



INTERNATIONAL WORKSHOP
NMCC 2014
NAVIGATION & MOTION CONTROL

International Workshop on Navigation and Motion Control

September 22 – 26, 2014
PROGRAM



September 22 (Monday)

- 08.30 **Meeting** at 9a, Bolshaya Posadskaya ulitsa (street) near Concern CSRI Elektropribor entrance
- 09.00 **Bus departure**
- 13.00 **Arrival at the destination**
- 14.00 – 15.00 **Lunch**
- 15.00 – 15.10 **Welcome and Introduction**
- Session 1. Chairman A.Yu. Sokolov** (CSRI Elektropribor, Russia)
- 15.10 – 16.10 **P. Davidson** (Tampere University of Technology, Finland)
 Methods of Pedestrian Navigation. Review lecture
- 16.10 – 16.40 **A.A. Krasnov, A.V. Sokolov** (CSRI Elektropribor, Russia)
 Gravity Measurements from Various Vehicles
- 16.40 – 17.10 **V.A. Chertopolokhov** (Lomonosov Moscow State University, Russia)
 Virtual Reality Simulation and Max-min Testing Algorithm
- 17.10 – 17.20 **Break**
- 17.20 – 18.00 **N.T. Zhigunova** (CSRI Elektropribor, Russia) Russian for foreigners
- 17.20 – 18.00 Meeting of General Director **Vladimir G. Peshekhonov** with employees of Concern CSRI Elektropribor, JSC
- 18.10 – 19.00 **Dinner**

September 23 (Tuesday)

- 09.00 – 10.00 **Breakfast**
- Session 2. Chairman G. Scholz** (Karlsruhe Institute of Technology, Germany)
- 10.00 – 11.00 **G. Trommer** (Karlsruhe Institute of Technology, Germany)
 Advanced Integrated Navigation Systems: From Kinematic INS/GNSS Integration Towards Platform Model Aided Navigation
- 11.00 – 11.20 **G. Trommer** (Karlsruhe Institute of Technology, Germany)
 About conference ION GNSS 2014
- 11.20 – 11.50 **F. Eisenlohr** (Karlsruhe Institute of Technology, Germany)
 Implementation of a Path Planning Algorithm for Unmanned Aerial Vehicles in Support of Rescue Forces in Buildings
- 11.50 – 12.00 **Break**
- 12.00 – 12.45 **N.V. Mikhailov** (St. Petersburg State University of Aerospace Instrumentation, Russia)
 Present and Future of Multi-System GNSS Receivers: Developer's Viewpoint
- 12.45 – 13.15 **R. Granacher** (Karlsruhe Institute of Technology, Germany)
 Implementation and Evaluation of a Procedure to Automatically Detect Buildings in Aerial Images
- 13.15 – 14.10 **Lunch**
- Session 3. Chairman A.V. Motorin** (CSRI Elektropribor, ITMO University Russia)
- 14.10 – 14.40 **T.A. Lepikhin** (St. Petersburg State University, Russia)
 Analysis of Quadcopter and Hexacopter Dynamics
- 14.40 – 15.10 **G. Scholz** (Karlsruhe Institute of Technology, Germany)
 A New Quadrotor with Tilted Rotors
- 15.10 – 15.40 **Yu.M. Skorodumov** (CSRI Elektropribor, Russia)
 Flow scheduling algorithm for distributed real time systems
- 15.40 – 15.50 **Break**
- 15.50 – 16.20 **D.Yu. Krysin** (St. Petersburg State University of Aerospace Instrumentation, Russia)
 Application of Time-of-Flight Cameras for Vehicle Attitude Determination near Water Surface
- 16.20 – 17.20 **N.T. Zhigunova** (CSRI Elektropribor, Russia)
 Writing a Paper in English: Common Mistakes
- 17.20 – 18.00 **N.T. Zhigunova** (CSRI Elektropribor, Russia) Russian for foreigners
- 17.20 – 18.00 **O.A. Stepanov** (CSRI Elektropribor, ITMO University, Russia)
 Discussion of the papers submitted for publication in the Proceedings of the Conference of Young Scientists Navigation and Motion Control (for the Russian participants)
- 18.10 – 19.00 **Dinner**

September 24 (Wednesday)

