

PRELIMINARY PROGRAM¹

MONDAY, 27 MAY 2013

8.00 – 9.50 **REGISTRATION OF CONFERENCE PARTICIPANTS**

10.00 – 10.15 **OPENING CEREMONY**

SESSION I – **INERTIAL SYSTEMS AND SENSORS**

Chairmen – **Prof. D.P. Lukyanov**, Russia
Mr. L. Camberlein, France

INVITED PAPER

10.15 – 11.00 1.² **Philippe Bouyer** (*The Photonic and Nanosciences Laboratory, Bordeaux University, France*)
The Centenary of Sagnac Effect and Its Applications :
from Electromagnetic to Matter Waves

11.00 – 11.30 **COFFEE BREAK**

PLENARY PAPERS

11.30 – 11.50 2. **D.P. Lukyanov, Yu.V. Filatov** (*Saint Petersburg State Electrotechnical University, Russia*), **Yu.D. Golyaev, V.N. Kuryatov** (*Research and Development Institute “Polyus”, Moscow, Russia*), **V.P. Vasiliev** (*The Institute for Precision Instruments Engineering, Moscow, Russia*), **V.I. Buzanov, V.P. Spectorenko, A.I. Klochko** (*The Central Design Bureau and the Plant «Arsenal», Kiev, Ukraine*), **K-U. Schreiber** (*Forschungseinrichtung Satellitengeodäsie der Technischen Universität München, Fundamentalstation Wettzell, Germany*)
64³ 50th Anniversary of the Laser Gyro

¹ The Conference Program Committee reserves the right to make alterations to the final Conference Program

² Paper No. in the Conference Program

³ Paper No. in CoMS-Elektropribor system

- 11.50 – 12.10 3. **Yu.K.Pylaev, A.G.Gubanov, M.V.Efremov, S.A.Kruglov, A.V.Romanov** (*Research and Production Enterprise "Antares", Saratov, Russia*)
6
Fiber-Optic Gyroscope as Space-Related Applications: Development, Production and Operational Experience

POSTER PAPERS ¹

12.10 – 12.50

- 11 4. **Yu.N.Korkishko, V.A.Fedorov, V.E.Prilutskiy, V.G.Ponomarev, I.V.Morev, D.V.Obukhovich, I.V.Fedorov, N.I.Krobka** (*Optolink RPC LLC, Zelenograd, Moscow, Russia*)
Investigation and Identification of Noise Sources of High Precision Fiber Optic Gyroscopes
- 37 5. **Yu.Yu.Broslavets, M.A.Georgieva, A.A.Fomitchev** (*Moscow Institute of Physics and Technology (State University), JSC "Lasex", Dolgoprudny, Moscow region, Russia*)
Generation Regimes of Laser Gyro with Solid-State Broadband Active Medium and Gyro with Semiconductor Optical Amplifier
- 51 6. **M.V. Chirkin, A.E. Serebryakov** (*Ryazan State Radio Engineering University, Ryazan, Russia*),
A.V. Molchanov, M.A. Zakharov (*Moscow Institute of Electromechanics & Automatics, Russia*)
Technological Aspects of Precision Ring Laser Production: Monitoring Mirror Surfaces of Optical Resonators
- 71 7. **V.Ya. Raspopov** (*Tula State University, Tula, Russia*)
Strapdown Inertial Navigation System for Rotating Flying Vehicles

¹ The authors of poster papers at the plenary session are given 3 min to present the main idea of the paper with 1-2 slides, if any; further discussion will continue at the posters

