PROGRAM

MONDAY, 29 MAY

8.00 – 9.50 **REGISTRATION OF THE CONFERENCE PARTICIPANTS**

10.00 – 10.10 **OPENING CEREMONY**

SESSION I – INTEGRATED SYSTEMS

Chairmen **Dr. B.S. Rivkin**, ***Russia***
Prof. G.F. Trommer, ***Germany***

INVITED PAPER

10.10 – 10.55 1. **D. Moormann** (*RWTH Aachen University*, ***Germany***)
An Integrated Navigation Approach for Autonomous Operation of a Parcel Delivery UAV

10.55 – 11.25 COFFEE BREAK

PLENARY PAPER

11.25 – 11.45 2. **A.G. Mikov** (*Petrozavodsk State University*, ***Russia***),
A.S. Galov (*Petrozavodsk State University, Nanoseti LTD, Petrozavodsk*, ***Russia***)
Data Processing Algorithms for MEMS Based Multi-Component Inertial Measurement Unit for Indoor Navigation

11.45 – 12.05 3. **S. Prophet, G. Scholz** (*Institute of Systems Optimization (ITE), Karlsruhe Institute of Technology (KIT), Karlsruhe,* ***Germany***), **G.F. Trommer** (*Institute of Systems Optimization (ITE), Karlsruhe Institute of Technology (KIT),* ***Germany***, *ITMO University*, ***Russia***)
Collision Avoidance System with Situational Awareness Capabilities for Autonomous MAV Indoor Flights

POSTER PAPERS[1]

12.05 – 12.50

4. **P.K. Kuznetsov, B.V. Martemyanov** (*Samara State Technical University, **Russia***)
New Method of Optical Flow Evaluation

5. **N.I. Kotov, S.B. Berkovich, R.N. Sadekov, A.V. Sholokhov, A.S. Lychagov** (*Interregional Social Foundation "Institute of Engineering Physics", Serpukhov, **Russia***), **Yu.V. Likholay** (*FRC "Information and Control" RAS, Moscow, **Russia***)
Using Vision Systems to Determine the Vehicle Position on the Road

6. **I.A. Shamov** *(Lyceum no. 329, St. Petersburg, **Russia***), **P.S. Shelest** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***)
An Application of the Convolutional Neural Network for the Creation of the Tower Lighthouses Recognition Algorithm

7. **S.I. Tomashevich** (*Institute of Problems of Mechanical Engineering* (*IPME) RAS, ITMO University, St. Petersburg**, Russia***), **A.O. Belyavskiy** (*ITMO University, St. Petersburg**, Russia***)
Transferring Navigation Information between Quadrotors in a Formation over Erasure Communication Channel with Binary Adaptive Coding

8. **J. Atman** (*Institute of Systems Optimization, Karlsruhe Institute of Technology, **Germany***), **G.F. Trommer** (*Institute of Systems Optimization (ITE), Karlsruhe Institute of Technology (KIT), **Germany**, ITMO University, **Russia***)
Robust Navigation of MAVs Based on Deeply Integrated Laser-Camera Information

9. **R.V. Alaluev, V.V. Matveev, V.Ya. Raspopov, A.P. Shvedov** (*Tula State University, **Russia***)
Efficiency Analysis of Algorithms to Correct Micro-Mechanical Positioning System for the Angular Position of a Pilot's Head

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[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*

10. **V.G. Nikitin, E.A. Filippova** *(State University of Aerospace Instrumentation, St. Petersburg, **Russia**)*
An Algoritm for Coordinate Location by Matching a Scene Photo with the Locality Map

11. **M.Yu. Belyaev, P.A. Borovikhin, D.Yu. Karavaev, D.N. Rulev** (*S.P.Korolev Rocket and Space Corporation Energia, Korolyov*, ***Russia***)
Controlling Steerable Platforms to Point Scientific Instruments at Survey Targets in the *URAGAN* Experiment Onboard the International Space Station

12. **B.V. Pavlov, E.V. Karshakov, M.Yu. Tkhorenko** (*V.A. Trapeznikov Institute of Control Sciences, RAS, Moscow*, ***Russia***)
On Calibration of a Navigation System Equipped with a Magnetic Gradiometer

13. **T.V. Matveeva, M.Yu. Belyaev** (*S.P. Korolev Rocket and Space Corporation Energia, Korolyov*, ***Russia***)
Control of PROGRESS Transport Cargo Vehicles During the Experiments

14. **I.N. Burdinskiy, S.A. Otcheskiy** (*Pacific National University, Khabarovsk, **Russia***)
Observation Error Estimation in Case of AUV Using a Single Beacon Acoustic Positioning System

15. **R.V. Senchenko**, **N.V. Krapukhina** (*National University of Science and Technology "MISiS", Moscow*, ***Russia***)
Developing an Integrated Virtual Support System Based on Navigational Information in the Framework of Ensuring the Security of Moving Vehicles

16. **N.V. Kamenov** (*Bulgarian postgraduate, National University of Science and Technology "MISiS", Moscow, **Russia***)**, N.V. Krapukhina** (*National University of Science and Technology "MISiS", Moscow*, ***Russia***)
Approach to Safe Vehicle Navigation Considering Dynamics of Transport Participants in Real Time

17. **O.S. Amosov, S.G. Baena** (*Komsomolsk-on-Amur State Technical University, **Russia***)
Trajectory Tracking while Measuring Distance and Bearing with the Use of Fractal Wiener Process for the Motion Model

18. **O.L. Starinova, M.K. Fain** (*Korolev National Research University (Samara University), **Russia***)
Electric Propulsion Spacecraft Guidance for Maintenance of the Lunar Base Infrastructure

19. **A.V. Abakumov, I.K. Kuz'menko, D.Yu. Livshits, P.K. Nesterov, A.A. Seranova, I.V. Sergushov , V.N. Slonov .** *(SC «Design Bureau of Industrial Automatics», Saratov, **Russia***)
Automatic Landing of an Unmanned Aerial Vehicle by Means of a Ground-Based Laser Beacon System

12.50 – 13.00 **DISCUSSION OF THE POSTER PAPERS**

13.00 – 14.00 LUNCH

Chairmen **Prof. O.A. Stepanov**, ***Russia***
Dr. B. Wang, *P.R. China*

PLENARY PAPERS

14.00 – 14.20 20. **E.A. Mikrin, M.V. Mikhailov, S.N. Rozhkov, A.S. Semenov** *(S.P. Korolev Rocket and Space Corporation Energia, Korolev, **Russia**)*
Determining the Attitude of the Advanced Crew Transportation Spacecraft *Federatsiya* from Measurements of Global Navigation Satellite Systems

14.20 – 14.40 21. **F. Wu, C. Gu, Y.H. Zhang, R.X. Mu** (*Shanghai Aerospace Control Technology Institute, Shanghai Engineer Research Center of Inertia, **P.R. China***)
SINS Aided GPS Integrity Monitoring for SINS/GPS Tightly Integrated Navigation System

14.40 – 15.00

22. **E. Robert, T. Perrot** (*Safran Electronics & Defense, Eragny, **France***)
Invariant Filter Versus Other Robust Filtering Methods Applied to Integrated Navigation

POSTER PAPERS[1]

15.00 – 15.30

23. **Q. Liang** (*ITMO University, St. Petersburg, **Russia***), **Yu.A. Litvinenko, O.A. Stepanov** (*ITMO University, Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia**)*, **G.F. Trommer** (*Institute of Systems Optimization (ITE), Karlsruhe Institute of Technology (KIT), **Germany**, ITMO University, St. Petersburg, **Russia***)
Solution to One Class of Navigation Information Processing Problems by Using Adaptive Bayesian Filters

24. **O.N. Skrypnik, N.G. Arefyeva** (*Irkutsk Branch of Moscow State University of Civil Aviation, Irkutsk, **Russia***)
Construction of an Optimal Flight Trajectory in the GLONASS Accuracy Field

