

# Second International Conference PHYSICS and CONTROL



Saint Petersburg, Russia,  
August 24–26, 2005

## FINAL PROGRAM



**IEEE**



**Organized by**

- St. Petersburg Scientific Center of Russian Academy of Sciences
- St. Petersburg Group of Russian National Committee of Automatic Control
- St. Petersburg Informatics and Control Society
- Institute for Problems of Mechanical Engineering of RAS
- St. Petersburg State University

**In Cooperation with**

- The IEEE Control Systems Society
- The IEEE Circuits and Systems Society
- The IEEE Computational Intelligence Society
- The European Physical Society (EPS)
- The EPS Interdivisional Group on Experimental Physics Control Systems
- The Russia (North-West) IEEE Joint CI/CS/RA Chapter

**Cosponsors**

- Central Scientific and Research Institute "Elektropribor", St.Petersburg, Russia
- Russian Foundation for Basic Research (project 05-01-10055)
- City University of Hong Kong, China
- St.Petersburg City Palace for Youth Creativity

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A. Dmitriev (Russia)	E.Mosekilde (Denmark)	V. Yakubovich (Russia)
A. Fradkov (Russia)		

**National Organizing Committee**

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**Address of Organizing Committee:**

Institute for Problems of Mechanical Engineering, 61 Bolshoy Ave. V.O.,  
 199178, St.Petersburg, RUSSIA, Ph. +7(812) 321–4766, Fax: +7(812)321–4771  
 E-mail: physcon05@physcon.ru , <http://conf.physcon.ru/2005/>

*Dear Colleagues and Guests, Dear Friends,*

*It is our pleasure to invite you to participate in the Second International Conference "Physics and Control" (PhysCon 2005) to be held on August 24–26, 2005 in Saint Petersburg, Russia.*

*The Conference "Physics and Control 2005" will be the second international conference focusing on the borderland between Physics and Control with emphasis on both theory and applications. The first Conference "Physics and Control 2003" (St.Petersburg, 20–22 Aug. 2003) was a success with about 250 participants from 33 countries.*

*PhysCon 2005 has attracted a large interest of different scientific communities as well. More than 250 papers were submitted from 35 countries. 212 papers, including 70 poster papers are included into the conference program after rigorous reviewing. Five invited sessions have been organized.*

*A major goal of the Conference is to bring together researchers from different scientific communities and to gain some general and unified perspectives in the studying of controlled systems in physics, chemistry, biology and other natural sciences. The Conference will provide a unique forum for meeting point for physicists and mathematicians, chemists and biologists, control theorists and engineers. We hope that the Conference will help experts in control theory to get acquainted with new interesting problems, and help experts in physics and related fields to know more about tools of the modern control theory.*

*We will do our best to create a friendly atmosphere for work and rest, encourage new personal contacts and exchange of ideas. We wish the participants to enjoy the historical sites and the amenities of this city, including the masterpieces of the Hermitage and the Russian Museum, the Royal palaces, charming suburbs, picturesque islands and embankments. Make your plans to stay over the weekend to attend various sightseeing tours.*

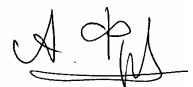
*The Conference will be held in the beautiful "Anichkov Palace" located in the historical part of the city, one of the residences of the Tsars' family in several generations.*

*Looking forward to meeting you in Saint Petersburg in August 2005.*

*On behalf of the IPC and NOC for PhysCon 2005,*



*Vladimir Peshekhonov  
Co-Chairman of IPC for PhysCon'05*



*Alexander L. Fradkov  
Chairman of NOC for PhysCon'05*

## Conference Schedule

Registration desk is open on:

**Monday, August 22:** 16:00–18:00 – Anichkov Palace (Department of Science);

**Tuesday, August 23:** 15:00–19:00 – Anichkov Palace (Main Building).

**August 24, 25, 26:** 9:00– 16:00 Anichkov Palace (Main Building).

### Tuesday, August 23

16:00–19:00	Bus tour
19:00–20:00	Welcome reception

### Wednesday, August 24

9:30–11:20	Opening Ceremony. Plenary Session I
11:20–11:50	Coffee Break
11:50–13:20	Plenary Session II
13:20–15:00	Lunch
15:00–17:00	Regular Sessions WeP1–WeP4
17:00–17:20	Coffee
17:00–18:00	Poster Session I

### Thursday, August 25

9:00–11:00	Regular Sessions ThA1–ThA4
11:00–11:20	Coffee Break
11:20–13:20	Regular Sessions ThM1–ThM4
13:20–15:00	Lunch
15:00–17:00	Regular Sessions ThP1–ThP4
17:00–17:20	Coffee
17:00–18:00	Poster Session II

### Friday, August 26

9:00–11:00	Regular Sessions FrA1–FrA4
11:00–11:20	Coffee Break
11:20–13:20	Regular Sessions FrM1–FrM4
13:20–15:00	Lunch
15:00–16:30	Plenary Session III
16:30–17:00	Closing Ceremony
17:15–19:00	Post Conference Activities
19:00–22:30	Conference Banquet

**PROGRAM AT A GLANCE**

**Wednesday, August 24**

	White Hall	Golden Hall	Blue Hall	Emperor's Cabinet
9:30–11:20	<b>Opening Ceremony. Plenary Session I (White Hall)</b>			
11:20–11:50	Coffee Break			
11:50–13:20	<b>Plenary Session II (White Hall)</b>			
13:20–15:00	LUNCH			
15:00–17:00	<b>WeP1.</b> Control of Oscillations	<b>WeP2.</b> Thermodynamics, Self-Organization, Control	<b>WeP3.</b> Plasma Modeling and Control in Tokamaks (invited)	<b>WeP4.</b> Complex Networks, Analysis, Synchronization and Control (invited)
17:00–17:20	Coffee			
17:00–18:00	<b>Poster Session I (Dancing Hall)</b>			

**Thursday, August 25**

	White Hall	Golden Hall	Blue Hall	Emperor's Cabinet
9:00–11:00	<b>ThA1.</b> Optimal Control	<b>ThA2.</b> Control of Nanostructures	<b>ThA3.</b> Synchronization	<b>ThA4.</b> Multiparameter Stability and Control Problems in Physics: Singularities, Bifurcations, Non-Conservativeness–I (invited)
11:00–11:20	Coffee Break			
11:20–13:20	<b>ThM1.</b> Control of Distributed Systems	<b>ThM2.</b> Dynamics and Control of Chaos	<b>ThM3.</b> Control of Charged Particle Beams (invited)	<b>ThM4.</b> Multiparameter Stability and Control Problems in Physics: Singularities, Bifurcations, Non-Conservativeness–II (invited)
13:20–15:00	LUNCH			
15:00–17:00	<b>ThP1.</b> Control of Mechanical Systems	<b>ThP2.</b> Control of Chaos	<b>ThP3.</b> Control of Oscillations and Waves	<b>ThP4.</b> Modeling
17:00–17:20	Coffee			
17:00–18:00	<b>Poster Session II</b> (Dancing Hall)			

**Friday, August 26**

	White Hall	Golden Hall	Blue Hall	Emperor's Cabinet
9:00–11:00	<b>FrA1.</b> Bifurcations and Chaos	<b>FrA2.</b> Nonlinear Dynamics and Control	<b>FrA3.</b> Motion Control	<b>FrA4.</b> Identification and Filtering
11:00–11:20	Coffee Break			
11:20–13:20	<b>FrM1.</b> Stochastic and Chaotic Systems	<b>FrM2.</b> Discontinuous and Hybrid Systems	<b>FrM3.</b> Nonlinear Dynamics	<b>FrM4.</b> Molecular and Quantum Control
13:20–15:00	LUNCH			
15:00–16:30	<b>Plenary Session III</b> (White Hall)			
16:30–17:00	<b>Closing Ceremony</b> (White Hall)			
17:00–19:00	Post Conference Activities			
19:00–22:30	CONFERENCE BANQUET			

## **Conference Venue**

The Conference will be held at the

**“Anichkov Dvorets” (Anichkov Palace),  
39, Nevskiy ave., 190011, Saint Petersburg,  
Phone: +7(812) 310–4395 (From August 24 to August 26)**

You can reach the “Anichkov Palace” by metro (subway): “Nevskiy Prospekt”/“Gostiny Dvor” (exit to Sadovaya Str.).