- 09.00 – 10.00 **Breakfast**
- Session 4. Chairman A.A. Medvedkov** (CSRI Elektropribor, ITMO University, Russia)
- 10.00 – 10.30 **V.V. Avrutov** (National Technical University of Ukraine Kyiv Polytechnic Institute, Kiev, Ukraine)
The Scalar Method of Quality Monitoring and Diagnostics of the Inertial Measurement Unit
- 10.30 – 11.00 **A.Yu. Sokolov** (CSRI Elektropribor, Russia)
Online Calibration of Angular Sensors of the Gyro Attitude Determination System
- 11.00 – 11.30 **O.A. Stepanov** (CSRI Elektropribor, ITMO University, Russia)
Filtering problems: main approaches and algorithms
- 11.30 – 12.00 **O.A. Stepanov** (CSRI Elektropribor, ITMO University, Russia)
About 19-th IFAC World Congress on Automatic Control
- 12.00 – 12.10 **Break**
- 12.10 – 12.40 **A.V. Motorin** (CSRI Elektropribor, ITMO University, Russia)
Nonlinear Filtering vs Allan Variance in Sensor Error Identification Problem
- 12.40 – 13.10 **P.A. Khmarsky** (Educational Institution "Military Academy of the Republic of Belarus" Minsk, Belarus)
Choice Effect of Coordinate Systems on Measuring Accuracy for Tracking Filters
- 13.10 – 14.00 **Lunch**
- Session 5. Chairman N.G. Skidanov** (CSRI Elektropribor, Russia)
- 14.00 – 14.45 **S.V. Aranovsky** (ITMO University, Russia)
Adaptive Methods of Periodic Disturbance Attenuation
- 14.45 – 15.00 **S.V. Aranovsky** (ITMO University, Russia)
Information about the 22nd Mediterranean Conference on Control and Automation
- 15.00 – 15.30 **O.G. Andrianova, A.Y. Kustov** (Institute of Control Sciences of the Russian Academy of Sciences, Moscow, Russia) Full Information Controller Design for LDTI Descriptor Systems: the Advantages of Anisotropy-based Approach
- 15.30 – 15.40 **Break**
- 15.40 – 16.10 **D. Eliseev, Y. Bershtam** (CSRI Elektropribor, Russia) **M. Evstifeev** (CSRI Elektropribor, ITMO University, Russia)
Research on high damping ratio steel for application in micromechanical gyro housing
- 16.10 – 16.40 **Yu.L. Avanesov, K.S. Gorokhovskiy, V.A. Granovskii, M.D. Kudryavtsev, N.K. Kulachenkov** (CSRI Elektropribor, Russia) Evaluation of Ray-Refraction Effect on the Calculation Algorithms and Parameters of Goniometric Instruments
- 16.40 – 17.00 **A.A. Medvedkov** (CSRI Elektropribor, ITMO University, Russia),
G. Scholz (Karlsruhe Institute of Technology, Germany)
Information about 2014 Inertial Sensors and Systems (ISS) – Symposium Gyro Technology facility
- 17.00 – 18.00 **N.T. Zhigunova** (CSRI Elektropribor, Russia)
Writing an English Paper: Common Mistakes
- 18.00 – 19.00 **Dinner**

September 25 (Thursday)

- 09.00 – 10.00 **Breakfast**
- 10.00 – 16.00 **Boat trip to the Konevets Island or a bus tour to Priozersk and Korela Fortress**
- 16.00 – 17.00 **Lunch**
- 20.00 **Dinner**

September 26 (Friday)

- 09.00 – 10.00 **Breakfast**
- 10.00 – 11.00 **S.G. Revniviykh** (Reshetnev Information Satellite Systems Corporation, JSC, Russia)
Present and future of GLONASS
- 11.00 – 13.00 **O.A. Stepanov** (CSRI Elektropribor, ITMO University, Russia)
Discussion of the papers submitted for publication in the Proceedings of the Conference of Young Scientists Navigation and Motion control
- 13.00 – 14.00 **Lunch**
- 16.00 **Departure for Saint Petersburg**



INTERNATIONAL LABORATORY «INTEGRATED NAVIGATION AND ATTITUDE REFERENCE SYSTEMS»

International Laboratory «Integrated navigation and attitude reference systems» was founded under the auspices of "Information and navigation system" Department with The State Research Center of the Russian Federation – Concern CSRI Elektropribor, JSC (<http://www.elektropribor.spb.ru/>). It is the leading research institute in Russia in the area of high-precision navigation, gyroscopy, gravimetry.

The laboratory is engaged in research and development of integrated navigation and attitude reference systems for various types of vehicles.

RESEARCH AREAS:

- Improvement of methods for processing of redundant navigation information.
- Development of methods for designing small-sized inertial satellite integrated navigation and attitude reference systems for various types of vehicles and robotic devices.
- Development of methods for designing small-sized systems for individual navigation and guidance.
- Improvement of GNSS receivers.
- Development and design of inertial sensors for navigation systems using up-to-date computer technologies.

HEADS OF THE INTERNATIONAL LABORATORY:

Oleg Stepanov

Professor, D.Sc. in Engineering (Russian Scientific Degree "Doctor of Technical Sciences")
ITMO University

Gert Trommer

Director, Professor, Ph.D
Institute of Systems Optimization of Karlsruhe Institute of Technology, Germany

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PARTNERS:

