



17th Saint Petersburg International Conference
on Integrated Navigation Systems
31 May – 02 June 2010, Russia

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PRELIMINARY PROGRAM

MONDAY, 31 MAY

- 8.00 – 9.50 REGISTRATION OF CONFERENCE PARTICIPANTS
- 10.00 – 10.15 OPENING CEREMONY

SESSION I – INERTIAL SYSTEMS AND SENSORS

Chairmen – Prof. D.P. Lukianov, Russia
Prof. J. Sinkiewicz, USA

PLENARY PAPERS

- 10.15 – 10.35 1. **Ya.A.Nekrasov, V.G. Peshekhonov** (*Concern CSRI*
87 *Elektropribor, JSC, St. Petersburg, Russia*), **C. Kergueris,**
P.Pfluger (*Tronics Microsystems, France*), **A. Elsayed, H.**
Haddara (*Si-WareSystems, Egypt*)
Test Results for the Russian-French Micromechanical Gyro
- 10.35 – 10.55 2. **S.F.Konovalov, V.P.Podchezertsev, D.V.Mayorov,**
56 **Y.A.Ponomarev, A.G.Sidorov** (*Bauman Moscow State*
Technical University, Moscow, Russia), **H.W. Park, N.Y.**
Kwon (*Pongsan FNS, Nonsan-City, Republic of Korea*),
G.S. Lee, J.B.Seo (*ADD, Republic of Korea*)
Two-Coordinate Micromechanical Rate Sensor With
Magnetoelectric Torques of a Feedback on Channels of
Excitation and Measurement
- 10.55 – 11.15 3. **V.V.Chikovani, Yu.A.Yatsenko** (*INNALABS Holding Inc.,*
58 *Kiev, Ukraine*)
Investigation of Azimuth Accuracy Measurement With
Metallic Resonator Coriolis Vibratory Gyroscope
- 11.15 – 11.45 COFFEE BREAK

PLENARY PAPERS

- 11.45 – 12.05 4. **A Carre, L Rosellini, O Prat** (*Sagem Défense Sécurité, Paris, France*)
100
HRG and North Finding
- 12.05 – 12.25 5. **Yu.G.Martynenko** (*Institute of Mechanics of Lomonosov Moscow State University, Moscow, Russia*),
32 **I.V.Merkuryev, V.V Podalkov** (*Moscow Power Engineering Institute (Technical University), Moscow, Russia*)
Calibration of Parameters of Small Viscoelastic Anisotropy of the Resonator of a Wave Solid-State Gyroscope by the Results of Bench Tests

POSTER PAPERS *

- 12.25 – 13.00 6. **V.E.Dzhashitov, V.M.Pankratov, M.A.Barulina, A.V.Golikov** (*Precision Mechanics and Control Institute, Russian Academy of Sciences, Saratov, Russia*)
5
Prospects for the Development and Creation of Superminiature Micromechanical Multipurpose Sensors of Inertial Information
7. **V.G.Andrejev, V.A.Belokurov, V.I.Galkin, V.N.Gorkin, V.I.Koshelev, A.V.Molchanov, I.S.Kholopov** (*Ryazan State Radioengineering University, Russia*)
95
Signal Filtration for Rate Gyro Units
8. **V.B.Nikishin** (JSC «Gazpriboravtomatिकासervice», Saratov, Russia), **A.V.Melnikov** (JSC «Geophysmash», Saratov, Russia), **V.S.Shorin** (*Saratov State Technical University, Saratov, Russia*)
69
Observability of Drift Parameters of Mems Inertial Measurement Unit

* *Poster presentation (3 min presentation by the author describing the main idea of the paper at the plenary session, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