- 61 8. **M.B. Bogdanov, A.V. Prokhortsov, V.V. Saveliev, V.A. Smirnov** (*Tula State University, Tula, Russia*)
Error of Accelerometer Strapdown Inertial Navigation System in a Conical Motion of the Longitudinal Axis of the Aircraft
- 73 9. **P.K. Plotnikov, A.V. Mikheyev, S.G. Naumov** (*Gagarin Saratov State Technical University, Saratov, Russia*)
Errors of a Strapdown Gyrocompass for Objects with Unlimited Turning Angles
- 5 10. **Yu.N.Chelnokov** (*Saratov State University, Precision Mechanics and Control Problems Institute of RAS, Saratov, Russia*), **S.E.Perelyaev** (*JSC «Concern «Avionica», Moscow, Russia*)
New Equations and Algorithms for Operation of Strapdown Inertial Navigation Systems Based on the Principles of Superposition and Kotelnikov–Study Transference
- 34 11. **N.I.Krobka, A.I.Balandin, A.I.Bidenko, N.V.Tribulev, V.S.Chernichenko** (*Scientific & Research Institute for Applied Mechanics named after academician V. I. Kuznetsov (Branch of the Center for Ground-Based Space Infrastructure Facilities Operation), Moscow, Russia; Moscow State Technical University named after Bauman, Moscow, Russia*)
On a Misconception in the Theory of Inertial Navigation Passed Unnoticed for Many Decades

- 33 12. **N.I.Krobka, A.I.Balandin, A.I.Bidenko, N.V.Tribulev, V.S.Chernichenko** (*Scientific & Research Institute for Applied Mechanics named after academician V. I. Kuznetsov (Branch of the Center for Ground-Based Space Infrastructure Facilities Operation), Moscow, **Russia**; Moscow State Technical University named after Bauman, Moscow, **Russia***), **S.V.Keda** (*Scientific & Research Institute for Applied Mechanics named after academician V.I.Kuznetsov (Branch of the Center for Ground-Based Space Infrastructure Facilities Operation), Moscow, **Russia***)
Development of a Program-Mathematical Software Package for Identification of a Gyroscope Noise Structure and Simulation of Strapdown Inertial Orientation Systems
- 41 13. **Songlai Han, Baolun Yuan, Guyin Rao, Guochen Wang** (*National University of Defense Technology, Changsha, **China***)
Initial Alignment Approach of a Two-Axis Indexing INS for Marine Applications
- 23 14. **L.V.Vodicheva, E.L.Alievskaya, Yu.V.Parysheva** (*FSUE "Academician N.A. Semikhatov Scientific and Production Association of Automatics", Yekaterinburg, **Russia***)
Initial Alignment of A Strapdown Inertial Navigation System on Stationary Base: Methods and Their Errors
- 12.50 – 13.00 **Discussion of the poster papers**
- 13.00 – 14.00 **LUNCH**

Chairmen – **Dr. Yu.A. Litmanovich**, Russia
Dr. J. Mark, USA

PLENARY PAPERS

- 14.00 – 14.20 15. **Yu.N. Korkishko, V.A. Fedorov, V.E. Prilutskiy, V.G. Ponomarev, I.V. Morev, S.F. Skripnikov, M.I. Khmelevskaya, A.S. Buravlev, S.M. Kostritskiy, A.I. Zuev, V.K. Varnakov** (*Optolink RPC LLC, Zelenograd, Moscow, Russia*)
10 Strapdown Inertial Navigation Systems Based on Fiber Optic Gyroscopes
- 14.20 – 14.40 16. **K.O. Baryshnikov, A.I. Balandin, M.I. Koptenkov, Yu.F. Titov** (*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*)
27 The Hybrid Inclinometer Using the Fiber-Optical Gyroscopes with an Extended Temperature Range

POSTER PAPERS ¹

14.40 – 15.20

- 3 17. **V.E. Dzhashitov, V.M. Pankratov** (*Precision Mechanics and Control Institute, Russian Academy of Sciences, Saratov, Russia*)
Nonconventional Application of Gyroscopes with the Variable Angular Momentum as Simulators in Medicine and Sport

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- 30 18. **S.A.Kolyadin** (*JSC «Concern «Avionica», Moscow, Russia*), **D.A.Rekunov, A.E.Fedorov** (*JSC "Ramensky Instrument Engineering Plant", Ramenskoe, Moscow region, Russia*), **P.V.Larionov, M.S.Makarov, A.A.Fomitchev** (*Moscow Institute of Physics and Technology (State University), Dolgoprudny, Moscow region, Russia*), **T.N.Vakhitov, A.B.Kolchev, K.Yu.Schastlivets, V.B.Uspensky** (*JSC "LASEX", Dolgoprudny, Moscow region, Russia*)
Strapdown Inertial Navigation System BINS-05: Basic Technical and Algorithmic Solutions, Flight Results
- 88 19. **B.A. Blazhnov, M.I. Evstifeev, G.I. Emelyantsev, P.N. Kostin, P.Yu.Petrov, D.A. Radchenko, I.V.Semyonov, A.P.Stepanov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)
GPS Compass with Autonomous Mode. Shipboard Test Results
- 22 20. **S. M. Siddiqui** (*Institute of Space Technology, Karachi, Pakistan*)
Self Alignment of Inertial Navigation System Using Robust Unscented Particle Filter
- 18 21. **A.V.Kozlov, I.Yu.Sazonov, N.B.Vavilova, N.A.Parusnikov** (*Moscow State University, Moscow, Russia*)
Accounting for Spatial Offsets of Accelerometer Proof Masses in an Inertial Measurement Unit Calibration on a Low-Grade Turntable
- 48 22. **A.V.Zbrutsky, N.G. Chernyak, O.M.Gryshchenko** (*National Technical University of Ukraine "Kiev Polytechnic Institute", Kiev, Ukraine*)
Recalibration of a Block of Accelerometers of a Strapdown Inertial Navigation System within Test Inclinations of an Object

- 32 23. **A.O.Kalchenko, N.B.Vavilova, A.A.Golovan**
(Moscow State University, Moscow, Russia)
 Elaboration of SINS Post-Processing Calibration
 Algorithm and the Analysis of Its Accuracy Depending
 on Some Types of the Aircraft Motions
- 60 24. **O.N. Bogdanov, A.A. Golovan** *(Lomonosov Moscow*
State University, Moscow, Russia)
 Simulation of Measurements of Strapdown Inertial
 Navigation System Sensors
- 55 25. **R.V.Ermakov, N.A.Kaldymov, S.F.Nakhov,**
A.V.Polushkin, I.V.Slistyn, S.N.Shatskov,
V.F.Vasiliev *(PC "KORPUS", a branch of FSUE*
N.A.Pilyugin "NPCAP", Saratov, Russia)
 High-Precision Full-Angle Rotary Table for the Inertial
 Equipment Tests
- 91 26. **D.V. Volynsky, D.G. Gryazin, Ya. A. Nekrasov, N.L.**
Yavorovskaya *(Concern CSRI Elektropribor, JSC, St.*
Petersburg, Russia), K.N. Usachev (BLM Synergie,
Moscow, Russia), D. Rames, F. Bellon, J. Perdriat
(«ACTIDYN SYSTEMES», Elancourt, France)
 C40-09 ST Centrifuge by ACTIDYN SYSTEMES.
 Test Results and Applications
- 83 27. **M.D. Kudryavtsev, O.A. Yakovenko** *(Concern CSRI*
Elektropribor, JSC, St. Petersburg, Russia)
 Certification of Motion Simulators in Dynamic Modes
 Using Autocollimating Measurements with Adaptive
 Signal Processing
- 81 28. **V.A. Granovsky, T.N. Syraya** *(Concern CSRI*
Elektropribor, JSC, St. Petersburg, Russia)
 Metrological Support of Navigation Equipment Tests
- 15.20 – 15.40 **Discussion of the poster papers**
- 15.40 – 16.10 **COFFEE BREAK**

16.10 – 18.10

PANEL DISCUSSION

"Navigation: vision of the future".

