

INTERNATIONAL WORKSHOP
NMC 2017
NAVIGATION & MOTION CONTROL
02-06 October 2017, Russia

*Dedicated to the 80th Anniversary of the Information
and Navigation System Department of ITMO University*

PROGRAM



DEPARTMENT
OF INFORMATION
AND NAVIGATION
SYSTEMS



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NMC 2017
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CO-SPONSORED BY:

State Research Center of the RF Concern CSRI Elektropribor, JSC

ITMO University

International Laboratory «Integrated Navigation and Attitude Reference Systems»

International Public Association - Academy of Navigation and Motion Control

St. Petersburg Group of the Russian National Committee on Automatic Control

St. Petersburg Electrotechnical University "LETI"

Program of the International Workshop on Navigation and Motion Control 02-06 October 2017, Russia

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October 2 (Monday)

08.30

09.00

13.00

14.00–15.00

15.00–15.10

15.10–15.55

15.55–16.40

16.40–16.55

16.55–17.55

18.00–19.00

Meeting at Concern CSRI Elektropribor, JSC, 9a, Bolshaya Posadskaya Ulitsa

Bus departure

Arrival at the destination

Lunch

Welcome and Introduction

Session 1. Chair Yu.A. Litvinenko (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

S.G. Revniviykh (*Reshetnev Information Satellite Systems Corporation, JSC, Moscow, Russia*)
The Satellite Geodezy Systems Application for the Precise Earth Model Construction

A.N. Terekhov (*Saint Petersburg State University, Russia*)
New Tools for Field Programmable Gate Array Design

Break

N.T. Zhigunova (*ITMO University, Concern CSRI Elektropribor JSC, Saint Petersburg, Russia*)
Writing Scientific Papers in English. Common Mistakes

Dinner

October 3 (Tuesday)

09.00–10.00

10.00–10.45

10.45–11.10

11.10–11.35

11.35–11.45

11.45–12.10

12.10–12.35

12.35–13.00

Breakfast

Session 2. Chairman A.V. Motorin (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

G.F. Trommer (*KIT University, Germany, ITMO University, Saint Petersburg, Russia*)
On the Way to Autonomous Reconnaissance in Urban Environment: Intrusion and Indoor Operation in Buildings

C. Doer, G. Scholz (*KIT University, Germany*), **G.F. Trommer** (*KIT University, Germany, ITMO University, Saint Petersburg, Russia*)
Inertial Sensor Data Based Motion Estimation Aided by Image Processing

S.P. Simakov (*Samara University, Samara, Russia*)
Algorithm for Determining Parameters of Relative Motion of Nanosatellites through Processing of Video Images

Break

M.E. Belyaev, D.N. Gerasimov (*ITMO University, Saint Petersburg, Russia*)
Adaptive Control System for Turbocharged Diesel Engine

R. Kleis, K. Mueller (*KIT University, Germany*), **G.F. Trommer** (*KIT University, Germany, ITMO University, Saint Petersburg, Russia*)
Detection of Pre-Selected Windows for Autonomous Approaches of Micro Aerial Vehicles

D.D. Davydov, A.A. Sobolev, E.V. Ustyugov, S.V. Shafran (*Samara University, Samara, Russia*)
Features of the Ground Tests of Nanosatellites as Example «SAMSAT-QB50» Nanosatellite

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October 3 (Tuesday)

13.00–14.00

Lunch

14.00–14.25

A.S. Nosov, (Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia)

A.B. Toropov (Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia),

Navigation Informativity of Geophysical Fields in Map-Aided Navigation

14.25–14.50

O.V. Zaitsev (ITMO University, Concern CSRI Elektropribor JSC, Saint Petersburg, Russia)

Integration of Relative and Absolute GNSS Positioning under Error Stochastic Uncertainty

14.50–15.15

I.L. Azhgirevich, **P.D. Zinoviyev**, **A.V. Izmaylov-Perkin**, **G.A. Kvetkin**, **A.V. Sviyazov**,
V.V. Scherbinin (JSC Central Research Institute for Automatics and Hydraulics, Moscow,
Russia)

Automated Landing System for General Aviation Vessels

15.15–15.40

K. Mueller (KIT University, Germany), **G.F. Trommer** (KIT University, Germany, ITMO
University, Russia)

Wind Estimation for Unmanned Micro Aerial Vehicles

15.40–16.05

Qing Liang (ITMO University, Saint Petersburg, Russia)

Analysis of Attitude Reference System Accuracy Versus Errors of Modulation Rotation Angle
Sensors

16.05–16.20

Break

Photographing of participants

Session 3. Chairman A.S. Nosov (Concern CSRI Elektropribor, JSC, ITMO University, Saint
Petersburg, Russia)

16.20–17.05

I. Tyukin, **A.N. Gorban** (University of Leicester, United Kingdom, Saint Petersburg
Electrotechnical University LETI, Saint Petersburg, Russia)

Knowledge Transfer Between Artificial Intelligence Systems

17.05–18.00

V.G. Peshekhonov (General Director of Concern CSRI Elektropribor, JSC, ITMO University,
Saint Petersburg, Russia)

Meeting of the General Director with the participants from the Concern CSRI Elektropribor, JSC

17.05–18.00

N.T. Zhigunova (Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia)

Russian Traditions and Superstitions (for foreigners)

18.00–19.00

Dinner

October 4 (Wednesday)

09.00–10.00

Breakfast

Session 4. Chairman K. Mueller (KIT University, Germany)

10.00–10.25

A.V. Paramonov, **D.N. Gerasimov**, **V.O. Nikiforov** (ITMO University, Saint Petersburg, Russia)

Algorithm of Adaptive Compensation of Disturbance in Linear MIMO Systems with Arbitrary
Input Delay

10.25–10.50

A.S. Miliushin (ITMO University, Saint Petersburg, Russia)

Adaptive Tracking of Multisinusoidal Signal in Linear MIMO Systems with Input Delay

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October 4 (Wednesday)

10.50–11.15

E.V. Lukoyanov, A.M. Gruzlikov, N.V. Kolesov (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

Active Diagnosis of a Discrete Event System

11.15– 11.40

A.Yu. Knyazhsky (*SUAI, Saint Petersburg, Russia*)

Control of Lateral Movement of the Ground Effect Vehicle over the Disturbed Sea Surface for Increase Fuel Efficiency

11.40–11.50

Break

11.50–12.15

Ali Khaled (*Arab Academy for Science, Technology & Maritime Transport, Egypt*),

Abdelsalam Ahmed (*ITMO University*), **Korium Mohamed** (*ITMO University*)

Intuitive Industrial Robot Programming Using Augmented Reality (ONLINE presentation)

12.15–12.40

Rilond Pattia Matital, V.Yu. Venediktov (*St. Petersburg Electrotechnical University LETI, Saint Petersburg, Russia*)

Vortex Beam Generation with Asymmetrization of Dynamic Holographic Gratings

12.40–13.05

Nkpoikanke Abraham Eno, Petr Pavlov (*St. Petersburg Electrotechnical University LETI, Saint Petersburg, Russia*)

Investigating the Output Characteristics of Ring Laser in Laser Dynamic Goniometer

13.05–13.30

John Tari Bagshaw (*St. Petersburg Electrotechnical University, LETI, Saint Petersburg, Russia*)

Identification of Seismic Signals at the Output of Large Ring Laser Gyroscope

13.30–14.30

Lunch

14.30–14.55

Session 5. Chairman D.P. Eliseev (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

A.S. Voronov (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

Error Evaluation of the Electromagnetic Log Sensor at Greater Depths

14.55–15.20

A.S. Alekseenko (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

Error Analysis of the Indirect Stabilization System

15.20–15.45

M.A. Tumanova (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

Formation of Functional Thin Film Elements on the Units of a Cryogenic Gyroscope

15.45–16.10

O.V. Zaitsev, O.A. Stepanov (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

60th Anniversary of the International Federation of Automatic Control (IFAC) Congresses

16.10–16.20

Break

16.20–16.45

Session 6. Chairman D.V. Kostygov (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