- 23 9. **V.Apostolyuk** (*National Aviation University, Kiev, Ukraine*)
Demodulated Dynamics and Optimal Filtering for Coriolis Vibratory Gyroscopes
- 46 10. **M.V. Chirkin, V.Yu. Mishin, D.A. Morozov** (*Ryazan State Radio Engineering University, Russia*), **A.V. Molchanov, M.A. Zakharov** (*Moscow Institute of Electromechanics and Automatics, Russia*)
Ring Laser Digital Signal Processing in Evaluating Laser Gyro Characteristics
- 28 11. **N.I.Krobka** (*Branch of the Center for Ground-Based Space Infrastructure Facilities Operation “Scientific & Research Institute for Applied Mechanics named after academician V. I. Kuznetsov”, Moscow, Russia*)
Differential Methods for Identification of the Structure of Noises of Fiber-Optical and Other Gyros
- 27 12. **N.I.Krobka** (*Branch of the Center for Ground-Based Space Infrastructure Facilities Operation “Scientific & Research Institute for Applied Mechanics named after academician V. I. Kuznetsov”, Moscow, Russia*)
The Features of Calibration of Three-Axis Laser Gyros with Single Vibrator and with a Recessively Rotating Basis (30 and 20 Years Later)
- 67 13. **Vavilova N.B, Golovan A.A., Parusnikov N.A., Sazonov I.Yu.** (*Lomonosov MSU, Russia*)
Calibration of Strapdown Inertial Navigation System Using Low-Accuracy Single Axis Turntable
- 15 14. **A.E.Fedorov, D.A.Rekunov** (*Open Society «Ramensky Instrument Engineering Plant», Ramensky, Moscow region, Russia*)
The Inertial Measurement Unit (IMU) of the Strapdown Inertial Navigation System (SINS) Stand Calibration with Pitch Limited Angles

15. **Ye.I.Somov, S.A.Butyrin** (*Research Institute of Mechanical Systems Reliability Samara State Technical University, Russia*)
48 Digital Signal Processing, Calibration and Alignment of a Strapdown Inertial System for Attitude Determination of an Agile Spacecraft

13.00 – 14.00 LUNCH

PLENARY PAPERS

Chairmen – **Prof. A.V. Nebylov**, Russia
Prof. I.M. Okon, Russia

- 14.00 – 14.20 16. **Ya.I.Binder, A.S.Lysenko, T.V.Paderina, A.N.Fedorovich** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)
59 Continuous Gyro-Inclinometric Survey of Arbitrarily-Oriented Wellbores: Various Circuitry Designs, Problems and Solutions.
- 14.20 – 14.40 17. **N.I.Krobka** (*Branch of the Center for Ground-Based Space Infrastructure Facilities Operation “Scientific & Research Institute for Applied Mechanics named after academician V. I. Kuznetsov”, Moscow, Russia*)
26 The Concept of Accurate Equations of Errors and Estimations of Quantum Limits of Accuracy of Strapdown Inertial Navigation Systems Based on Laser Gyros, Fiber-Optical Gyros, and Atom Interferometers on de Broglie Waves

POSTER PAPERS *

- 14.40 – 15.30 18. **Yu.Yu.Broslavets, M.A.Georgieva, A.A.Fomitchev** (*Moscow Institute of Physics and Technology (State University), JSC “Lasex”, Dolgoprudny, Russia*)
51 Features of Use of the Ring Mode-Locked YAG:Cr⁴⁺ Laser as a Laser Gyroscope

* *Poster presentation (3 min presentation by the author describing the main idea of the paper at the plenary session, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

- 8 19. **Y.N.Chelnokov, M.Y.Loginov** (*Institute of Precision Mechanics and Control, Russian Academy of Sciences, Saratov, **Russia***)
Differential Error Equations for an Aided Strapdown Inertial Navigation System Functioning in the Normal Geographical Reference Frame. Derivation, Analytic Investigation and Simulation Results
- 33 20. **Y.Kuznyetsov, S.Oleynik, V.Demenkov** (*Research Production Enterprise Hartron-Arkos, Kharkov, **Ukraine***), **Y.Plaksiy** (*National Technical University «Kharkov Polytechnic Institute», Kharkov, **Ukraine***)
Application of The Models of Rotation for the Error Analysis of Algorithms for Gimballess Inertial Attitude Systems of Moving Objects
- 37 21. **H.S.Jung, D.K.Han, T.H.Keem** (*Hanwha Corporation R&D Center, Daejeon, **Korea***)
Estimation and Correction of Initial Attitude and Inertial Sensor Bias through Transfer Alignment
- 35 22. **M.B.Bogdanov, M.B.Danilov, V.V.Saveliev** (*Tula State University, Tula, **Russia***)
Results of Exploratory Checkout of a Strapdown Navigation System Based on Fiber Optic Gyroscopes and Force-Rebalanced Accelerometers
- 88 23. **L.V.Vodicheva, E.L.Alievskaya, Yu. Parysheva** (*Science and Production Association of Automatics, Ekaterinburg, **Russia***)
Instrument Errors of a Strapdown Attitude Reference Unit for a Spinning Vehicle: an Estimation Technique and Some Results
- 53 24. **Y.G.Egorov, S.V.Smirnov** (*Bauman Moscow State Technical University, Moscow, **Russia***,)
The Synthesis of Parameter Setting Algorithms in the Adaptive Correction System of the Radio Telescope Inertial Orientation System
- 80 25. **V.V.Pchelin, A.V.Uskov, B.L.Sharygin** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***)
Navigational Support for the Ship-Based Helicopter Flights Using Gyro Technologies