Chairmen: Academician of the Russian Academy of Sciences
Prof.V.G.Peshekhonov, the Program Committee Chairman, *Russia*,
and **Dr. G. Schmidt**, the Program Committee member, *USA*

All the interested conferees are welcome.

18.30 – 21.00

**SIGHT-SEEING GUIDED BUS TOUR
OF SAINT PETERSBURG**

TUESDAY, 28 MAY 2013

SESSION I – INERTIAL SYSTEMS AND SENSORS

Chairmen – **Dr. B.S. Rivkin**, Russia
Dr. G. Schmidt, USA

INVITED PAPER

- 9.00 – 9.45** 29. **Alexander A. Trusov** (*Microsystems Laboratory, University of California, Irvine, CA, USA*)
Ultra High Quality Factor and Wide Dynamic Range
Inertial MEMS for North-Finding and Tracking
Applications

PLENARY PAPERS

- 9.45 – 10.05 30. **D. Meyer, M. Larsen** (*Northrop Grumman Electronics Systems International Inc. -Navigation System Division, Woodland Hills, CA, USA*)
Nuclear Magnetic Resonance Gyroscope for Inertial
Navigation
- 10.05 – 10.25 31. **A.Jeanroy, A. Bouvet, G. Remillieux** (*Sagem DS, Paris, France*)
HRG and Marine Applications

POSTER PAPERS¹

10.25 – 10.45

- 74 32. **V.S. Shorin** (*Saratov State Technical University named after Gagarin Yu. A., Saratov, **Russia***), **V. B. Nikishin, S.Yu. Panchenko** (*JSC “Gazpriboravtomatikaservis”, Saratov, **Russia***)
Evaluation and Compensation of Micromechanical Gyro Drift in Pipeline Geometry Tool
- 92 33. **R.G. Lyukshonkov, N.V. Moiseev, Ya.A. Nekrasov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***)
In Situ Measurement of Parameters of Sensitive Elements for Autonomous Compensation in a MEMS Gyro
- 29 34. **E.S.Barbin, A.N.Koleda, T.G.Nesterenko** (*National Research Tomsk Polytechnic University, Tomsk, **Russia***)
Simulation of MEMS Gyro Operation at a System Level
- 72 35. **B.P. Bodunov, S.B. Bodunov, V.A. Vladimirov, A.N. Igonin, N.A. Kostenok** (*JSC Research and Production Enterprise Medicon, Miass, Chelyabinsk region, **Russia***)
Dual-Mode HRG for Space Application
- 35 36. **A.A.Maslov, I.V.Merkuryev, V.V.Podalkov** (*Moscow Power Engineering Institute, Moscow, **Russia***)
Nonlinear Dynamic Properties of Electrostatically Tuned Vibrating Gyroscope
- 38 37. **M.M.Shevelko, D.P.Lukyanov, A.N.Peregudov, E.S.Gribkova, A.I.Lutovinov** (*Saint Petersburg Electrotechnical University “LETI” Electroacoustics and Ultrasound Techniques Department, Saint Petersburg, **Russia***)
Studying Specific Features of Acoustic Wave Propagation for Creation of Solid-State Motion Sensors

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10.45 – 10.55 **Discussion of the poster papers**

10.45 – 11.25 **COFFEE BREAK**

PLENARY PAPERS

- 11.25 – 11.45 38. **A. Giani, Ph. Combette, A. Deblonde** (*Universite Sciences et Techniques du Languedoc Montpellier 2, Montpellier, France*); **M.A.Basarab** (*Bauman Moscow State Technical University, Moscow, Russia*)
49 A Highly Sensitive Thermal Accelerometer with Improved Bandwidth
- 11.45 – 12.05 39. **S. F. Kononov, V. P. Podchezertsev** (*Bauman Moscow State Technical University, Moscow, Russia*)
53 Inertial Measurement System for Building Pile Displacements

SESSION II - INTEGRATED SYSTEMS

Chairmen – **Prof. I.M. Okon**, Russia, USA
Prof. G. Trommer, Germany

PLENARY PAPERS

- 12.05 – 12.25 40. **V. B. Nikishin, M. N. Karpov, G.V. Briuzgin**
76 (*JSC "Gazpriboravtomatikaservis", Saratov, Russia*),
V.S. Shorin (*Saratov State Technical University named after Gagarin Yu. A., Saratov, Russia*)
Underground Navigation System Design for Estimation of Pipeline Local Offset
- 12.25 – 12.45 41. **N.I.Buinacheva, V.M.Kutovoy, O.I.Maslova,**
13 **S.Yu.Perepelkina, A.A.Fedotov** (*FSUE "SPA of Automatics", Ekaterinburg, Russia*)
Navigation Device Tryout Technique Based on a Strapdown Inertial Unit in the Process of Flight Tests Preparation

13.00 – 14.00 **LUNCH**

POSTER PAPERS¹

14.00 – 14.40

- 89 42. **R. Miletiev, R. Kenov, I. Simeonov** (*Technical University of Sofia, Bulgaria*), **E. Iontchev** (*Higher School of Transport “T. Kableshkov, Sofia, Bulgaria*)
Design of High Speed GPS/GSM/IMU System for Inertial Navigation
- 47 43. **A.V.Chernodarov, S.E.Perelyaev** (*Concern “Avionica”, Moscow, Russia*), **A.P. Patrikeev** (*RPA “Mobile Information Systems”, Moscow, Russia*)
Flight Development of the Math-Based Software for an Inertial Satellite Navigation System Built Around a Three-Axis Monolithic Laser Unit
- 8 44. **M. Ushaq** (*Beihang University School of Instrumentation Science & Opto Electronics Engineering, Beijing, China*); **J. Ali** (*Center for Control and Instrumentation, NESCOM, Islamabad, Pakistan*); **J. Ch. Fang** (*Beihang University School of Instrumentation Science & Opto Electronics Engineering, Beijing, China*)
An Improved Fault Tolerant Mechanization of Integrated Navigation Systems Employing Federated Kalman Filter
- 62 45. **S. L. Bulghackov, Yu. P. Mikheenkoy, V.N.Kryuchkov, O. I. Fedoskin, D. A. Khilevich** (*JSC “LaserService”, Moscow, Russia*)
Results of Design of an Inertial-Satellite Navigation System for Synthetic Aperture Radar
- 69 46. **F. Outamazirt, L. Yan, F. Li** (*School of Automatic Control and Electrical Engineering, Beijing, China*)
Accuracy Enhancement of Sins Realized through Integration with GPS Using Unscented Kalman Filter

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- 84 47. **V. A. Pogorelov, S.V. Sokolov** (*Rostov State Transport University, Rostov-on-Don, Russia*)
The Sustainable Solution of the Problem of Integration of the Inertial and Satellite Navigation Systems
- 80 48. **A.S. Scherbakov, D.Yu. Pershin** (*IIS SB RAS, Novosibirsk, Russia*)
Improvement Position Accuracy for One Frequency GNSS Receivers by Means of Inertial Sensors
- 16 49. **A.V.Kramlikh, M.E.Grigoreva** (*Samara State Aerospace University, Samara, Russia*)
Joint Use of Different Types of Information in the Spacecraft Orientation Determination Algorithms
- 19 50. **A.A.Panyov, A.A.Golovan** (*Lomonosov Moscow State University Laboratory of Navigation and Control, Moscow, Russia*), **E.V.Baranov, A.P.Gusev** (*JSC "MDB "Compas", Moscow, Russia*)
On Indoor Positioning Using Low-Grade IMU and Wi-Fi Fingerprinting
- 17 51. **A.K.Volkovitskiy, E.V.Karshakov, B.V.Pavlov** (*Institute of Control Sciences RAS, Moscow, Russia*)
Algorithm of Relative Electromagnetic Positioning
- 78 52. **K.K. Veremeenko** (*Moscow Aviation Institute, Russia*)
Research of Properties of Integrated Landing System Using Pseudolites Signals
- 70 53. **S.N. Sharov, S.G. Tolmatchev** (*JSC "Concern "Granit-Electron", St. Petersburg, Russia*)
Determination of Gripping Device Position at Landing of UAV to Moving Vessel
- 67 54. **V.B. Guzhov, V. P. Kurenkov, V.N. Shashok** (*ARSRI "Signal" JSC, Kovrov, Russia*)
Integration of Odometric and Space Navigation Channels for Land Measuring Accuracy Improvement

