter

ID: 120; Title: Synchronization between semiconductor lasers with internal delayed feedback
Authors: A. Loose, S. Schikora, H.-J. Wünsche, and F.Henneberger

ID: 138; Title: Time-delayed feedback control of delay-coupled systems
Authors: Eckehard Schoell

ID: 193; Title: Zero-lag synchronization in delay-coupled lasers and its stability
Authors: Ingo Fischer, V.Flunkert, O.D. Huys, J. Danckaert, E.Schöll, C.M. Gonzales, M.C. Torrent, J. Garcia-Ojalvo

ID: 242; Title: Synchronization without correlation
Authors: C. Mirasso, M. C. Soriano, G. van der Sande, I. Fischer

ID: 106; Title: Lag synchronization in delay-coupled lasers
Authors: C. M. Gonzalez, I. Fischer, J. Tiana, M. C. Torrent, J. Garcia-Ojalvo

D02 - Special session I4: Localization of oscillations in dynamical systems

Chairman: G. A. Leonov

ID: 58; Title: Control of oscillations in manufacturing networks
Authors: Alexander Y. Pogromsky, Boris Andrievsky and Jacobus E. Rooda

ID: 108; Title: Mathematical models of electrical machines
Authors: Kondrat'eva E.V., Leonov G.A.

ID: 109; Title: Analysis and synthesis of phase locked loops circuits
Authors: Kuznetsov N.V., Leonov G.A., Neittaanmäki P., Seledzhi S.M.

ID: 110; Title: Period doubling bifurcation in discrete phase-locked loops
Authors: Kudryashova E.V., Kuznetsov N.V.

ID: 182; Title: On nonlinear resonance oscillations of a spring supported point particle
Authors: M.M. Shunderyuk



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Program of posters

POSTER SESSION 1 – Wednesday 2 – h. 18.00-19.00

- 1 **ID: 7; Title:** Perturbation of eigenvalues in multiparameter families of non-self-adjoint operator matrices
Authors: Oleg N. Kirillov
- 2 **ID: 8; Title:** Noise-Induced Transitions for Coexisting Periodic Attractors
Authors: Irina Bashkirtseva
- 3 **ID: 9; Title:** Minimax Terminal Control Problem in Hierarchical Nonlinear Discrete-Time Dynamical System
Authors: Andrey F. Shorikov
- 4 **ID: 10; Title:** Sensitivity Control for Stochastic Invariant Manifolds
Authors: Lev Ryashko
- 5 **ID: 55; Title:** Stochastic Chaos and its control in a stochastic Duffing-van der Pol system
Authors: Zhang Ying, Xu Wei, Ni Fei, Fang Tong
- 6 **ID: 89; Title:** Necessary optimality conditions for optimal impulsive control problem for one class of Lagrangian system
Authors: A.N. Seseikin, N.I. Zhelonkina
- 7 **ID: 96; Title:** On the duality of guaranteed control-estimation problems for hierarchical systems
Authors: S.V. Kruglikov
- 8 **ID: 180; Title:** Distributed Multi-Objective Optimal Control for Wind Farms
Authors: Mauricio F. Mauleoux, Viacheslav P. Shkodyrev
- 9 **ID: 209; Title:** Some Approaches to Adaptive Control of Non-linear Physical Laboratory Servo-system DR300
Authors: Vladimír Bobál, Petr Chalupa, Marek Kubalčík, Petr Dostál
- 10 **ID: 212; Title:** Anisotropy-Based Approximation of Linear Discrete Time-Invariant Stochastic System
Authors: Michael M. Tchaikovsky and Alexander P. Kurdyukov
- 11 **ID: 239; Title:** Experimental phase control of a forced Chua's circuit
Authors: Giovanni Chessari, Stefano Euzzor, Luigi Fortuna, Mattia Frasca, Riccardo Meucci, Fortunato T. Arecchi
- 12 **ID: 248; Title:** Stratification of approximating surfaces for the Lorenz attractor
Authors: Leonov G.A., Malykh A.E., Reitmann V.
- 13 **ID: 133; Title:** The intrinsic hypoelliptic Laplacian and its heat kernel on unimodular Lie groups
Authors: A. Agrachev, U. Boscain, J.P. Gauthier, F. Rossi
- 14 **ID: 22; Title:** Stabilization of Reaction Wheel Pendulum on Movable Support with On-line Identification of Unknown Parameters
Authors: Alexey A. Bobtsov, Sergey A. Kolyubin, Anton A. Pyrkin



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- 15 **ID:** 141; **Title:** On The Output Stabilizability Of Distributed Systems
Authors: Faouzi Haddouchi
- 16 **ID:** 160; **Title:** On Stabilization of Levitron
Authors: Burlakova L.A.
- 17 **ID:** 100; **Title:** The study of self-synchronization of vibroexciters with inner degree of freedom using numerical methods
Authors: Potapenko M
- 18 **ID:** 187; **Title:** Robustness of synchronization in hyperchaotic circuits
Authors: A. Buscarino, L. Fortuna, M. Frasca
- 19 **ID:** 273; **Title:** Synchronization and antisynchronization for two chaotic Van der Pol-Duffing systems
Authors: Servilia Oancea , Ioan Grosu
- 20 **ID:** 204; **Title:** Induction motor rotor time constant inverse estimation using neural network
Authors: N. Kabache, B.Chetate
- 21 **ID:** 247; **Title:** Automatic Vehicle Steering using Variable Structure Model Reference Adaptive Control
Authors: Ardeshir Karami Mohammadi Mohammadreza Saeed
- 22 **ID:** 258; **Title:** Using of smooth approximation for nonlinear beam dynamics investigation in RF linac
Authors: V.S. Dyubkov, E.S. Masunov, S.M. Polozov
- 23 **ID:** 259; **Title:** A new CNN-based approach for automotive electronic devices characterization
Authors: G. M. Rivituso, A. Gallo
- 24 **ID:** 298; **Title:** Synchronization of Chaos in Unidirectional Coupled Duffing Oscillators
Authors: Fadhil Rahma Tahir, Falih M. Mousa



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POSTER SESSION 2 – Thursday 3 – h. 18.00-19.00

- 1 **ID:** 31; **Title:** The Dynamics Of The Interaction Systems
Authors: V.M. Somsikov
- 2 **ID:** 47; **Title:** A nonlinear dynamics of population size: the influence of age structure in population on the transition to chaos
Authors: Efim Ya. Frisman Oksana L. Zhdanova
- 3 **ID:** 90; **Title:** Spatio-temporal Dynamics of Urban Development Along The Bosphorus , Istanbul
Authors: C. Soylu, M.E. Yalcin, B. Dikcinar, I. Dincer, Z. Enlil, B. Sengezer, M. Frasca, L. Fortuna, F. Martinico and P. La Greca
- 4 **ID:** 4; **Title:** Usage Of Invariant Immersion Method For Identification Of Parameters For Systems With Limited Output (Hard Limitation In Observation Equation).
Authors: V.M. Ponyatskiy I.V. Zamotaev V.B. Kisilev
- 5 **ID:** 77; **Title:** An analytical investigation of steady-state flutter of the hereditary deformable plates in supersonic flow field
Authors: Botir Usmonov, Faxriddin Badalov
- 6 **ID:** 145; **Title:** Development of new data carriers on the basis of non-linear system characterised by dynamic chaos
Authors: Afanasiev V., Loginov S., Polskiy Yu.
- 7 **ID:** 265; **Title:** Influence of ion strength and viability in bacterial self-assembly pattern on abiotic surface: preliminary models
Authors: Caratozzolo M., Frasca M., Grasso L., Guglielmino S., Fortuna L. and Marletta G.
- 8 **ID:** 61; **Title:** High Definition Diagnostic Imaging: Transversal & Tangential Helix Coupling Control of the Projective Oscillator Representation
Authors: Walter Schempp
- 9 **ID:** 127; **Title:** Model-based control of cardiac dynamics in a ring geometry
Authors: Alejandro Garzon, Roman Grigoriev
- 10 **ID:** 3; **Title:** Spin-orbit interaction in particles' motion as a model of quantum computation
Authors: Gerasimos G. Rigatos
- 11 **ID:** 88; **Title:** Creating quantum dots by charge density fluctuations.
Authors: A. G. Balanov, O. Makarovsky, O. Thomas, L. Eaves, A. Patane`, R. P. Campion, C. T. Foxon, E. E. Vdovin, D. K. Maude, G. Kiesslich, and R. J. Airey
- 12 **ID:** 142; **Title:** Polar pumped current in quantum nano rings
Authors: Edris Faizabadi
- 13 **ID:** 150; **Title:** Semiconductor Quantum-Dot Lasers with Optical Feedback
Authors: Christian Otto, Kathy Luedge, and Eckehard Schoell
- 14 **ID:** 220; **Title:** Quantum Nanoring With Two Magnetic Impurities As A Spin-Polarizer
Authors: Leila Eslami and Mahdi Esmaeilzadeh



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- 15** **ID:** 25; **Title:** On the experiment of Michelson-Morley
Authors: Slavik Avagyan
- 16** **ID:** 69; **Title:** The Possible Synergetic Approachs For Investigations Of Evolution Properties Of Silicon Structures On Insulator
Authors: Prokopiev E.P.
- 17** **ID:** 70; **Title:** Synergetic Approaches To Problems Of Evolution Of Properties Of Materials And Nanomaterials On The Basis Of Silicon
Authors: Prokopiev E.P., A.I.Alihanov
- 18** **ID:** 146; **Title:** Graphene nano layer as a grid line metalization in solar cell
Authors: Roya Jalali , Edris Faizabadi
- 19** **ID:** 267; **Title:** Effect of contact position and tip properties on the torsional vibration responses of atomic force microscope cantilevers
Authors: Ardeshir Karami mohamadi, Mohammad Abbasi
- 20** **ID:** 143; **Title:** Spin Polarization through Semiconductor Superlattice in the Presence of Dresselhaus Spin-Orbit Interaction By coherent potential approximation
Authors: Edris Faizabadi
- 21** **ID:** 13; **Title:** Orbital Tether System Parameters Identification for Small Subsattellites Deorbiting from Circular and Elliptic Orbit
Authors: Ishkov S.A., Sheynikov I. V.
- 22** **ID:** 250; **Title:** Optimization mathematical models of beam dynamics in the injection systems with real geometry
Authors: S.A. Kozynchenko, D.A. Ovsyannikov
- 23** **ID:** 277; **Title:** Attitude Control of a Precise-Oriented Flexible Satellite by Using Constant Amplitude Thrusters
Authors: Dr.Eng. ir. Setyamartana Parman