- 41 26. **V.Ja.Raspopov, S.E.Tovkach, A.P.Shvedov** (*GOUVPO Tula State University, Russia*), **P.P.Paramonov, J.I. Sabo** (*FGUP OKB "Electroautomatics" of P.A.Yefimov, St. Petersburg, Russia*)
Verticals for Unmanned Aerial Vehicle of Different Functions
- 50 27. **Gryazev B.V., V.V.Savel'ev, V.A.Smirnov** (*Tula State University, Tula, Russia*)
Sight Line Stabilization System Compensating Linear Shifting Movement of The Vehicle
- 13 28. **V.M.Nikiforov, S.A.Zaitsev, A.S.Shiryaev** (*Federal State Unitary Enterprise "N.A.Pilyugin Scientific and Development Centre", Russia*), **E.V.Piskulin, E.A.Schedrin** (*Serpuukhov Military Institute of Missile Forces, Serpuukhov, Moscow Region, Russia*)
System Theoretic Approach to the Development of Motion Control Technical Systems
- 25 29. **N.M.Bespalova, V.A.Zhezlov** (*Federal State Unitary Enterprise «N. A. Pilyugin Scientific and Development Centre», Moscow, Russia*)
Motion Model of Gyrostabilizers in the Conditions of External Pitch Axis Nonhorizontal Orientation
- 36 30. **N.B.Vavilova, A.A.Golovan, A.A.Panyov** (*Lomonosov Moscow State University Laboratory of Navigation and Control, Moscow Russia*), **A.V.Konon, A.A.Laptiev** (*JSC NGKS, Lukhovitsy Russia*)
Development and (ANT) Testing of the Navigation Algorithms Elaborated for Pipeline Inspection Systems
- 34 31. **M.B.Bogdanov, M.B.Danilov, V.V.Saveliev** (*Tula State University, Tula, Russia*)
Gyroscope-Free Method of Analytical Construction Of Plumb-Line under Conditions of Intensive Maneuvering of Vehicle

32. **D.M.Kalihin, L.Y.Kalihin, Y.V.Sadomtsev, A.V.Polushkin, E.A.Deputatova, R.V.Ermakov, S.F.Nahov** (*PC "KORPUS", a branch of FSUE N.A. Pilyugin "NPCAP", Saratov, Russia*), **L.A.Izmailov, A.V.Molchanov** (*Moscow Institute of Electromechanics and Automatics, Plc, Russia*), **M.V.Chirkin** (*Ryazan State University, Russia*)
Multi-Purpose Precision Test Simulator with Digital Control System for Testing Rate Gyroscopes of Different Types

15.30 – 16.00 COFFEE BREAK

SESSION II – INTEGRATED SYSTEMS

Chairmen – **Dr. Yu.A. Litmanovich**, Russia
Prof. A.V. Zbrutsky, Ukraine

PLENARY PAPERS

- 16.00 – 16.20 33. **Donald E. Swihart** (Air Force Research Laboratory, U.S.A.), **Arthur F. Barfield** (*Infoscitex Corp, U.S.A.*), **Edward M. Griffin** (*Lockheed Martin Aeronautics Co., U.S.A.*), **Richard C. Lehmann** (*Lockheed Martin Aeronautics Co., U.S.A.*), **Shawn C. Whitcomb** (*Lockheed Martin Aeronautics Co., U.S.A.*), **Mark A. Skoog** (*NASA Dryden Flight Research Center, U.S.A.*), **Billie Flynn** (*Lockheed Martin Aeronautics Co., U.S.A.*), **Kevin E. Processor** (*Calspan Corporation*)
Design, Integration and Flight Test of an Automatic Ground Collision Avoidance System
- 16.20 – 16.40 34. **G.V.Antsev, A.A.Makarenko, V.A.Sarychev, L.S.Tournetsky** (*Joint-Stock Company «Radar mms», St. Petersburg, Russia*)
Software System of Simulation Model of Unmanned Aerial Vehicle Landing System For

117.00 – 21.00 SIGHT-SEEING GUIDED BUS TOUR OF SAINT PETERSBURG

TUESDAY, 1 JUNE

SESSION II – INTEGRATED SYSTEMS

(Continued)

Chairmen – **Dr. B.S. Rivkin**, Russia
Mr. L. Camberlein, France

PLENARY PAPERS

- 9.00 – 9.20 35. **E.V.Karshakov** (*V.A.Trapeznikov Institute of Control Sciences RAS, Moscow, **Russia***)
43 Attitude System Corrected by Accelerations Calculated Using Satellite Navigation System Phase Measurements in Standard Mode
- 9.20 – 9.40 36. **A.Maier, S.Kiesel, G.F.Trommer** (*KIT – Institute of Systems Optimization, Karlsruhe, **Germany***)
45 Performance Analysis of Federated Filter for SAR/TRN/GPS/INS Integration
- 9.40 – 10.00 37. **V.B.Nikishin, A.I.Sinev** (*CJSC «Gaspriboravtomatikaservice», Saratov, **Russia***),
49 **P.K.Plotnikov, S.G.Naumov** (*Saratov State Technical University, **Russia***)
Accuracy Improvement of an Underground Navigation on the Basis of Integration of SINS, Odometers and GPS/GLONASS Receivers
- 10.00 – 10.20 38. **D.-H. Hwang, D. W. Lim, S. L. Cho, S. J. Lee** (*Department of Electronics Engineering, Chungnam National University, Gung-dong, Yuseong-gu, Daejeon **Korea***)
96 A Unified Approach to The Ultra-Tightly Coupled GPS/INS Integrated Navigation System

POSTER PAPERS *

- 10.20 – 11.00 39. **L.N.Belskii, V.D.Gokhfeld** (*FSUE “Academician N.A. Semikhatov Scientific and Production Association of automatics”, Ekaterinburg, Russia*), **V.A.Kapitonov** (*State Scientific and Production Space-Rocket Centre “TSSKB-PROGRESS”, Samara, Russia*), **V.M.Kutovoi, S.Ju.Perepelkina, A.A.Fedotov** (*FSUE “Academician N.A. Semikhatov Scientific and Production Association of automatics”, Ekaterinburg, Russia*)
Construction of a Navigation Device Prototype Model on the Basis of a Strapdown Inertial Unit, Satellite Navigation Equipment and Computing Device
- 81
40. **E.G.Kharin, I.A.Kopylov, V.A.Kopelovich, E.V.Klabukov** (*M.M.Gromov FRI, Moscow, Russia*)
On-Board and Ground-Based Algorithms for the Integrated Processing of Inertial and Radionavigation Systems Data: Analysis and Working out Based on the Flight Test Data
- 52
41. **H.O.Aro** (*National Space Research and Development Agency, Obasanjo Space Centre, FCT Nigeria*)
Development of a Low-Cost Integrated Navigation System for Sounding Rocket
- 74
42. **Hamza Benzerrouk, Alexander Nebylov** (*International Institute for Advanced Aerospace technologies of Saint-Petersburg State University of Aerospace Instrumentation, Saint Petersburg, Russia*)
Integrated Navigation System INS/GNSS Based on Joint Application of Robust Adaptive Linear and Nonlinear Filtering
- 64
43. **A.V.Prohortsov, V.V.Saveliev, A.A.Chepurin** (*Tula State University, Tula, Russia*)
A Method for Eliminating Simulative Jams of a Satellite Navigation System by Using Information From a Strapdown System
- 38