## **Registration Desk**

The participants are invited to pick up their Conference bag at the registration desk. The registration desk will be open for registration matters and other information during the following hours:

- Monday, August 22, 16:00–18:00 – Anichkov Palace (Department of Science and Engineering);
- Tuesday, August 23, 15:00–19:00 – Anichkov Palace (Main Building);
- August 24, 25, 26: 9:00–16:00 – Anichkov Palace (Main Building).

## **Publication**

Proceedings of the Conference on CD-ROM and the Program with the Abstracts Volume will be distributed to the participants at the Registration desk. After the Conference the Proceedings will be available from the IEEE Xplore Library, see at <http://www.ieee.org>.

## **Accommodation**

Most participants will be staying in the hotels “Oktyabrskaya” (\*\*\*), “Rus” (\*\*\*), “Nauka” (\*).

## **Internet Access and Computer/CD ROM Facilities**

Free Internet access and computer/CD ROM facilities will be provided to participants from August 23 till August 26. Ask at the Registration desk.

## **Lunches**

Lunch tickets will be available at the registration desk. There are also a number of restaurants, coffee shops and snack bars within walking distance from the “Anichkov Palace”. See the site map at the back cover.

## **Conference Banquet**

The Conference Banquet will take place on Friday 26 August at 19:00 in one of the historical buildings of the city. A limited amount of tickets will be available at the Registration desk.

## **Book Exhibition**

The book exhibition will be organized near the Registration desk.

## **Cancellation Policy**

The registration fee will be refunded less a handling fee of €35 – upon a written request received before July 5, 2005 (postmarked). After this date there will be no refund but the CD-ROM Proceedings will be sent by airmail.

## **Conference Information**

For inquires use local phone numbers: **321–4766** (before August 24) or **310–4395** (from August 23 to August 26).

## **Social Program**

Saint Petersburg (the former capital of Russia) with about 5 millions inhabitants is recognized as one of the most beautiful cities in the world. It is often called “Venice of the North”. The city was founded by Russian Tsar Peter the Great (Peter I, 1689–1725 years of governing) during the Northern War of Russia with Sweden. May 16, 1703 is seemed to be the date of Saint Petersburg foundation.



Saint Petersburg is known not only for its palaces and museums. It is a historical scientific center of Russia, where the first Russian University and Russian Academy of Sciences were founded in 1724. Among first professors of St.Petersburg University were Leonhard Euler (who lived in Saint Petersburg for 30 years and wrote about 500 of his 865 papers there) and Daniil Bernoulli. Visitors have a unique possibility to see houses where L. Euler, P. Chebyshev, A.M. Lyapunov, A.A. Markov, S. Kovalevskaya lived and worked, as well as L. Euler's tomb.

Various guided tours over Saint Petersburg and suburbs including visits to Tsars' palaces and museums will be available during both the Conference days and the weekend. You will never get tired of admiring the unique architecture of regular and landscape gardens and parks, suburban palaces of Pushkin, Pavlovsk, Peterhof, Gatchina, and Lomonosov (Oranienbaum).

### Sightseeing Tours

A number of sightseeing tours are organized for the Symposium participants and accompanying persons. Prices and dates are subject to changes if the amount of attendees is not sufficient. Individual tours are available upon request at the Registration desk.

- ♦ *Survey bus tours* over Saint Petersburg (free of charge for registered participants): **August 23, 16:00–19:00**
- ♦ *Waterbus tour "Over rivers and channels" (€8): August 25, 18:15–19:30*
- ♦ *The Hermitage (€15): August 23, 25: 11:00–13:00*
- ♦ *Russian Museum (Russian Icon and Russian art) (€15): August 24, 15:00–17:00*
- ♦ *Walking tour "Historical Center of St.Petersburg": Upon request*
- ♦ *Bus tour to suburbs "Peterhof fountains" (€45): Aug. 27, 10:00–16:00*

*Peterhof* is 30 kilometers to the West of St.Petersburg. The palace and park complex with its unique array of fountains is considered to be one of the most beautiful in the world. The complex also includes the "*Monplaisir*" and "*Marly*" Palaces and the *Hermitage Pavilion*. It is often called "Russian Versailles".

More information about tours and sightseeing in Saint Petersburg is posted on the PhysCon 2005 website and can be found on other sites:

<http://www.personal-guide.spb.ru/>

<http://gorussia.about.com/cs/russia/>

<http://www.saint-petersburg.com/>

[http://www.300.spb.ru/home\\_en.phtml](http://www.300.spb.ru/home_en.phtml)

Since August is high season for tourism in Saint Petersburg, we recommend you to make advance booking of your tours, see the Registration form.

### **Currency**

The Russian legislation does not impose restrictions on the amount of foreign currency brought in. Currency exchange services are offered in any bank and in most hotels. The most popular currencies are US dollar (US\$) and Euro (€). Official exchange rates on July 20, 2005 were: US\$ 1 =28.67 roubles, 1 €=34.59 roubles. Credit cards and traveller checks are accepted in some banks. However, the commission rates are rather high (5–10%). Therefore cash is still preferable way of payment in Russia.

### **Electricity**

The electricity is supplied at 220V, 50 Hz in Russia.

### **Location and Weather**

Saint Petersburg is located at the mouth of the Neva River, and across the islands of its delta on the coast of the Finish Gulf of the Baltic Sea. Sometimes it is referred as "the city of 101 islands and 300 bridges". The city is situated on 60° of the northern latitude. Stockholm, Oslo and Helsinki can boast of being the same latitude. St.Petersburg belongs to the Moscow standard time (MST) zone, which differs from the Greenwich GMT: Summer MST=GMT+4 hours. The climate in St.Petersburg is moderate and humid. Hot sunny days are not rare, but you never know when it is going to rain. July is the hottest month of the year. It usually starts getting a bit cooler in mid-August. In August it is warm with occasional rains, the temperature ranging from 18° to 23°C.

### **Responsibility**

The organizers do not accept responsibility for any personal injury, damage or loss of property, which may occur in connection with this Conference. All participants are advised to arrange travel insurance before departure from their home countries.

### **Travel agency working for PhysCon 2005:**

"Monomax" (<http://www.monomax.org>)

## TECHNICAL PROGRAM

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### WEDNESDAY, AUGUST 24

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Wednesday, August 24, 9:30–11:20  
White Hall

#### Opening Ceremony, Plenary Session I

Chair: V. Peshekhonov (*Russia*)

9:50–10:35

Synergetics: Some Recent Developments

H. Haken (*Germany*)

10:35–11:20

Status of ITER Project

O.G. Filatov, V.P. Smirnov (*Russia*)

11:20–11:50 — Coffee break

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Wednesday, August 24, 11:50–13:20  
White Hall

#### Plenary Session II

Chair: W.D. Pilkey (*USA*)

11:50–12:35

Internal Movements as a Means to Control the Motion of a Body in a Resistive Medium

F.L. Chernousko (*Russia*)

12:35–13:20

Control of Pendulum

K. Furuta (*Japan*)

13:20–15:00 — Lunch

Wednesday, August 24, 15:00–17:00  
White Hall

#### Session WeP1. Control of Oscillations

Co-Chairs: F.L. Chernousko (*Russia*), K. Furuta (*Japan*)

15:00–15:40

From the Pendulum to Rydberg Accelerator and Planetary Dynamics: Autoresonant Formation and Control of Nonlinear States (*invited*)

L. Friedland (*Israel*)

**15:40–16:00**

A Pendulum-Driven Cart via Internal Force and Static Friction

**H. Li, K. Furuta** (*Japan*), **F.L. Chernousko** (*Russia*)

**16:00–16:20**

Asymptotic Stabilization of Uniform Motion in Hamiltonian Systems

**I.V. Burkov** (*Russia*)

**16:20–16:40**

Control of Mechanical Energy Pumping in the Non-Homogeneous System of Coupled Oscillators

**A.I. Musienko, L.I. Manevitch** (*Russia*)

**16:40–17:00**

Asymptotic Analysis of the Autoresonance Phenomenon

**L.A. Kalyakin** (*Russia*)

**17:00–17:20 — Coffee**

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**Wednesday, August 24, 15:00–17:00**  
**Golden Hall**

**Session WeP2. Thermodynamics, Self-Organization, Control**

**Co-chairs: T.A. Khantuleva, Yu.A. Pykh** (*Russia*)

**15:00–15:20**

Synergetic Phenomena in Detonation of Solid Heterogeneous Explosives Control of Oscillations and Dissipative Structures in Detonation Flow

**I. Plaksin, J. Campos, J. Direito, R. Mendes, J. Ribeiro, J. Góis, P. Simões, L. Pedroso, A. Portugal** (*Portugal*), **J. Kennedy, S. Coffey** (*USA*)

**15:20–15:40**

Internal Control in Nonequilibrium Transport

**T.A. Khantuleva** (*Russia*)

**15:40–16:00**

Effect of the Solution Ionic Composition upon the Precipitation Kinetics and Self-Organization Processes in Basic Iron Sulfate Precipitates

**N.M. Sergeeva** (*Russia*), **V.G. Korsakov** (*Russia, Japan*), **Y. Nakanishi** (*Japan*), **S.V. Mjakin** (*Russia*), **H. Kominami** (*Japan*)

**16:00–16:20**

Thermodynamic Modeling of Nanocomposites

**V.G. Korsakov, M.M. Sychov, S.V. Mjakin, S.A. Alexeev** (*Russia*), **Y. Nakanishi, H. Kominami, T. Aoki, Y. Hatanaka** (*Japan*)

**16:20–16:40**

Direct Lyapunov Method in the Theory of Replicator System with Entropy-Like Applications

**Yu.A. Pykh** (*Russia*)

**16:40–17:00**

Decision Making for a Great Number of Alternatives by Self-Organization

**A.V. Osipov** (*Russia*)

**17:00–17:20 — Coffee**

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**Wednesday, August 24, 15:00–17:00**

**Blue Hall**

**Session WeP3. Plasma Modeling and Control in Tokamaks (invited)**

**Organizers and Co-chairs: V.A. Belyakov, D.A. Ovsyannikov** (*Russia*)

**15:00–15:20**

Plasma Control in Tokamaks

**V. Belyakov, A. Kavin, E. Lamzin, D. Ovsyannikov, S. Sytchevsky, V. Vasiliev** (*Russia*)

**15:20–15:40**

Plasma Shape Reconstruction in Tokamak Globus-M Experiments with Using Magnetic Sensors

**V.I. Vasiliev, Yu.A. Kostsov, K.M. Lobanov, L.P. Makarova, A.B. Mineev, V.K. Gusev, R.G. Levin, Yu.V. Petrov, N.V. Sakharov** (*Russia*)

**15:40–16:00**

Robust Features Analysis for the MAST Plasma Vertical Feedback Control System

**V.A. Belyakov, A.A. Kavin, D.A. Ovsyannikov, A.D. Ovsyannikov, A.P. Zhabko, E.I. Veremey, I.A. Makeev** (*Russia*), **M.P. Gryaznevich, G.J. McArdle** (*UK*)

**16:00–16:20**

Program for Scientific and Educational Investigations on the Base of Small Spherical Tokamak Gutta

**D.A. Ovsyannikov, A.D. Ovsyannikov, A.P. Zhabko, E.I. Veremey, G.M. Vorobyov, V.M. Zavadskij** (*Russia*)

**16:20–16:40**

Study of Plasma Current Ramp-Down and Runaway Generation under Massive Gas Injection into the Tokamak for Disruption Mitigation

**A. Mineev** (*Russia*), **M. Sugihara** (*Japan*), **V. Zhogolev, K. Lobanov, L. Makarova, V. Vasiliev** (*Russia*)

**17:00–17:20 — Coffee**

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**Wednesday, August 24, 15:00–17:00**

**Emperor's Cabinet**

**Session WeP4. Complex Networks, Analysis, Synchronization and Control (invited)**

**Organizers and Co-chairs: M. di Bernardo** (*Italy*), **G. Chen** (*China*)

**15:00–15:20**

Synchronization in Complex Networks with Blinking Interactions

**I. Belykh** (*Switzerland*), **V.N. Belykh** (*Russia*), **M. Hasler** (*Switzerland*)

**15:20–15:40**

Automatic Control of Phase Synchronization in Coupled Complex Oscillators

**V.N. Belykh** (*Russia*), **N. Kuckländer** (*Germany*), **G.V. Osipov** (*Russia*), **B. Blasius**, **J. Kurths** (*Germany*)

**15:40–16:00**

On Pinning Control of Scale-Free Networks

**G. Chen**, **Z. Fan** (*China*)

**16:00–16:20**

Load Distribution in Small World Networks

**M. di Bernardo**, **F. Garofalo**, **S. Manfredi**, **F. Sorrentino** (*Italy*)

**16:20–16:40**

Physical Properties and Medium Access Control for Wireless Ad-hoc Networks

**B. Zieliński** (*Poland*)

**16:40–17:00**

Network Analysis, Adaptive Control and Imitation Simulation for Multi-Agent Telecommunication Systems

**A.V. Timofeev**, **A.V. Syrtsev**, **A.V. Kolotaev** (*Russia*)

**17:00–17:20 — Coffee**

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**Wednesday, August 24, 17:00–18:00**  
**Dancing Hall**

**Poster Session I**

**Moderator: M. Ananyevskiy**

Controlling Motion of an Ensemble of Topological Defects

**V.O. Afenchenko**, **A.B. Ezersky**, **S.V. Kiyashko** (*Russia*)

Stability Conditions for a Class of Nonlinear Dynamical Systems

**A.Yu. Aleksandrov**, **A.V. Platonov** (*Russia*)

Feedback control of ensemble of HF quantum molecules

**M. Ananyevskiy** (*Russia*)

Adiabats and Compression of Pulses

**V.G. Arkhipkin**, **I.V. Timofeev** (*Russia*)

Suppression of a noise-induced transition by feedback control

**Yu.A. Astrov**, **A. Fradkov**, **P. Guzenko** (*Russia*)

Multi-Purpose Control of Dynamic System

**A.A. Ashimov**, **Yu.V. Borovskiy**, **As.A. Ashimov** (*Kazakhstan*)

Velocity Control of an Electro Hydraulic Servomotor by Neural Networks

**H. Azimian**, **R. Adlgostar**, **M. Teshnehlab** (*Iran*)

Controlling the Optimize Deposition of Thin Film in D.C. Plasma Magnetron Sputtering and Measuring the Surface Conductivity by Hall Effect

**F. Bahadori, M. Mahmoudzadeh** (*Turkey*)

Breaking the Light Barrier. Adding Velocities beyond the Speed of Light

**E.A. Blomdahl** (*USA*)

An  $H_\infty$  Technology for Simultaneous Estimation and Control of an Inertial Gyroplatform when Stabilizing It in a Reference Phase Path

**A.V. Chernodarov** (*Russia*)

Theses on Entropy

**K. Chernyshov** (*Russia*)

Control of Isomerization in Classical Ensembles of Nonrigid Molecular Systems, LiCN

**A.A. Efimov** (*Russia*), **F. Borondo, R.M. Benito** (*Spain*)

Description of Elastic Ionic Polarization of a Dielectric by the Model of System with Cross Coupling

**I.E. Eremin, N.S. Kostyukov, E.A. Covalence** (*Russia*)

The Condensable Phase Fractions Growth under Free Molecular Conditions

**A.I. Gavrilov, E.V. Hairjuzova, F.V. Moskalenko, I.A. Gavrilov** (*Russia*)

Pontryagin Maximum Principle for Quantum Time-Optimum Problem

**P.A. Golovinski** (*Russia*)

Quantum Feedback of Distinguishable Atoms

**T. Ivanova, D. Ivanov** (*Russia*)

Single Particle Dynamics in Continuously Controlled Bosonic Gas

**D. Ivanov** (*Russia*), **S. Wallentowitz** (*Chile*)

An Approach to Surface Profile Estimation

**S.A. Kochetkov, P.A. Shavrin** (*Russia*)

Nonlinear Controllers: A Hybrid Algorithm of Synthesis

**Yu.V. Kolokolov, A.P. Sholonik, P.S. Ustinov** (*Russia*)

Direct Synthesis of Sliding Modes Identifier for Non-Linear Systems

**S.A. Krasnova, V.A. Utkin, S.I. Kuznetsov** (*Russia*)

High-speed Gradient Method Application for Control of Electromechanical Antenna Pointing Drive

**A.Yu. Kuchmin** (*Russia*)

Investigation Self-Organization Structures in Supersonic Dynamics of Domain Wall in Orthoferrites

**A.P. Kuz'menko, E.A. Zhukov, A.V. Kaminskiy** (*Russia*)

On Stabilization Problem for Non-Linear Systems

**S.I. Kuznetsov, V.A. Utkin, S.A. Krasnova** (*Russia*)

Modeling of Tetrahedrally Close-Packed Structures in Magnetic Nanocrystalline Fe-C Films

**L.I. Kveglis, A.V. Kuzovnikov, I.V. Timofeev** (*Russia*)

The Digital Measurer of Temperature with Platinum Thermoresistor

**B.M. Mamikonyan, Kh.B. Mamikonyan, A.M. Manukyan** (*Armenia*)

Precision Control of Thermal Field in Solid Sample

**M.A. Martsenyuk, A.Yu. Oschepkov** (*Russia*)

Hankel Singular Values and Vectors of a Nonlinear Pendulum

**L.A. Mironovsky, X.Y. Petrova** (*Russia*)

Robust and Simultaneous Stabilization of Jump Time-Delay Systems via Output Feedback

**P.V. Pakshin, A.A. Emelyanov** (*Russia*)

Motion Control on a Vicinity of Sets on Logarithmic Restrictions in Connected Phase Planes

**V.N. Pilishkin** (*Russia*), **I. Tollet** (*Finland*)

From Nanopowders to Micro-Crystals

**I. Sandu, I. Morjan, I. Voicu, R. Alexandrescu, F. Dumitrache, I. Soare, M. Fleaca, L. Albu, M. Scarisoreanu, E. Popovici, E. Vasile** (*Romania*)

The Deutsch-Jozsa Algorithm and the Bulk Ensemble NMR Quantum Computer

**R. Sawae, Y. Mori, M. Kawamura, T. Sakata, K. Takarabe** (*Japan*)

Nonlinear Effects and Chaotic Nonequilibrium Behavior with the Thermal Effect on the Nano-Dimensional Metallic Films

**I. Serov, A. Anisimov, G. Lukyanov, V. Margolin, I. Soltovskaya** (*Russia*)

Simulation of Interaction of the Electromagnetic Radiation in the Form of Surface Wave with the Solid Surfaces

**I. Serov, G. Lukyanov** (*Russia*)

Relay Control of the Steel Converter Process by Means of Cooling Additives

**B.M. Sokolov, A.I. Shepeljavyi** (*Russia*), **A.V. Medvedev** (*Sweden*)

Novel Electrochemical Formaldehyde Actinometer for Xe<sub>2</sub>-excimer Lamp Intensity Control

**E.A. Sosnin, E.A. Zakharova, M.L. Moskalyeva, V.N. Batalova** (*Russia*)

Controlled Synchronization of Unbalanced Rotors with Flexible Shafts in Time-Varying Vibrational Units

**O. Tomchina, I. Kudryavtseva** (*Russia*)

Admissible Sampling Time to Stabilize a Shaft in Radial Active Magnetic Bearings

**V.S. Voronkov, A.V. Krivitskaya** (*Russia*)



**THURSDAY, AUGUST 25**

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**Thursday, August 25, 9:00–11:00**  
**White Hall**

**Session ThA1. Optimal Control**

**Co-chairs: N.N. Bolotnik** (*Russia*), **H. Ohmori** (*Japan*)

**9:00–9:20**

Positional Guaranteed Optimization of Linear Control Systems under Disturbances

**N.V. Balashevich** (*Belarus*)

**9:20–9:40**

Nonlinear Adaptive Extremum Seeking Control for Time Delayed Index in the Presence of Deterministic Disturbance

**S. Yamanaka, H. Ohmori** (*Japan*)

**9:40–10:00**

Optimal Control of the Magnetohydrodynamic Ocean Wave Energy Converter: Theory

**D.A. Altshuller, R.A. Koslover** (*USA*)

**10:00–10:20**

Optimal Control Problem for Head Injury Criterion

**D.V. Balandin, N.N. Bolotnik** (*Russia*), **W.D. Pilkey, S.V. Purtsezov** (*USA*)

**10:20–10:40**

Weak Conservation Laws for Minimizers Which Are Not Pontryagin Extremals

**D.F.M. Torres** (*Portugal*)

**10:40–11:00**

Real-Time Computation of Constrained Optimal Closed-Loop Control for Large DAE Systems and Applications in Industrial and Engineering Processes

**G. Bock** (*Germany*)

**11:00–11:20 — Coffee break**

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**Thursday, August 25, 9:00–11:00**  
**Golden Hall**

**Session ThA2. Control of Nanostructures**

**Co-chairs: Yu.A. Astrov** (*Russia*), **A.B. Ezersky** (*Russia*)

**9:00–9:20**

Exciton Spectroscopic Control of Disordered Semiconductor Systems Properties

**A.G. Areshkin, L.I. Vasil'eva, D.L. Fedorov** (*Russia*)

**9:20–9:40**

Statistical Control in Dynamical Non-Linear Systems

**S.V. Borisenok** (*Russia*)

**9:40–10:00**

Multi-Zone Coherent Atomic Beam Splitter Control by Raman Transitions  
**S.V. Borisenok, Yu.V. Rozhdestvensky, Yu.D. Selishcheva** (*Russia*)