N.K. Kulachenkov (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

My Internship at the University of California, Irvine

16.45–17.10

A. S. Nosov (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

About 2017 DGOIN Inertial Sensors and Systems (ISS) Symposium Gyro Technology

17.10–17.35

V.V. Bogomolov, D.P. Eliseev, E.G. Litunenkov, N.M. Fayzullina (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*), **Qing Liang** (*ITMO University, Saint Petersburg, Russia*)

About International Scientific and Technical Conference *Current Technologies in the Problems of Control, Automation and Data Processing*

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October 4 (Wednesday)

17.35-18.00

Yu.A. Litvinenko, V.G. Peshkxonov, O.A. Stepanov, O.M. Yashnikova (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

Information and Navigation System Department of ITMO University. 80th Anniversary

18.00-19.00

Dinner

October 5 (Thursday)

09.00-10.00

Breakfast

10.00-16.00

Entertainment Program

16.00-17.00

Lunch

20.00

Dinner

October 6 (Friday)

09.00-10.00

Breakfast

Session 7. Chairman A.V. Yakimova (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)

10.00-10.45

A.S. Kukaev (*Saint Petersburg Electrotechnical University, Saint Petersburg, Russia*)
Simulation of Surface Acoustic Wave Devices

10.45-11.10

N.N. Nevirkovets, D.V. Kostygov, A.A. Mikhteeva, N.M. Chernetskaya
(*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)
Verification of digital integrated circuits taking into account pad models

11.10-11.35

N.M. Chernetskaya, A.A. Mikhteeva (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)
Digital Correction of Successive Approximation Analog-to-Digital Converter

11.35-12.00

A.V. Yakimova, A.A. Belogurov, Y.V. Belyaev (*Concern CSRI Elektropribor, JSC, Saint Petersburg, Russia*)
Design of Sensing Element of Surface Micromachined Capacitive MEMS Accelerometer

12.00-13.00

Discussion of the Papers Submitted for Publication in the Proceedings of the Conference of Young Scientists Navigation and Motion Control

13.00-13.30

Closing Ceremony

O.A. Stepanov (*Concern CSRI Elektropribor, JSC, ITMO University, Saint Petersburg, Russia*)

13.30-14.30

Lunch

16.00

Departure to Saint Petersburg



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WORKSHOP WORKING GROUP IN CONCERN CSRI ELEKTROPRIBOR

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THE DEPARTMENT OF INFORMATION AND NAVIGATION SYSTEMS OF ITMO UNIVERSITY

The Department of Information and Navigation Systems is one of the oldest departments of ITMO University and the first one in the country to begin training of engineers in the specialty "Navigation devices".

The department was founded in September 1937. Its development was promoted by eminent scientists and specialists of the Russian industry and navy, including academician A.N. Krylov, professors B.I. Kudrevich, K.S. Ukhov, S.F. Farmakovskii, M.A. Sergeev, and V.A. Karakashev.

Since 1991, the department has been headed by the Director of CSRI Elektropribor, awardee of the Lenin and the State Prizes, academician of the Russian Academy of Sciences V.G. Peshekhonov. The reputed education and research school "Integrated Navigation and Motion Control Systems" has been created and is actively working within the department under the leadership of V.G. Peshekhonov.

The department is represented by strong academic staff, and the education and research school of the department has been highly acknowledged both in Russia and abroad. Over the 80-year period, the department has trained more than 2000 engineers,

more than 150 candidates and 20 doctors of engineering science. The department staff is actively engaged in research work; the specialists publish their papers in scientific journals and make presentations at conferences in Russia, USA, Germany, France, and Japan.

The department offers excellent opportunities for its students as regards both education and further employment. The department graduates are in demand at the leading instrument-making enterprises of the city. Academic mobility of students is growing, they gain new experience and widen their horizons during internships at the Russian and foreign universities, including the international research laboratory "Integrated Orientation and Navigation Systems" functioning at the department and headed by Prof. O.A. Stepanov and Prof. G.F. Trommer.

The department is deservedly proud of its glorious history and faces the future with confidence, and young students have all the necessary foundations to become highly professional, much-in-demand specialists in the field of navigation, motion control and related areas.

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