* *Poster presentation (3 min presentation by the author describing the main idea of the paper at the plenary session, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

44. **Syed Zahid Jamal** (*Institute of Space Technology, Karachi, Pakistan*)
94 Architecture and Performance Analysis of Tightly Coupled GPS/INS Integrated Navigation System for Airborne Applications
45. **K.K.Veremeenko, D.A.Antonov, M.V.Zharkov, R.Yu. Zimin** (*Moscow Aviation Institute (State Technical University), Russia*), **A.Yu. Chernodubov** (*OOO Transas-Telematika, Moscow, Russia*)
86 Small-sized Integrated Navigation System

11.00 – 11.30 COFFEE BREAK

PLENARY PAPERS

Chairmen – **Dr. A.V. Sokolov**, Russia
Mr. L. Camberlein, France

- 11.30 – 11.50 46. **A.V. Chernodarov, A.P.Patrikeev, Ju.N.Korkishko, V.A.Fedorov** (RPC “OPTOLINK” Ltd, Moscow, Zelenograd, **Russia**), **S.E.Perelyaev** (Moscow Institute of Electromechanics and Automatics, Moscow, **Russia**)
70 Half-Scale Development of the Mathematical Software Support for the SINS-500 Inertial Satellite Navigation System Built Around Fiber-Optic Gyros
- 11.50 – 12.10 47. **Halil Ersin Soken, Chingiz Hajiyev** (*Istanbul Technical University, Turkey*)
3 UKF Based In-Flight Calibration of Magnetometers and Rate Gyros for Pico Satellite Attitude Determination
- 12.10 – 12.30 48. **O.O.Barabanov, V.B.Moiseyenko** (*Degtyarev Kovrov State Technological Academy, Vladimir region, Kovrov, Russia*)
72 Theoretical and Experimental Comparison of Some Ways of Mobile Track Robot Autonomous Navigation

POSTER PAPERS *

- 12.30 – 13.00 49. **V.I.Kortunov, A.N. Gora** (*National space university of N.E.Zhukovsky "KhAI", Ukraine*)
90 Global System of Transfer of The Flight Data on the Basis of the Satellite Communication Channel
50. **V. Popovich, S. Vanurin, S. Kokh, V. Kuzionnyy** (*St. Petersburg Institute for Informatics and Automation of RAS, St. Petersburg, Russia*)
97 Intellectual Geographic Information System for Navigation Safety
51. **Lucjan Gućma, Andrzej Bak, Maciej Gućma, Stefan Jankowski, Paweł Zalewski** (*Marine Traffic Engineering Institute, Maritime University of Szczecin, Poland*), **Marko Perković** (*University of Ljubljana, Slovenia, EU Joint Research Center, Milano, Italy*)
84 Laser Docking System Integrated with Pilot Navigation Support System. Background to High Precision, Fast and Reliable Vessel Docking
52. **A.M.Aleshechkin** (*Institute of Engineering Physics and Radio Electronics of Siberian Federal University, Krasnoyarsk, Russia*)
82 Accounting for Signal Travel Speed in Maritime Radiopositioning
53. **V.Bartenev, S.Jatsun** (*Kursk State Technical University, Kursk, Russia*)
83 Motion Control of Mobile Wheeled Robots Based on the Signal of Optron Matrix
54. **K.A.Pupkov, A.D.Ustuzhanin** (*Bauman Moscow State Technical University, Russia*)
14 Optimization of Man-Machine Interaction for Spacecraft Control

* *Poster presentation (3 min presentation by the author **describing the main idea of the paper at the plenary session**, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