**10:00–10:20**

Synchronization and Control of Internal and External Degrees of Freedom of Atoms in a Standing Laser Wave  
**V.Yu. Argonov, S.V. Prants** (*Russia*)

**10:20–10:40**

Development of Materials with Periodically Arranged Groups of Microparticles by Photopolymerization of Faraday Ripple Patterns  
**A.B. Ezersky, B.S. Kaverin, S.V. Kiyashko, S.A. Chesnokov** (*Russia*)

**11:00–11:20 — Coffee break**

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**Thursday, August 25, 9:00–11:00**  
**Blue Hall**

**Session ThA3. Synchronization**

**Co-chairs: I.I. Blekhman, G.V. Osipov** (*Russia*)

**9:00–9:20**

Modeling and Synchronization of the Mechatronic Vibrational Stand  
**B. Andrievsky, A. Fradkov, S. Gavrilov, V. Konoplev** (*Russia*)

**9:20–9:40**

Multistability of Partially Synchronous Regimes in a System of Three Coupled Logistic Maps  
**S.M. Nikolaev, A.V. Shabunin, V.V. Astakhov** (*Russia*)

**9:40–10:00**

Robust Synchronization of nDOF Lagrangian Systems  
**D.I. Rosas, J. Alvarez** (*Mexico*)

**10:00–10:20**

Scaling Properties of Multimode Dynamics in Coupled Chaotic Oscillators  
**A.R. Ziganshin, A.N. Pavlov** (*Russia*)

**10:20–10:40**

Synchronization of Chaotic Intermittent Behavior  
**G.V. Osipov, M.V. Ivanchenko, V.D. Shalfeev** (*Russia*), **J. Kurths** (*Germany*)

**10:40–11:00**

Periodic Oscillations in Weakly Connected Cellular Nonlinear Networks  
**M. Gilli, M. Bonnin, P.P. Civalleri, F. Corinto** (*Italy*)

**11:00–11:20 — Coffee break**

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**Thursday, August 25, 9:00–11:00**  
**Emperor's Cabinet**

**Session ThA4. Multiparameter Stability and Control Problems in Physics: Singularities, Bifurcations, Non-Conservativeness–I (invited)**

**Organizers and Co-chairs: A.P. Seyranian, O.N. Kirillov (Russia)**

**9:00–9:20**

Eigenvalue and Stability Analysis for Axially Moving Strings in Transverse Vibrations

**Y. Wang, X. Liu, L. Huang (China)**

**9:20–9:40**

Instability of Non-Linear Viscoelastic Beam under Tracking Loading

**S.A. Agafonov, D.V. Georgievskii (Russia)**

**9:40–10:00**

Motion Control of an Underactuated Two-Link Manipulator by Using High-Frequency Excitation

**H. Yabuno (Japan)**

**10:00–10:20**

The Aerodynamical Instability of Circular Profiles Systems

**V.I. Vanko (Russia)**

**10:20–10:40**

Sensitivity Analysis of the Roots of the Characteristic Polynomial and Stability of Non-Conservative Systems

**O.N. Kirillov (Russia)**

**10:40–11:00**

Excitation of Oscillations by a Small Limited Control Force

**A.O. Belyakov (Russia)**

**11:00–11:20 — Coffee break**

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**Thursday, August 25, 11:20–13:20**  
**White Hall**

**Session ThM1. Control of Distributed Systems**

**Co-chairs: A. Sharkovsky (Ukraine), G.A. Leonov (Russia)**

**11:20–11:40**

Ideal Turbulence and Bifurcations in Infinite-Dimensional Dynamical Systems

**A. Sharkovsky, V. Fedorenko (Ukraine)**

**11:40–12:00**

Control of Clocks Distributed Systems

**G.A. Leonov, S.M. Seledzhi (Russia)**

**12:00–12:20**

Pole Placement in Infinite Dimensions

**D.V. Yakubovich (Spain, Russia)**

**12:20–12:40**

Parabolic Distributed Parameter Control Systems with Two-Time-Scale Motions

**V.D. Yurkevich** (*Russia*)

**12:40–13:00**

Suppression of Spiral-Wave Turbulence by Point Weak Excitations

**S.A. Vysotsky, R.V. Cheremin, A. Loskutov** (*Russia*)

**13:00–13:20**

Controlled Generation of the Oscillations of a Magneto-Sensitive Elastic Sphere

**I.A. Brigadnov, I.V. Burkov** (*Russia*)

**13:20–15:00 — Lunch**

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**Thursday, August 25, 11:20–13:20**  
**Golden Hall**

**Session ThM2. Dynamics and Control of Chaos**

**Co-chairs: F. Borondo** (*Spain*), **I.V. Miroshnik** (*Russia*)

**11:20–11:40**

Analysis of the Control of Chaos in Unidimensional Maps

**F. Borondo, L.H. Orden** (*Spain*)

**11:40–12:00**

Generating Multi-Folded Torus Chaotic Attractors

**S. Yu, J. Lü** (*China*), **H. Leung** (*Canada*), **G. Chen** (*China*)

**12:00–12:20**

Is Chaos Always Suppressed Parametrically?

**A. Dzhanoev, A. Loskutov** (*Russia*), **T. Schwalger** (*Germany*)

**12:20–12:40**

Localized Control for Non-Resonant Hamiltonian Systems

**M. Vittot, C. Chandre, G. Ciraolo, R. Lima** (*France*)

**12:40–13:00**

Conditional Attractors and Regularization of Chaotic Systems

**I.V. Miroshnik, E. Olkhovskaya** (*Russia*)

**13:00–13:20**

Speed-Gradient Control with Non-Linearity in the Parameters for a Chaotic Colpitts Oscillator

**M.A. Jordán, J.L. Bonitatibus** (*Argentina*)

**13:20–15:00 — Lunch**

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**Thursday, August 25, 11:20–13:20  
Blue Hall**

**Session ThM3. Control of Charged Particle Beams (invited)**

**Organizer and Chair: D.A. Ovsyannikov (Russia)**

**11:20–11:40**

Exploring the Bunching Section of the Neutrino Factory

**A. Poklonskiy (Russia), D. Neuffer, M. Berz (USA), A.D. Ovsyannikov, D.A. Ovsyannikov (Russia)**

**11:40–12:00**

Muon Collider Interaction Region Simulation and Optimization

**P. Snopok (Russia), C. Johnstone, M. Berz (USA), D.A. Ovsyannikov, A.D. Ovsyannikov (Russia)**

**12:00–12:20**

BDO-RFQ Code and Optimization Models

**D.A. Ovsyannikov, A.D. Ovsyannikov, I.V. Antropov, V.A. Kozynchenko (Russia)**

**12:20–12:40**

Mathematical Modeling of the Electron Beam Formatting System on the Basis of Field Emission Cathode

**N.V. Egorov, E.M. Vinogradova (Russia)**

**12:40–13:00**

Modeling of Transitional Processes in APF Cavity

**E. Pikulin, V. Malyshev, S. Filaev, Yu.A. Svistunov (Russia)**

**13:00–13:20**

Some Approaches to Long Time Beam Evolution

**S.N. Andrianov (Russia)**

**13:20–15:00 — Lunch**

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**Thursday, August 25, 11:20–13:20  
Emperor's Cabinet**

**Session ThM4. Multiparameter Stability and Control Problems in Physics: Singularities, Bifurcations, Non-Conservativeness–II (invited)**

**Organizers: A.P. Seyranian, O.N. Kirillov (Russia)**

**Co-Chairs: A. Mondragón (Mexico), A.P. Seyranian (Russia)**

**11:20–11:40**

Unfolding a Degeneracy Point of Two Unbound States: Crossing and Anticrossing of Energies and Widths

**E. Hernández, A. Jáuregui, A. Mondragón, L. Nellen (Mexico)**

**11:40–12:00**

Local Analysis of the No-Controllable Set for One-Input Generalized Linear Systems

**M.I. García-Planas (Spain)**

**12:00–12:20**

A Comparison of Methods for the Stability Analysis of Beams with Varying Cross Sections under Nonconservative Loading

**J.M. Temis, I.M. Fyodorov** (*Russia*)

**12:20–12:40**

On Eigenvalue Surfaces near a Diabolic Point

**O.N. Kirillov, A.A. Mailybaev, A.P. Seyranian** (*Russia*)

**12:40–13:00**

On a Parametric Resonance Problem

**A.P. Seyranian** (*Russia*), **C. Cattani** (*Italy*)

**13:20–15:00 — Lunch**

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**Thursday, August 25, 15:00–17:00**  
**White Hall**

**Session ThP1. Control of Mechanical Systems**

**Co-chairs: I.M. Ananievski** (*Russia*), **D.G. Marinova** (*Bulgaria*)

**15:00–15:40**

Some Topics in Active Vibration Control (*Invited*)

**A. Preumont** (*Belgium*)

**15:40–16:00**

Optimization of Parameters of Shock Isolator with Preview Control

**W.D. Pilkey, S.V. Purtsezov** (*USA*)

**16:00–16:20**

Control of Scleronomous Mechanical System with Unknown Matrix of Inertia

**I.M. Ananievski** (*Russia*)

**16:20–16:40**

Robust Control of Smart Beams in the Presence of Damage-Induced Structural Uncertainties

**D.G. Marinova** (*Bulgaria*), **G.E. Stavroulakis, E.C. Zacharenakis** (*Greece*)

**16:40–17:00**

Predictive Controller Design with Offline Model Learning for Flexible Beam Control

**K. Zmeu, E. Shipitko** (*Russia*)

**17:00–17:20 — Coffee**

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**Thursday, August 25, 15:00–17:00  
Golden Hall**

**Session ThP2. Control of Chaos**

**Co-chairs: A. Balanov** (*Germany*), **E.M. Koltsova** (*Russia*)

**15:00–15:20**

Bifurcation Analysis of Chaos Control by Delayed Feedback

**N. Janson** (*UK*), **A. Balanov**, **E. Schöll** (*Germany*)

**15:20–15:40**

Control of Chaotic Oscillations in the Process of Crystallization via Extended Method of Time-Delayed Feedback

**E.M. Koltsova**, **M.V. Cherenkov** (*Russia*)

**15:40–16:00**

Control of Hamiltonian Chaos as a Possible Tool to Control Anomalous Transport in Fusion Plasmas

**G. Ciraolo** (*Italy*), **F. Briolle**, **C. Chandre**, **E. Floriani**, **R. Lima**, **M. Vittot** (*France*), **M. Pettini** (*Italy*), **C. Figarella**, **P. Ghendrih** (*France*)

**16:00–16:20**

Delayed Feedback Control of Chaos in a Switched Arrival System

**Y.-P. Tian** (*China*)

**16:20–16:40**

Control of Unstable Steady States by Time-Delayed Feedback Methods

**P. Hövel**, **E. Schöll** (*Germany*)

**16:40–17:00**

Control of the Chaotic Dynamics of Delayed Feedback Klystron Oscillator and its Application in Chaotic Communications

**A.M. Shigaev**, **N.M. Ryskin** (*Russia*)

**17:00–17:20 — Coffee**

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**Thursday, August 25, 15:00–17:00  
Blue Hall**

**Session ThP3. Control of Oscillations and Waves**

**Co-chairs: M.I. Caiado** (*Portugal*), **G. Kostin** (*Russia*)

**15:00–15:20**

Singularity Phenomena in Ray Propagation in Anisotropic Media

**A.A. Melikyan** (*Russia*), **N.D. Botkin**, **V.L. Turova** (*Denmark*)

**15:20–15:40**

Harmonic Disturbance in a Controlled Mechanical System with Friction

**G. Kostin** (*Russia*)

**15:40–16:00**

On Asymptotic Stabilization of Elastic Systems

**M.I. Caiado** (*Portugal*), **A. Sarychev** (*Italy*)

**16:00–16:20**

Running Waves in a Ring of Van-der-Pol Oscillators: Role of Anharmonicity

**A. Shabunin**, **V. Astakhov**, **A. Akopov**, **T. Vadivasova** (*Russia*)

**15:20–16:40**

Robustness and Describing Function Method

**L.S. Chechurin**, **A.I. Merkoulov** (*Russia*)

**16:40–17:00**

Nonlinear Dynamics and Chaotic Behavior of Coupled Systems with Phase and Delay Control

**V.P. Ponomarenko** (*Russia*)

**17:00–17:20** — Coffee

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**Thursday, August 25, 15:00–17:00**  
**Emperor's Cabinet**

**Session ThP4. Modeling**

**Co-chairs: S.D. Zemlyakov** (*Russia*), **V. Reitmann** (*Germany*)

**15:00–15:20**

Automatic Derivation and Decomposition of Lagrange's Form Mathematical Model for a Complex Mechanical System

**S.D. Zemlyakov**, **V.M. Glumov** (*Russia*)

**15:20–15:40**

On Use of Reduction in Qualitative Analysis of Lagrange Systems

**V.D. Irtegov** (*Russia*)

**15:40–16:00**

Description of Electronic Polarization of a Dielectric by the Model of System with Feedback

**I.E. Eremin**, **E.L. Eremin**, **V.A. Overchuk** (*Russia*)

**16:00–16:20**

Behavioral Modeling of Microelectromechanical Filters

**S. Fouladi**, **A. Hajhosseini Mesgar**, **M. Kahrizi** (*Canada*)

**16:20–16:40**

Generic Analytical Embedding Methods for Nonstationary Systems Based on Control Theory

**V. Reitmann**, **H. Kantz** (*Germany*)

**17:00–17:20** — Coffee

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**Thursday, August 25, 17:00–18:00**  
**Dancing Hall**

**Poster Session II**

**Moderator: B. Andrievsky**

On the Instability of the Free Elastic Rod with Non-Linear Intrinsic Viscosity under the Action of the Follower Force

**S.A. Agafonov, G.A. Scheglov** (*Russia*)

A Hierarchy of Non-Holonomic Constraints and Step-2 Nilpotent Lie Algebras

**A. Anzaldo-Meneses, F. Monroy-Pérez** (*Mexico*)

Determined Chaos in Phase-Transition Processes of Melting of Anisotropic Substances

**E.V. Bogatkov, L.A. Bitvutskaya** (*Russia*)

Optimal Control of Piston Movement in Tube Caused by the Difference of Gas Static Pressures

**M.V. Chernyshov, S.A. Kabanov, V.N. Uskov** (*Russia*)

Vibrational Resonance in a Noisy Bistable System: Nonfeedback Control of Stochastic Resonance

**V.N. Chizhevsky** (*Belarus*), **G. Giacomelli** (*Italy*)

Definition of the Fiber-Optical Tomography Problem

**I.V. Denisov, E.V. Denisova, N.A. Rybalchenko, V.A. Sedov** (*Russia*)

Description of Population Dynamics of Commercial Species Allow for Nonlinearity of a Craft Function

**E.Ya. Frisman, E.V. Last** (*Russia*)

The Trade Effects on Both Genetic Variety and Dynamic Behavior of Mendelian Limited Population

**E.Ya. Frisman, O.L. Zhdanova** (*Russia*)

Travelling Waves in Systems of Locally or Globally Coupled Relaxation Oscillators

**E.V. Grigorieva, S.A. Kaschenko** (*Belarus*)

Control of Noise-Induced Cooperative Dynamics in Coupled Neuron Models

**B. Hauschildt, A. Balanov, N. Janson, E. Schöll** (*Germany*)

Second Circuit of Two-Dimensional Feedback Loop in Ring Interferometer as a Way to Create Coupled Oscillators System or Couplings in an Oscillator

**I.V. Izmailov, A.V. Lyachin, M.E. Nazarov, B.N. Poizner, D.A. Shergin** (*Russia*)

Application of Finite Element Method for the Computation of Young's Modulus and Poisson's Ratio along Non-Principal Material

**K.V. Jayakumar, G. Gupta** (*India*)

Variation in the Electrical Behaviour of CdS Thin Films Caused by High Electron Beam Irradiation

**K.V. Jayakumar, G. Gupta** (*India*)

Reconstruction of Signals of Sensors of the Power Flux

**E. Jharko** (*Russia*)

The Measuring of Dynamic Parameters of Functioning Water Storage Dams

**S. Karapetyan, B. Mamikonyan** (*Armenia*)

Estimation of Control Times for Weakly Chaotic Dynamical Control Systems

**S.M. Khryashchev** (*Russia*)

Chaos-Degree-Change Bifurcations during Self-Organization of Cascade-Like Hierarchical Systems

**V.G. Kleparskiy** (*Russia*)

Detecting Orbits of High Periods from Numerical Solutions of the Rossler System

**B.G. Kukhareno** (*Russia*)

A Collection of the Simplest Synchronized Chaotic Systems

**A.I. Lerescu, I. Grosu** (*Romania*)

Comparison and the Analysis of the Processes of the Movement of Air through the Human Breathing System and its Natural Model

**G. Lukyanov, A. Rassadina, V. Usachev** (*Russia*)

Double-Wavelet Analysis: A Tool to Study Interaction Phenomena in Nonstationary Dynamics

**A.N. Pavlov** (*Russia*), **O.V. Sosnovtseva** (*Denmark*)

The Physical Modeling of Cutting Process at Steel Treatment

**A.I. Sahradyan** (*Armenia*)

Identification of the Psychophysiological State of the Man

**I. Serov, G. Lukyanov, L. Rybina** (*Russia*)

Yakhno-Fitzhugh Model of the Control Parameter in Feigenbaum Scenario for Speech Rhythm

**O.P. Skljarov** (*Russia*)

Pomeau-Manneville Scenario for Speech V-rhythms and Memory Mechanisms

**O.P. Skljarov** (*Russia*)

Multi-Output Maps with Associated Asymptotically Stable Zero Dynamics

**S.B. Tkachev, D.U. Panfilov** (*Russia*)

Non-Authorized Access to the Chaotic Communication Channel Based on the Partial Approach to the Inverse Problem of Non-Linear Dynamics

**M.V. Tomashevskaya, V. N. Kuleshov** (*Russia*)

Speed-Gradient Control of Passing through Resonance in Some Mechanical Systems

**D. Tomchin** (*Russia*)

Adaptive Control of Chaos in Nonlinear Discrete-Time Systems Using Time-Delayed State Feedback

**A. Yazdanpanah, A. Khaki-Sedigh** (*Iran*)

Adaptive Control of Chaos in Nonlinear Chaotic Discrete-Time Systems

**Am. Yazdanpanah, A. Khaki-Sedigh, Ar. Yazdanpanah** (*Iran*)

**FRIDAY, AUGUST 26**

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**Friday, August 26, 9:00–11:00**  
**White Hall**

**Session FrA1. Bifurcations and Chaos**

**Co-chairs: A.P. Krishchenko** (*Russia*), **Zh.T. Zhusubaliyev** (*Russia*)

**9:00–9:40**

Bifurcations and Chaos in Nonsmooth Dynamical Systems: Analysis and Control (*Invited*)

**Mario di Bernardo** (*Italy*)

**9:40–10:00**

Quasiperiodicity and Torus Birth Bifurcations in Nonsmooth Systems

**Zh.T. Zhusubaliyev** (*Russia*), **E. Mosekilde** (*Denmark*)

**10:00–10:20**

Torus Birth and Destruction in an Autonomous Piecewise-Smooth System

**Zh.T. Zhusubaliyev**, **E. Soukhoterlin** (*Russia*), **E. Mosekilde** (*Denmark*)

**10:20–10:40**

Characterization of Chaotic Dynamics from Return Times

**D.V. Dumsky**, **A.N. Pavlov** (*Russia*)

**10:40–11:00**

Fractal Properties of Chaotic Dynamical Systems in Reverse Time and Its Applications

**A.I. Tomashevsky**, **M.V. Kapranov** (*Russia*)

**11:00–11:20** — Coffee break

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**Friday, August 26, 9:00–11:00**  
**Golden Hall**

**Session FrA2. Nonlinear Dynamics and Control**

**Co-chairs: Y. Mutoh** (*Japan*), **V.P. Ponomarenko** (*Russia*)

**9:00–9:20**

Adaptive Decoupling Control of Nonlinear Multivariable Systems with Unknown Parameters

**Y. Mutoh** (*Japan*)

**9:20–9:40**

Complex Dynamics of a Frequency-Phase Lock System

**V.P. Ponomarenko**, **E.A. Tikhonov** (*Russia*)

**9:40–10:00**

Invariant Stabilization of Time-Varying Control Systems with Outer Action

**I.E. Zuber**, **A.Kh. Gelig** (*Russia*)

**10:00–10:20**

Frequency-Domain Estimates for Transient Attributes of Discrete Phase Systems

**A.I. Shepeljavyi, V.B. Smirnova, N.V. Utina** (*Russia*)

**10:20–10:40**

A Chaotic Dynamics of the Vehicle on the Plane

**P.A. Shavrin** (*Russia*)

**10:40–11:00**

Adaptive Control Systems with Two-Time Scale Motions

**A.S. Vostrikov, O.Y. Shpilevaya** (*Russia*)

**11:00–11:20 — Coffee break**

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**Friday, August 26, 9:00–11:00**

**Blue Hall**

**Session FrA3. Motion Control**

**Co-chairs: V.Yu. Rutkovsky, Ye.I. Somov** (*Russia*)

**9:00–9:20**

A New Approach to Control of Moving Structure Object with Nonrigid Construction

**V.Yu. Rutkovsky, V.M. Sukhanov, V.M. Glumov** (*Russia*)

**9:20–9:40**

Concept and Advantages of Spaceplane Water Landing with Ekranoplane Assist

**A. Nebylov** (*Russia*), **N. Tomita** (*Japan*)

**9:40–10:00**

Mathematical Models, Designing, Analysis and Synthesis of Control Systems of the Complex Flexible Objects

