PROGRAM

MONDAY 24 MAY

8.00–9.50   REGISTRATION OF CONFERENCE PARTICIPANTS

10.00–10.15   **OPENING CEREMONY**

SESSION I – INTEGRATED SYSTEMS

Chairmen: ***Dr. B. Rivkin***, *Russia*
Prof. J. Sinkiewicz, *USA*

P L E N A R Y   P A P E R S

10.15-10.35   **V.D. Dishel, A.K. Bykov, V.L. Palastin, D.K. Churikov** (*N.A. Pilyugin Scientific-Production Center of Automatics and Instrument-Making (SPCAI), Moscow,* Russia)
Outcomes Analysis for the First Flight Test of the Integrated Inertial - Satellite System of Navigation, Attitude and Trajectory Monitoring
of the Launcher and the Upper Stage at Spacecraft "Amos 2"
at Geostationary Ascent

10.35-10.55   **G. Johnson, R. Shalaev** (*John J. McMullen Associates*, *New London, CT,* USA)**, R. Hartnett** (*US Coast Guard Academy, New London,* USA),
P. Swaszek (*University of Rhode Island, Kingston,* USA), **M. Narins** (*Federal Aviation Administration, Washington*, USA)
Can Loran Meet GPS Backup Requirements?

10.55-11.15   **A.V. Chernodarov, A.P. Patrikeev** (*Zhukovsky Air Force Engineering Academy, Moscow,* Russia), **V. L. Budkin, V.P. Golikov, S.V. Larionov** (*Ramenskoye Design Company, Ramenskoye, Moscow Region,* Russia)
Flight Development of Onboard Estimating Filters

11.15-11.45   COFFEE BREAK

P O S T E R   P A P E R S[*]

11.45-13.00   **A.L. Fradkov, B.R. Andrievsky** (*Institute for Problems of Mechanical Engineering of the Russian Academy of Sciences, St.Petersburg*, Russia)
Shunting-Based Robust Autopilot Design

B. Peterson (*Peterson Integrated Geo-positioning, LLC, Waterford,* USA*),*
K. Carroll, A. Hawes (*US Coast Guard, Wildwood,* USA)
Designing Enhanced Loran for the Next Generation of Receivers

---

[*] The authors of poster papers present 1-2 slides within 3 minutes at the plenary session; the discussion will be continued at the posters.

S.B. Berkovich, N.I. Kotov, A.V. Sholokhov (*Serpukhov Military Academy, Serpukhov, Moscow region,* Russia), **L.P. Kamensky** (*FSUE Moscow Institute of Heating Engineering, Moscow,* Russia)
The Correlation Approach to Definition of Terrain Mobile Object Position on the Trajectories Submitted in Geoinformation Systems

M. Chandrashaker (*Bharat Dynamics Ltd., (Ministry of Defense*), *Hyderabad,* India)
Application of PIV Technique for Long Range Missile Movement Analysis

Yi Xiao (*Naval University of Engineering & Naval Aeronautical Engineering Institute, Yantai, Shandong Province,* China), **Guan Xin, He You** (*Naval Aeronautical Engineering Institute, Yantai, Shandong Province,* China)
A Novel Cooperative Location Algorithm Using Beacon

V.S. Lobanov, V. N. Zboroshenko (*Central Scientific Research Institute of Machine Building (TsNIIMash), Korolyov, Moscow region,* Russia)
The Guidance and Navigation of the Reusable Returnable Rocket Boosters

S.V. Bogoslovsky, A.V. Vinogradov (*St.Petersburg University of Aerospace Instrumentation, St.Petersburg,* Russia) **V.M Korol, L.K Dmitrieva** (VNIIRA-RANTEK, St.Petersburg, Russia)
Control System for Flight Vehicles Group at Formation Motion

H. Refai, Su Yang, J.J. Sluss (*University of Oklahoma, Tulsa,* USA)
Auto-Collision Avoidance System Using DGPS

G.V. Antsev, V.A. Sarychev, V.A. Tupikov, L.S. Tournetsky (*JSC «Radar mms», St.Petersburg,* Russia)
Small-Sized Remotely Piloted Helicopter and Monitoring

S.P. Dmitriev, A.E. Pelevin (*State Research Center of Russia CSRI Elektropribor, St.Petersburg,* Russia)
Optimization of the Ship's Navigation and Controlling System and the Results of the Sea Trials

Hangen He, Tao Wu (*Institute of Automation, National University of Defense Technology, Changsha,* China), **A.V. Timofeev** (*St.Petersburg Institute for Informatics and Automation, Russian Academy of Sciences, St.Petersburg,* Russia)
A New Method of Vision-Based Obstacle Detection for Navigation and Motion Control of Mobile Robots

13.00-14.00   LUNCH

Chairmen: ***Prof. L. Nesenyuk***, *Russia*
                Mr. L. Camberlein, *France*

P L E N A R Y   P A P E R S

14.00-14.20   **V.G. Peshekhonov, I.E. Gutner, V.M. Zinenko, V.F. Savik, V.E. Yanushkevich** (*State Research Center of Russia CSRI Elektropribor, St. Petersburg,* Russia)
An Integrated Periscope Complex

14.20-14.40   **Shun Liu, H. Hagiwara, R. Shoji, H. Tamaru, T. Okano** (*Tokyo University of Marine Science and Technology, Tokyo,* Japan)
New Radar Network System for Observing and Analyzing Vessel Traffic in Tokyo Bay

POSTER PAPERS[*]

14.40-15.20   **Wang Tang** (*Ching Yun University, Jung-Li, China*), **G. Howell** (*ARINC, San Diego,* USA), **Yi-Hsueh Tsai** (*National Taiwan University, Taipei,* China)
Short-Term Accuracy Analysis of a Barometric Altimeter

Zixing Cai, Xiaobing Zou (*Central South University, Changsha,* China), **A.V. Timofeev** (*St.Petersburg Institute for Informatics and Automation, Russian Academy of Sciences, St.Petersburg,* Russia)
Path Tracking and Fault Relevant Navigation Feedback Control for a Mobile Robot

V.E. Hertzman, N.I. Oreshko, A.V. Ekalo (*State Enterprise Science Engineering Center of St. Petersburg State Electrotechnical University, St.Petersburg,* Russia)
The Use of Wavelets for the Analysis of Trajectory and Telemetry Measurements

J.I. Giribet, M. España, C. Miranda (*GICOR-FIUBA, Ciudad de Buenos Aires,* Argentina)
A Non-Linear Observer Based Integrated Navigation Algorithm

V.A. Tupysev (*State Research Center of Russia CSRI Elektropribor, St.Petersburg,* Russia)
Guaranteed Estimation of the Dynamic System State in the Case of Uncertainty in the Description of Disturbances and Measurement Errors

Yi-Hsueh Tsai, Fan-Ren Chang (*National Taiwan University, Taipei***,** China**), Wen-Chieh Yang** (*Intelligent Business Technology, Taipei,* China)
Receiver Autonomous Integrity Monitoring via Single Kalman Filter

J. Narkiewicz, M. Andrzejczak (*Institute of Aeronautics and Applied Mechanics, Warsaw University of Technology, Warsaw,* Poland)
A System Based on Julier-Uhlmann Filter for On-Line Prediction of a Vessel Motion

H.-J. Lin (*National Huwei University of Science and Technology, Huwei Jen, Yunlin,* China)
Complementary Locating System with Integrating GPS and Accelerometer

15.20-15.55   COFFEE BREAK

---

[*] The authors of poster papers present 1-2 slides within 3 minutes at the plenary session; the discussion will be continued at the posters.

PLENARY PAPERS

15.55 -16.15   **V.V. Abol, A.A. Bermishev** (*Russian Mission Control Center, Korolyov, Moscow Region,* Russia)**, D.A. Evtushenko, P.G. Itin** (*The Research and Production Enterprise Termoteh, Korolyov, Moscow Region,* Russia)
Complex of Hardware-Software Means for Tests of User's Navigational Equipment in Mobile Operational Mode with the Use of Vehicle Motion Reference Trajectory

16.15-16.35   **Meiyi Li, Zixing Cai** (*College of Information Science & Engineering, Central South University, Changsha,* China)
Optimality-Emerging of Mobile Robot's Planning and Navigating with EC for Repeated Tasks under Unknown Environments

17.15-21.00   SIGHT-SEEING GUIDED BUS TOUR OF SAINT PETERSBURG

TUESDAY 25 MAY

SESSION I- INTEGRATED SYSTEMS (Continued)

Chairmen: *Dr. Yu. Litmanovich, Russia*
Dr. J. Mark, USA

PLENARY PAPERS

8.30–8.50   **A.K. Brown** (*NAVSYS Corporation, Colorado Springs*, USA)
Test Results of a GPS/Inertial Navigation System Using a Low Cost MEMS IMU

8.50–9.10   **N.K. Berenov, V.N. Branets, S.N. Evdokimov, S.I. Klimanov, L.I. Komarova, E.A. Mikrin, V.S. Ryzhkov, R.M. Samitov** (*Rocket-Space Corporation Energia, Ramenskoye, Moscow region,* Russia)
Soyuz-TMA Space Vehicle Descent Control System

9.10–9.30   **F.M. Tucker** (*US Army Simulation and Training Technology Center, Orlando, FL,* USA)
GPS Augmentation with a Magnetic Fluid-Based Six Degree-of-Freedom Inertial Sensor and a Low-Cost, Multi-Oscillator Array Timing Device

POSTER PAPERS [*]

---

[*] The authors of poster papers present 1-2 slides within 3 minutes at the plenary session; the discussion will be continued at the posters.

9.30-10.10

V.G. Borisov, S.K. Danilova, V.O. Chinakal (*Institute of Control Sciences, Russian Academy of Sciences, Moscow,* Russia)
Intellectual Decision Support System for Integrated Control and Navigation Systems of Maritime Mobile Vehicles

S.E. Golubkov, **E.A. Melnikova** (*Moscow Institute of Electromechanics and Automatics, Moscow*, Russia)
Automatic Control Algorithms Development on Landing. Analysis of Control Quality by the Results of Mathematical Analysis and Scaled-Down Modeling

G.I. Yemelyantsev, B.Ye. Landau, S.L. Levin, S.G. Romanenko
(*State Research Center of Russia CSRI Elektropribor, St. Petersburg,* Russia)
In-Flight Calibration of the ESG-Based Spacecraft Attitude Reference System Using a Stellar Sensor

Jamshaid Ali, Zhang Chang Yun (*Beijing University of Aeronautics and Astronautics (BUAA), Beijing,* China)
Simulation Algorithm for SINS Axes Misalignment Angles through Stars Observation

A.F.Schekutiev (*Central Unitary Enterprise TsNIIMash, Korolyov, Moscow region,* Russia)
Model Complex for Research, Optimization and Adaptation of Navigational Algorithms for Terraneous (on-Ground) Mobile Transport Vehicles at Integration of a Satellite Navigation Set with Tactile Type Sensors and Some Inertial Instruments

M. Vičan, J. Špaček, P. Puričer (*Czech Technical University, Prague,* Czech Republic)
Adaptive Algorithm for Positioning Data Fusion

Dah-Jing Jwo, Rong-Jyh Chen (*National Taiwan Ocean University, Keelung, Taiwan,* China)
Integrated GPS/INS Navigation Systems Using Mixed H_2/H_∞ Filtering Approaches

A.S. Volzhin, A.A. Viazmikin, V.S. Zeenich, E.Ya. Falkov (*State Scientific Center of RF, State Unitary Enterprise State Research Institute of Aviation Systems, Moscow,* Russia)
Integrated System Able to Measure Errors of Satellite Navigation System Receivers

Zhang Xinggu, Zheng Jiachun (*Jimei University, Xiamen,* China)
A Study on the Information Fusion of the Shipborne Navigation Instruments

10.30–11.00   COFFEE BREAK

SESSION II: SATELLITE SYSTEMS

Chairmen: ***Dr. O. Stepanov,*** *Russia*
          Dr. L. Crovella, *Italy*

5

11.00-11.20   **S. Winkler, H.-W. Schulz, M. Buschmann, T. Kordes, P. Vörsmann**
(*Institute of Aerospace Systems, Technical University of Braunschweig, Braunschweig,* Germany)
Visual Aided Low-Cost GPS/INS Integration for Autonomous MAV Navigation

11.20-11.40   **N.A. Atamanov** (*Navteco Ltd, Moscow*, Russia), **I.V Gusev, M.A. Glazkov, P.N. Kuleshov** (*PIC PROGRESS AG*, *Moscow,* Russia)
An Integrated Navigation System for Measuring Railway Angular Parameters

11.40-12.00   **O.A. Mezentsev, G. Lachapelle** (*University of Calgary,* Canada),
J. Collin, H. Kuusniemi (*University of Calgary,* Canada & *Tampere University of Technology,* Finland)
Accuracy Assessment of a High Sensitivity GPS Based Pedestrian Navigation System Aided by Low-Cost Sensors

12.00-12.20   **A. Seifert, A. Kleusberg** (*University of Stuttgart - Institute of Navigation, Stuttgart,* Germany)
An Alternative GPS/INS Integration Method

12.20-12.40   **S.P. Dmitriev, D.A. Koshaev** (*State Research Center of Russia CSRI Elektropribor, St.Petersburg,* Russia)
Information Monitoring and Diagnostics of Duplicate Inertial Systems

12.40-13.00   **G. Gerten** (*General Dynamics, Dayton, Ohio,* USA)
Protecting the Global Positioning System

13.00-14.00   LUNCH

Chairmen: ***Prof. A. Nebylov***, *Russia*
            Prof. A. Zbrutsky, *Ukraine*

14.00-14.20   **M.O. Kechine, C.C.J.M. Tiberius, H. van der Marel** (*Delft University of Technology, Delft,* the Netherlands)
Real-Time Kinematic Positioning with NASA's Internet-Based Global Differential GPS (IGDG)

14.20-14.40   **T. N. de Morais, A. B. V. Oliveira, F. Walter** (*Instituto Tecnológico de Aeronáutica, São José dos Campos,* Brazil)
Global Behavior of the Equatorial Anomaly since 1999 and Effects on GPS Signals

POSTER PAPERS[*]

14.40-15.10

        V.V. Abol (*Russian Mission Control Center, Korolyov, Moscow Region,* Russia)
Determination of High-Precision GLONASS Ephemerides with Integrated

---

[*] The authors of poster papers present 1-2 slides within 3 minutes at the plenary session; the discussion will be continued at the posters.

GLONASS/GPS Receivers: a Method, Software, Test Results

K.W. McPherson, W.S. Ely, J.M. Stewart (*Airservices Australia, Canberra,* Australia)
New Test Results in Support of the ICAO Ground-Based Regional Augmentation System (GRAS) Validation

P. Kovář, F. Vejražka, L Seidl, P. Kačmařík (*Czech Technical University, Prague,* Czech Republic)
Reception of Signals of GLONASS System by Experimental GNSS Receiver

A. Banachowicz (*Gdynia Maritime University, Gdynia,* Poland**),**
A. Dołgopołow (*Maritime Office, Szczecin,* Poland)**, R. Bober, Z. Kozłowski, A. Wolski** (*Maritime University of Szczecin, Szczecin,* Poland)
The Study of Possible Barge Traffic Control with a DGPS System in the Dolna Odra Area

15.30-16.05   COFFEE BREAK

P L E N A R Y   P A P E R S

16.05-16.25   **F. Bastide, Ch. Macabiau** (*ENAC, Toulouse,* France), **E.Chatre** (*Galileo Joint Undertaking, Brussels, Belgium*)
Computation of GALILEO E5a/E5b Signal-to-Noise Density Ratio Degradation due to DME/TACAN and JTIDS/MIDS Signals through Simulations

16.25-16.45   **V. I. Baburov, N. V. Ivanszevich, E. A. Panov, N. V. Vasilyeva**
(*AUSRIRE Branch Office AUSRIRE-Navigator, St.Petersburg,* Russia)
A Navigation Integrated System for Landing Approach and Helicopters Landing on a Sea Platform

16.45–17.05   **Jyh-Ching Juang, Kai-Yuan Cheng, Ching-Linag Tseng, Cheng-Fan Lo**
(*National Cheng Kung University, Tainan, Taiwan,* China)
The Design and Test of a Dual-Frequency GPS Pseudo-Satellite Augmentation System

18.00-22.00   BANQUET

WEDNESDAY 26 MAY

SESSION III – INERTIAL SYSTEMS AND SENSORS

Chairmen: ***Prof. D. Loukianov,*** *Russia*
Prof. H. Sorg*, Germany*

P L E N A R Y   P A P E R S

8.30-8.50   **Y. Paturel, E. Willemenot, A. Urgell** (*IXSEA, Marly Le Roi,* France)
FOG Technology and FOG-Based Systems: An Industrial Reality at Ixsea

8.50-9.10   **L. N. Belsky, A. D. Budrin, L. V. Vodicheva, V.A. Kokovikhin,
V. M. Kutovoy, L. N. Shalimov**
(*Science & Production Association of Automatics, Ekaterinburg,* Russia)
Estimation of Orientation of Optical System Basic Axes with the Help
of Strapdown INS and Vector Matching

9.10-9.30   **V. E. Prilutsky, V. G. Ponomarev, V. G. Marchuk, M. A. Fenyuk,
Yu. N. Korkishko, V. A. Fedorov, S. M. Kostritsky, E. M. Paderin,
A. I. Zuev** (*Optolink Ltd., Moscow Institute of Electronic Technology, Plant
Proton, Moscow,* Russia)
Interferometric Closed-Loop Fiber Optic Gyroscopes with Linear Output

POSTER PAPERS [*]

9.30-10.40

A. G. Andreev, V. S. Ermakov, M. B. Mafter (*Perm Scientific-Industrial
Instrument Making Company, Perm,* Russia), **V. I. Kokorin (***NIIRT
Krasnoyarsk State University, Krasnoyarsk,* Russia) **S. V. Rumyantsev**
(Murmansk Manufacturing Enterprise Atomflot, Murmansk, Russia)
Results of High Latitude Trials of Modern Russian Marine Compasses

G. E. Sandoval-Romero *(Universidad Nacional Autónoma de México,*
Mexico)
Superluminescent Fiber Source for Fiber Optic Gyrocompass

P. K. Plotnikov, A. V. Mikheyev (*Saratov State Technical University,
Saratov, Russia*), **Yu. N. Korkishko, V. A. Fedorov, V. E. Prilutsky**
(*Optolink Ltd., Moscow, Saratov,* Russia)
Fiber-Optical Gyrocompass Based on Strapdown Inertial System of Orientation
and Navigation

A.V. Zbrutsky, M. Rahmouni (*National Technical University of Ukraine
KPI, Kiev,* Ukraine)
Algorithmic Methods for Increasing the Accuracy of a Gyrocompass

S. M. Yakoushin (*Perm State Technical University, Perm,* Russia)
A New Method of a Fast Initial Alignment for Gimballed Inertial Navigation
Systems

A.V. Molchanov *(Moscow Institute of Electromechanics and Automatics,
Moscow,* Russia), **D.A. Morozov, I.V. Osetrov, M.V. Chirkin** (*Ryazan State
Pedagogical University, Ryazan,* Russia)
Field Reliability of Ring Lasers Used in Strapdown Inertial Navigation Systems

I.V. Merkuriev, V.V. Podalkov, S.I. Gubarenko
(*Moscow Power Engineering Institute, Moscow,* Russia)
Influence of Gimbals' Non-Linearity on Dynamics and Accuracy of Micro

---

[*] The authors of poster papers present 1-2 slides within 3 minutes at the plenary session; the discussion will be
continued at the posters.

Electro-Mechanical Gyro

Yu. A. Yatsenko, G. Yu. Yatsenko, V. V. Chikovani
(*Ukrainian Center for Optical Instrument Technology, Kiev,* Ukraine)
Sensitivity and Accuracy Enhancement for Metallic Resonator CVG

**L. Ya. Kalihman, D. M. Kalihman, N. A.Kaldymov, A. V.Polushkin,
S. F. Nahov** (*FSUE PC "Korpus", Saratov,* Russia)
Use of Precision Quartz Measuring Instruments Apparent Acceleration in
Modern Inertial Navigation Control Systems

V. N. Belobragin (*FSUE SPLAV SPRA, Tula,* Russia)**, V. I. Gorin,
V. Ya. Raspopov** (*Tula State University, Tula,* Russia)
Angular Parameter Pickups of Flight Vehicles on the Basis of the Gyros
with a Rotary Gimbal Suspension

**A. P. Mezentsev, L. Z. Novikov, A. A. Konovtchenko, A. A. Ignatiev,
L.A. Dudko, A. D. Bogatov, A. Ya. Artemiev,** (*Kuznetsov Research Institute
of Applied Mechanics, Moscow,* Russia), **Ya. I. Binder** (*JSC Electromechanics,
St.Petersburg,* Russia), **O. L. Mumin** (*State Research Center of Russia
CSRI Elektropribor, St. Petersburg,* Russia)
Subminiature Dynamically Tuned Gyroscope. Design and Development

G.P. Anshakov (*FSUE State Research & Production Rocket-Space Center
"TsSKB-Progress", Russian Aerospace Agency, Samara,* Russia),
Ye. I. Somov, S.A. Butyrin (*State Research Institute of Mechanical Systems
Reliability, Samara,* Russia)
Dynamics of Precise Gyromoment Control Systems for the Land-Survey
Spacecraft

S.N. Vassilyev, V.A. Voronov, E.I. Druzhinin (*Institute for System Dynamics
and Control Theory of SB RAS, Irkutsk,* Russia)
Generation of the Programmed Control by Gyro Actuators of the Spacecraft
Control System in the Attitude-Change Mode

V.M. Slyusar (*National Technical University of Ukraine KPI, Kiev,* Ukraine)
Extension of Navigation Sculling-Algorithms Design for Frequency Shaped
IMU Data

A.P. Kolevatov, S.G. Nikolaev (*Perm State Technical University, Perm,*
Russia), **A.G. Andreev, V.S. Ermakov, V.P. Buturlakin** (*JSC Perm Scientific-
Industrial Instrument Making Company, Perm,* Russia)
Automation of Navigation Systems Algorithms and Software Development
Based on Object-Oriented Approach

10.40-11.10   COFFEE BREAK

Chairmen: ***Prof. V. Gusinsky***, *Russia*
            Dr. G. Schmidt, *USA*

PLENARY PAPERS

11.10-11.30   **D. P. Loukianov, Yu. V. Filatov, S. Yu. Shevchenko, M. M. Shavelko,
Yu. A. Toropov, A. A. Tikhonov, A. G. Povalyaev** (*St.Petersburg*

Electrotechnical University, St.Petersburg, Russia)**, I. V. Popova,
A. M. Lestev, M. A. Lestev** (*Gyrooptica Ltd., St.Petersburg,* Russia)**,
V.V. Novikov, M. S. Vershinin** (*Avangard-Elionica Ltd, St.Petersburg,*
Russia)
 The Development and Investigation of a SAW- Microaccelerometer

11.30-11.50   **Seonho Seok, Chihwan Jeong, Kukjin Chun** (*School of Electrical
Engineering and Computer Science, Seoul National University, Seoul,* Korea),
Byeungleul Lee (*SAIT,* Korea)
 MEMS Silicon Resonant Accelerometer for Navigational Application

11.50-12.10   **V.E. Dzhashitov, V.M. Pankratov** (*Precision Mechanics and Control
Institute, Russian Academy of Sciences, Saratov,* Russia), **A.A. Papko** (*FSUE
Research Institute of Physical Measurements, Penza,* Russia)
 The Micromechanical Precision Accelerometer in Conditions of Thermal
Effects

12.10-12.30   **U. Schreiber, A. Velikoseltsev** (*Forschungseinrichtung Satellitengeodäsie,
Kötzting,* Germany), **G. E. Stedman, R. B. Hurst** *(University of Canterbury,
Christchurch,* New Zealand), **T. Klügel** (*Bundesamt für Kartographie und
Geodäsie, Kötzting,* Germany)
 Large Ring Laser Gyros as High Resolution Sensors for Applications in
Geoscience

12.30-12.50   **S.F. Konovalov, A.V. Kuleshov, V.P. Podchezertsev, V.V. Fateev** (*Bauman
Moscow State Technical University, Moscow,* Russia), **Keun Ok Ahn** (*ADD,*
Korea)
 Development of Vibrating Gyro Designed for Operation in Conditions of
Extreme Shock Effects

12.50-13.00   **CLOSING CEREMONY**

13.00-14.00   LUNCH

14.00-15.00   Visit to the exhibition of specimens of new equipment developed by CSRI
Elektropribor