55. **Kunle Fashade** (*Center For Space Transport And Propulsion, Epe, Lagos State, Nigeria*), **Adetoro Lanre** (*National Space Research and Development Agency, Abuja, Nigeria, Obasanjo Space Center, P.M.B 437, Abuja, Nigeria*)
77 Transfer Orbit Trajectory Controller Design for a Typical Spacecraft Launching from Nigeria
56. **A.S.Galkina A.I.Manturov, V.E.Jurin** (*State Research and Production Space-Rocket Center "TsSKB-Progress", Samara, Russia*)
61 Estimation of Remote Sensing Satellite Attitude Control for Curvilinear Swaths
57. **V.V.Voronov** (*R.E.T.Kronshtadt, ZAO, Moscow, Russia*), **G.V.Trubnikov** (*Transas, ZAO, St.-Petersburg, Russia*)
91 The Common Requirement Specification for the UAY Navigation Systems
58. **N.A. Dyadkov** (*Ural state technical university, Ekaterinburg, Russia*), **A.P. Panfilov, V.G. Osipov, A.L.Eisymont, D.E. Kosorukov** (*JSC Research Center "Module", Moscow, Russia*)
65 Implementation of a Digital Unified Program Receiver SoC for Integrated Navigation and Traffic Control Systems

13.00 – 14.00 LUNCH

PLENARY PAPERS

Chairmen – **Prof. J. Sinkiewicz**, USA
Prof. I.M. Okon, Russia

- 14.00 – 14.20 59. **Pavel Davidson, Jussi Collin, and Jarmo Takala** (*Tampere University of Technology, Finland*)
40 Application of Particle Filters to Map-Matching Algorithm
- 14.20 – 14.40 60. **Igor V. Belokonov, Mikhail Bondar, Ilya Kudriavtsev** (*Samara State Aerospace University, Russia*)
93 Problems of Navigational Tracking of Tether System Deployment by an Example of Experiment YES2 on the Space Vehicle "Foton-M3"

- 14.40 – 15.00 61. **George Dekoulis** (*Department of Computer Science and Engineering, Frederick Research Centre, Frederick University, Nicosia, Cyprus*)
73 Intelligent Navigation Strategies for Unattended Flight

POSTER PAPERS *

- 15.00 – 15.25 62. **S.B.Berkovich, N.I.Kotov, A.V.Sholokhov, A.Yu.Makhayev, E.G.Leiba**
54 (*IRSI "Institute of engineering physics", Russia*),
V.A.Liventsev (*Academician N.A.Pylyugin Scientific-Production Center of Automatics and Instrument-Making (PSPC), Moscow, Russia*)
Mobile Azimuth Keeping System Using Digital Map of Road
63. **E.A.Mikrin, A.V.Bogachev, V.N.Platonov, A.V.Sumarokov, V.P.Shiryaev** (*OAO RSC «Energia» JSK, Korolyov, Moscow region, Russia*)
92 Effects of Reaction Wheel Rotor Unbalances on Microaccelerations Onboard an Advanced SC
64. **Hamza Benzerrouk, Alexander Nebylov, Gennadi Yatsevitch** (*International Institute for Advanced Aerospace technologies of Saint-Petersburg State University of Aerospace Instrumentation, St. Petersburg, Russia*)
63 Original Integrated Navigation System GNSS Tracker/Electronic Compass for Blinds Peoples Localization and Navigation in the City
65. **V.A.Soldatenkov, U.K.Gruzevich, M.A.Lisov, V.M.Achildiev, P.F.Zorin, A.D.Levkovich** (*«Scientific Production Unity GEOPHIZIKA-NV» Stock Company, Moscow, Russia*)
7 Optoelectronic Device for Determining the Geographical Coordinates of the Remote Object with Micromechanical Strapdown Navigation System

* *Poster presentation (3 min presentation by the author **describing the main idea of the paper at the plenary session**, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

66. **A.I.Sdvizhkov, A.I.Golubev, V.V.Matakhin, A.L.Slavsky** (*FSUE "ARSRI "Signal", Kovrov, Vladimir Region, Russia*)
 16 On the Issue of the Construction Principles and Results of Experimental Adjustment of a Contactless Radar Ground Vehicle Speed Meter in Different Operating Conditions
67. **Grebnev J., Kornilov A., Svyazhin D.** (*JSC Arzamas Research & Production Enterprise "TEMP-AVIA", Nizhny Novgorod Region, Russia*)
 42 Two-Axis Magnetometer Compass Calibration Procedures
68. **V.S.Lobanov, N.V. Tarasenko, V.A.Tkachenko, D.N.Shulga, V.N.Zboroshenko,** (*FSUE Central Scientific Research Institute of Machine Building (TsNIImash), Korolev, Moscow region, Russia*)
 104 Precision Orientation and Stabilization system for the Advanced Astrophysical SV

15.25 – 15.55 COFFEE BREAK

PLENARY PAPERS

Chairmen – **Dr. Yu.A. Litmanovich**, Russia
Prof. A.V. Zbrutsky, Ukraine

69. **A.Azenha, L.Peneda, A.Carvalho** (*Institute for Systems and Robotics, Faculty of Engineering, University of Porto, Portugal*)
 15.55 – 16.15 4 Accuracy Improvement of Indoors Localization with Radio Signal Strength Measurements
70. **Y.A.Mikrin, M.V.Mikhailov, S.N.Rozhkov** (*RSC Energia, city of Korolev, Moscow Region, Russia*)
 16.15 – 16.35 30 Autonomous Navigation and Rendezvous of SC in a Lunar Orbit
71. **Agustin Cozzetti, Riccardo Scopigno** (*Istituto Superiore Mario Boella, Torino, Italy*), **Letizia LoPresti** (*Politecnico di Torino, Torino, Italy*)
 16.35 – 16.55 66 Architectures for the Integration of GNSS Receiver and Vanet Transceiver: Potential Benefits of Tight-Coupled Architectures

- 16.55 – 17.15 72. **V.D.Dishel** (*Academician N.A. Pylyugin Scientific-Production Center of Automatics and Instrument-Making (PSPC), Moscow, Russia*)
75 The World's First Application of Satellite Navigation in GNC Systems for Space Launch Vehicles

POSTER PAPERS*

- 17.15 – 17.40 73. **O.A.Stepanov, A.B.Toropov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)
31 Comparison of Point Mass and Particle Filters in Map-Aided Navigation
74. **M.A.Basarab** (*Bauman Moscow State Technical University, Russia*)
85 Spherical Approximation of Telemetry Information by Cumulative Quaternion Bases
75. **O.S.Amosov** (*Amur State University of Humanities and Pedagogy, Komsomolsk-on-Amur, Russia*)
47 Optimal Estimation by Using Regression and Wavelets
76. **G.P. Losev** (*FSUE "Academician N.A. Semikhatov Scientific and Production Association of automatics", Ekaterinburg, Russia*)
98 Possible Methods for Qualitative Improvement of Precision Characteristics of Systems for Controlling Motion Paths of Ships, Missiles, Aircrafts and Other Vehicles
77. **Yuri P.Ivanov** (*State University of Aerospace Instrumentation, Russia*)
68 Universal Algorithm of Adaptive Optimal-Invariant Signal Filtering
78. **Yuri P. Ivanov, Vladimir G. Nikitin** (*State University of Aerospace Instrumentation, St. Petersburg, Russia*)
71 Complex Optimal-Invariant Inertial Signal Processing with Consideration for Failures of Measuring Devices

* *Poster presentation (3 min presentation by the author **describing the main idea of the paper at the plenary session**, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

79. **A.I.Diveev** (*Institution of Russian Academy of Sciences Dorodnicyn Computing Centre of RAS, **Russia***),
21 **K.A.Pupkov** (*Bauman Moscow State Technical University, **Russia***), **E.A.Sofronova** (*Peoples' Friendship University of Russia, **Russia***)
 Quality Improvement of Control Systems by Multi-Objective Synthesis Using the Network Operator Method

18.30 – 22.00 **BANQUET**

WEDNESDAY, 2 JUNE

SESSION II – INTEGRATED SYSTEMS

(Continued)

PLENARY PAPERS

Chairmen – **Prof. A.V. Nebylov**, Russia

Prof. I.M. Okon, Russia

- 9.30 – 9.50 80. **R.N.Akhmetov, V.P. Makarov, A.V. Sollogub**
*(Samara Space Centre TsSKB-Progress, **Russia**)*
76 Survivability Control Techniques of Low-Orbiting Earth Remote Sensing Unmanned Spacecraft
- 9.50 – 10.10 81. **S. Shiotani** (*Kobe University, Organization of Advanced Science and Technology, **Japan***)
20 On Simulation of Numerical Navigation for a Ship under Effects of Weather