- 15 59. **G.G.Kalach** (*MSIREA, Moscow, Russia*)
Application of Model-Based Design in MATLAB for
Implementing the Method for Integration of Information
Obtained from IMU, Based on the Artificial Intelligence
Method
- 52 60. **E.A. Ivashina, M.O. Korlyakova, A.Yu. Pilipenko**
(*Kaluga branch of Bauman Moscow State Technical
University, Russia*), **V.M.Nikiforov** (*Academician
Pilyugin Scientific-Production Center, Moscow, Russia*)
Neural Network Approach to the Formation
of Intellectual Video Navigation System
- 59 61. **A.I. Matasov, P.A. Akimov** (*Faculty of Mechanics and
Mathematics Lomonosov Moscow State University,
Moscow, Russia*)
Algorithm of Variational-Weighted Quadratic
Approximations for Least Absolute Deviations Method
in Dynamic Systems
- 86 62. **O.A. Stepanov, A.B. Toropov** (*Concern CSRI
Elektropribor, JSC, St. Petersburg, Russia*)
Application of the Monte Carlo methods with the RAO-
Blackwellisation Procedure to a Problem of Aiding a
Navigation System
- 85 63. **V.A. Tupysev, O.A. Stepanov, I.V. Venediktov**
(*Concern CSRI Elektropribor, JSC, St. Petersburg,
Russia*)
Improving Federated Filter Accuracy in Integrated
Processing of Navigational Data
- 43 64. **G.P.Losev, T.N.Lozhkina, E.N. Makhanev** (*FSUE
“Scientific & Production Association of Automatics
named after Academician N.A. Semikhatov”,
Ekaterinburg, Russia*)
Multiparametric Optimization of Complex Nonlinear
Nonstationary Stochastic Systems According to the
Criterion Defining the Maximum Probability of Meeting
the Requirements of Output Parameters

POSTER PAPERS¹

10.35 – 11.15

- 24 68. **V.D.Gokhfeld, V.K.Gurieva, V.M.Kutovoi, V.G.Norkin** (*FSUE RPA of Automatics named after Academician N.A. Semikhatov, Yekaterinburg, Russia*)
Redundancy And Diagnostics of The CS LV “Soyuz-2”, “Soyuz-St” Navigation Devices
- 44 69. **V.F.Petrishchev** (*TsSKB-Progress, Samara, Russia*)
An Integrated Precision System of EO Satellite Autonomous EGRP-Based Navigation
- 1 70. **Ye.I.Somov, S.A.Butyrin, S.Ye.Somov, T.Ye.Somova** (*Samara State Technical University, Samara, Russia*)
SIRIUS-S Software Environment for Computer-Aided Designing of Attitude Control Systems for Small Information Satellites
- 66 71. **I.V. Zaiko, P.G. Mikhailov, V.V. Matakhn, S.I. Philippov** (*ARSRI “Signal” JSC, Kovrov, Russia*)
Some Aspects of Navigational Support for Compact Ground Mobile Robot-Technical Facilities
- 40 72. **M.H. Dorri, A.A. Roshchin** (*Institute of Control Sciences RAS, Moscow, Russia*)
RDS (Research of Dynamic Systems): A New Software Tool for Analysis and Synthesis of Control Systems
- 58 73. **M.M. Tchaikovsky** (*IPU RAN, Moscow, Russia*); **V.M. Nikiforov, S.A. Zaicev** (*FGUP “NPCAP”, Moscow, Russia*); **D.M. Kalihman** (*FGUP “NPCAP”, Saratov, Russia*)
Robust Control of Triaxial Gyrostabilizer under Uncertain Disturbances and Measurement Noises