**A.V. Nebylov, A.I. Panferov, S.A. Brodsky** (*Russia*)

**10:00–10:20**

Coupling and Damping the Structure Oscillations at Spacecraft Gyromoment Digital Control

**Ye.I. Somov, S.A. Butyrin, S.Ye. Somov** (*Russia*)

**10:20–10:40**

Robust Control of a Flexible Spacecraft Respinup by the Weak Internal Torques

**Ye.I. Somov, G.P. Titov, S.A. Butyrin, V.A. Rayevsky, A.G. Kozlov** (*Russia*)

**10:40–11:00**

Methods for Increasing the Accuracy of Micromechanical Gyroscopes

**L.A. Severov, V.K. Ponomarev, A.I. Panferov, N.A. Ovchinnikova** (*Russia*)

**11:00–11:20 — Coffee break**

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**Friday, August 26, 9:00–11:00**  
**Emperor's Cabinet**

**Session FrA4. Identification and Filtering**

**Co-chairs: A.I. Matasov** (*Russia*), **A. Zuyev** (*Ukraine*)

**9:00–9:20**

Guaranteed Filtering in Delayed Dynamic Systems

**N.K. Ahmedova, V.B. Kolmanovskii, A.I. Matasov** (*Russia*)

**9:20–9:40**

Observability of a Flexible Manipulator with a Payload

**A. Zuyev** (*Ukraine*)

**9:40–10:00**

Neuro-Quantum Networks in Tasks of Pattern Recognition

**T.R. Ambaryan** (*Russia*)

**10:00–10:20**

Best Likelihood Forecast of Volatility in Class of Linear Functions

**M.I. Krivoruchenko** (*Russia*)

**10:20–10:40**

Development of Neural Networks Module for Fault Identification in Asynchronous Machine Using Various Types of Reference Signals

**Dj. Khodja, B. Chetate** (*Algeria*)

**10:40–11:00**

Parameter Estimation from Noisy Chaotic Time Series

**I. Grosu** (*Romania*), **A. Lerescu** (*The Netherlands*)

**11:00–11:20 — Coffee break**

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**Friday, August 26, 11:20–13:20**  
**White Hall**

**Session FrM1. Stochastic and Chaotic Systems**

**Co-chairs: D.V. Iourtchenko** (*USA*), **P.V. Pakshin** (*Russia*)

**11:20–11:40**

Multiscale Coupling in Heterogeneous Diffusion Processes: A Port-Based Approach

**D. Eberard, L. Lefèvre, B. Maschke** (*France*)

**11:40–12:00**

Robust and Simultaneous Stabilization of Jump Discrete-Time Systems with Control-Dependent Noise via Output Feedback

**P.V. Pakshin, V.V. Pachaev** (*Russia*)

**12:00–12:20**

Influence of Random Phase Modulation on Chaotic Response of a Bilinear Driven Oscillator  
**M.V. Zakrzhevsky** (*Latvia*), **D.V. Iourtchenko** (*USA*)

**12:20–12:40**

Nonlinear Fractal Dynamics and Clustering of Passive Particles by a Hydrodynamic Vortex and a Current  
**M.V. Budyansky**, **S.V. Prants** (*Russia*)

**12:40–13:00**

Feedback Bounded Control of Oscillation for Wave Equation under a White-Noise Excitation  
**A.S. Bratus**, **A.P. Ivanova** (*Russia*)

**13:20–15:00 — Lunch**

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**Friday, August 26, 11:20–13:20**  
**Golden Hall**

**Session FrM2. Discontinuous and Hybrid Systems**

**Co-chairs: T.F. Filippova** (*Russia*), **A.S.I. Zinober** (*UK*)

**11:20–11:40**

Differential Flatness of Sliding Mode Nonlinear Systems  
**A.J. Koshkouei**, **K.J. Burnham**, **A.S.I. Zinober** (*UK*)

**11:40–12:00**

An LMI Approach to Stability Analysis of PWM DC-DC Buck Converters  
**A.N. Churilov** (*Russia*)

**12:00–12:20**

Hybrid Luenberger Observers in the Problem of Multiprogrammed Control  
**N.V. Smirnov** (*Russia*)

**12:20–12:40**

Variable Structure-Based Nonlinear Congestion Control for Networked Controlled Systems  
**K. Bouyoucef**, **K. Khorasani** (*Canada*)

**12:40–13:00**

Impulsive Control Problem for Uncertain Dynamic Systems  
**T.F. Filippova** (*Russia*)

**13:00–13:20**

Variable Structure Model Reference Adaptive Control with an Augmented Error Signal for Input-Delay Systems  
**E.L. Mirkin** (*Kyrgyz Republic*)

**13:20–15:00 — Lunch**

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**Friday, August 26, 11:20–13:20**  
**Blue Hall**

**Session FrM3. Nonlinear Dynamics**

**Co-chairs: S.P. Kuznetsov** (*Russia*), **K.E. Starkov** (*Mexico*)

**11:20–11:40**

On stability by the First Approximation for Discrete Systems

**N.V. Kuznetsov, G.A. Leonov** (*Russia*)

**11:40–12:00**

Attractors of One-Dimensional Maps Generated By Boundary Value Problems

**A. Sharkovsky** (*Ukraine*), **J. Sousa Ramos** (*Portugal*), **S. Berezovsky** (*Ukraine*)

**12:00–12:20**

Iteration Method of the Localization of Periodic Orbits

**A.P. Krishchenko** (*Russia*), **K.E. Starkov** (*Mexico*)

**12:20–12:40**

Examples of Localization of Periodic Orbits of Polynomial Systems

**K. Starkov, L.N. Coria** (*Mexico*)

**12:40–13:00**

Review and Examples of Non-Feigenbaum Critical Situations Associated with Period-Doubling

**S.P. Kuznetsov, A.P. Kuznetsov, I.R. Sataev** (*Russia*)

**13:20–14:45 — Lunch**

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**Friday, August 26, 11:20–13:20**  
**Emperor's Cabinet**

**Session FrM4. Molecular and Quantum Control**

**Co-chairs: M.Yu. Uleysky** (*Russia*), **M. Vittot** (*France*)

**11:20–11:40**

Coherent Control of Atomic Excitation under the Action of Bichromatic Laser Field in the Presence of Electric Field

**V.A. Astapenko** (*Russia*)

**11:40–12:00**

Perturbation Theory and Control in Classical or Quantum Mechanics by a Closed Formula

**M. Vittot** (*France*)

**12:00–12:20**

Quantum Control of Dissociation of an Iodine Molecule by One and Two Femtosecond Laser Pulses  
Excitation

**M. Ananyevskiy, A.S. Vetchinkin, Yu.A. Zotov, A. Fradkov, S.Ya. Umanskiy, O.M. Sarkisov**  
(*Russia*)

**12:20–12:40**

Quantum Control and Quantum Chaos in Cavity QED

**M.Yu. Uleysky, S.V. Prants** (*Russia*)

**12:40–13:00**

Coherent Control Technique Enhanced by Entangled States

**A.I. Zhiliba** (*Russia*)

**13:20–14:45 — Lunch**

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**Friday, August 26, 15:00–16:30**  
**White Hall**

**Plenary Session III**

**Chair: G. Leonov** (*Russia*)

**15:00–15:45**

Controlling bifurcations

**G. Chen** (*China*)

**15:45–16:30**

Controlling the Relative Entropy Evolution for Classical, Thermodynamical and Quantum Systems

**M. Pavon, F. Ticozzi** (*Italy*)

**16:30–17:00 — Closing Ceremony**

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