SESSION III – SATELLITE SYSTEMS

Chairmen – **Dr. O.A. Stepanov**, Russia

Dr. B.V. Shebshaevich, Russia

PLENARY PAPERS

- 10.10 – 10.30 82. **N.V. Mikhailov, A.L. Botchkovsky, V.V.Chistyakov**
*(«Mstar Semiconductor», Russian Office, St. Petersburg, **Russia**)*, **V.F. Mikhailov** (*St. Petersburg State University of Aerospace Instrumentation, St. Petersburg, **Russia***)
9 Multi-Peak Processing of GNSS Signals for Strong Multipath Environment

- 10.30 – 10.50 83. **N.V.Mikhailov , A.V.Nikandrov** (*«MStar Semiconductor»*, *Russian Office, St. Petersburg, **Russia***),
 11 **V.F.Mikhailov** (*St. Petersburg State University of Aerospace Instrumentation, St. Petersburg, **Russia***)
 Multipath Identification and Mitigation in GNSS Receivers Using Cluster Analysis Methods

POSTER PAPERS *

- 10.50 – 11.30 84. **V.G.Valeev, I.N.Kornilov, S.I.Kudinov** (*The Urals State Technical University-UPI, Ekaterinburg, **Russia***)
 29 Method to Increase Noise Immunity for User Satellite Radionavigation System (SRNS)
85. **L.P.Barabanova** (*Degtyarev Kovrov State Technological Academy, Kovrov, Vladimir region, **Russia***)
 24 The Lower Bounds for The Geometrical Factors of Global Navigation Satellite System
86. **Ki-Yeol Seo, Sang-Hyun Park, and Deuk-Jae Cho** (*GNSS Research Center, Korea Ocean Research & Development Institute (KORDI), Daejeon, **Korea***)
 60 Design of Software DGNSS Reference Station and Integrity Monitor for Maritime Service
87. **Valeriy Konin, Alexey Pogurelsky** (*National Aviation University, Kiev, **Ukraine***)
 39 Development of Glonass Signal Processing Software
88. **V.Baburov, N.Ivantsevich, O.Sauta** (*Branch Office Open Joint Stock Company «AUSRIRE» «AUSRIRE-Navigator», St. Petersburg, **Russia***)
 12 Criteria of Preferences in the Problem of the Choice of the Satellite Receiver for the Navigation and Landing Complex

* *Poster presentation (3 min presentation by the author **describing the main idea of the paper at the plenary session**, accompanied by 1-2 slides, if any; the discussion to be continued at the posters).*

89. **A.L.Bochkovsky, N.V.Mikhailov, V.V.Chistyakov**
(«MStar Semiconductor», Russian Office, St. Petersburg, **Russia**), **V.F.Mikhailov** (St. Petersburg State University of Aerospace Instrumentation, St. Petersburg, **Russia**)
10 Use of Multipeak Processing of GNSS Signals for Pseudorange and Pseudorange Estimation in Multipath Conditions

11.30 – 12.00 COFFEE BREAK

PLENARY PAPERS

- 12.00 – 12.20 90. **Pavel Kovář, Petr Kačmařík, František Vejražka**
(Department of Radio Engineering, Faculty of Electrical Engineering, Czech Technical University in Prague, Praha, **Czech Republic**)
57 Interoperable GPS, GLONASS and Galileo Software Receiver

- 12.20 – 12.40 91. **N.V.Mikhailov, S.S.Pospelov, M.V.Vasilyev,**
V.V.Chistyakov («MStar Semiconductor», Russian Office, St.Petersburg, **Russia**), **N.V. Vasilyeva** (Branch Office Open Joint Stock Company «AUSRIRE» «AUSRIRE-Navigator», («MStar Semiconductor», Russian Office, St. Petersburg, **Russia**)
6 Method of Fast First Fix Using Low Cost GNSS Receiver

12.30 – 13.00 CLOSING CEREMONY
13.00 – 14.00 LUNCH