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- 90 74. **D. M. Kalihman, L.Ya.Kalihman, V.A.Turkin , Yu.V.Sadomtsev, E.A. Deputatova, S.F.Nahov** (*PC “Korpus”, Saratov, Russia*); **V.M.Nikiforov** (*Academician Pilyugin Scientific-Production Center, Moscow, Russia*); **M.M.Tchaikovsky** (*Institute of Control Sciences of the Russian Academy of Sciences, Moscow, Russia*)
Principles for Designing Digital Robust Controllers for Measurement Channels of Angular Velocity and Proper Acceleration in Modern Strapdown Inertial Navigation Systems and Software for Their Monitoring
- 31 75. **H. Benzerrouk** (*PhD Candidate from Algeria, IIAAT of SUAI, Saint Petersburg, Russia*); **A. V Nebylov** (*IIAAT, SUAI university, Saint Petersburg, Russia*); **Pau Pau Closas** (*Centre Tecnol`ogic de Telecomunicacions de Catalunya, Barcelona, Spain*)
Optimal Integrated Navigation System INS/GNSS Based on Robust Nonlinear Gauss Hermite Kalman Filter
- 21 76. **Boris Iliev Vassilev** (*TU-Sofia, Sofia, Bulgaria*); **Boriana Petrova Vassileva** (*IICT - BAS, Sofia, Bulgaria*)
GNSS Based Attitude Determination
- 4 77. **V.I.Baburov, N.V.Ivantsevich, N.V.Vasilyeva** (*OJSC AUSRIRE, NTC Navigator , St. Petersburg, Russia*)
Statistical Characteristics of Tropospheric Errors in GNSS Positioning
- 9 78. **M. Y. Shin, D. J. Cho, K. Y. Seo** (*Korea Institute of Ocean Science & Technology (KIOST), Daejeon, South Korea*)
Fault Detection Techniques on Reference Station for Network RTK Integrity Monitoring

39 79. **I.N.Shestakov, V.V. Panferov, G. A. Kryzhanovskij, A. A. Chekhov** (*The St.Petersburg State University of Civil Aviation, St.Petersburg, Russia*)
Increasing Object Positioning Precision by Taking into Account GNSS Signal Refraction in Observation Point

36 80. **P.N.Vlasov, E.G.Kharin, V.G.Polikarpov A.V.Yasenok, I.A.Kopylov, V.A.Kopelovich, V.M.Padenko** (*JSC M. M. Gromov Flight Research Institute, Zhukovsky, Moscow region, Russia*)
A Technology for Trajectory Measurements during Aircraft Landing onto a Ship

11.15 – 11.30 Discussion of the poster papers

11.30 – 12.00 COFFEE BREAK

PLENARY PAPERS

12.00 – 12.20 81. **E.A.Mikrin, M.V.Mikhailov, I.V.Orlovsky, S.N.Rozhkov, A.S.Semenov** (*RSC "Energiya", Korolyov, Moscow region, Russia*)
14
Autonomous Navigation System for Upgraded Soyuz and Progress Spacecrafts

12.20 – 12.40 82. **G.P.Anshakov, S.K.Grigoriev, A.I.Manturov, N.A.Panov, A.S.Poplevin** (*State Research and Production Space Center "TsSKB-Progress", Samara, Russia*)
12
Evaluation of Spacecraft Injection Accuracy by Volga Upper Stage

12.40 – 13.00 CLOSING CEREMONY

13.00 – 14.00 LUNCH