25. **X.X. Xing, H.H. Zhuang, X.C. Zeng, X.Y. Hou** (*Beijing Institute of Aerospace Control Device, **P.R. China***)
A Pedestrian Navigation Device based on Step Count with Double Gyros
PAPER WAS NOT PRESENTED

26. **T. Wang, Y. Zhou, W. Wang** (*Beijing Institute of Aerospace Control Device, **P.R. China***)
Design of the Navigation Method of the Mechanical Gyro Based Inertial Platform System

27. **P.J. Liu, B. Wang, Z.H. Deng, X. Xiao, S.T. Wang** (*School of Automation, Beijing Institute of Technology, Beijing, **P.R. China***)
A Correction Method for DVL Measurement Error by Pitch Dynamics

[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.*

28. **A.V. Chernodarov, A.P. Patrikeev** (*NaukaSoft Experimental Laboratory, Ltd., Moscow, **Russia***), **A.B. Borzov, I.I. Merkulova** (*Bauman Moscow State Technical University, **Russia***), **Yu.N. Korkishko, V.A. Fedorov, I.V. Fedorov** (*RPC "OPTOLINK" Ltd., Zelenograd, **Russia***)
Seminatural Development of Multiposition Inertial Satellite Navigation Systems Built Around Fiber-Optic and Micromechanical Sensors

29. **X.T. Wu, Y. Yang, W. Gao, Z.S. Zhang, Z. Pei** (*Tianjin Navigation Instruments Research Institute, **P.R. China***)
Attitude Error Compensation Technology for Inertial Platform of Airborne Gravimeter Based on RTS Smoothing Algorithm

30. **Y. Pi, B. Hou** (*Tianjin Navigation Instruments Research Institute, **P.R. China***)
The Inertial Navigation Technology for Oil Pipeline Surveying and Mapping
PAPER WAS NOT PRESENTED

15.30 – 15.40 **DISCUSSION OF THE POSTER PAPERS**

15.40 – 16.10 COFFEE BREAK

PLENARY PAPERS

16.10 – 16.30 31. **R.N. Sadekov, K.A. Asatryan** *(Interregional Social Foundation "Institute of Engineering Physics", Serpukhov, **Russia**)*, **V.E. Prun, V.V. Postnikov** *(LIC «Cognitive Technologies», Moscow, **Russia**)*, **F.G. Kirdyashov, M.R. Koren** *(National University of Science and Technology «MISIS», Moscow, **Russia**)*,
Road Sign Detection and Recognition in Panoramic Images to Generate Navigational Maps

16.30 – 16.50 32. **A. Errico, V. Di Vito** (*CIRA, Italian Aerospace Research Center, Capua, **Italy***)
Performance-Based Navigation (PBN) with Continuous Descent Operations (CDO) for Efficient Approach over Highly Protected Zones

16.50– 17.10 33. **A.V. Inzartsev, A.M. Pavin, N.I. Rylov** (*Institute of Marine Technology Problems, Far Eastern Branch of RAS, Vladivostok, **Russia***)
Development of the AUV Automatic Docking Methods Based on Echosounder and Video Data

17.30 – 21.30 SIGHT-SEEING GUIDED TOUR OF SAINT PETERSBURG

TUESDAY, 30 MAY

SESSION I – INTEGRATED SYSTEMS
(Continued)

Chairmen **Prof. Yu.V. Filatov, *Russia***
Prof. I.M. Okon, ***Russia, USA***

PLENARY PAPERS

9.00 – 9.20 34. **V.A. Bobkov** (*Institute of Automation and Control Processes, Far Eastern Branch of RAS, Far Eastern Federal University, Vladivostok, **Russia***),
A.P. Kudryashov, S.V. Melman (*Institute of Automation and Control Processes, Far Eastern Branch of RAS, Vladivostok, **Russia**),* **A.F. Scherbatyuk** *(Institute of Marine Technology Problems, Far East Branch of RAS, Far Eastern Federal University, Vladivostok, **Russia***)
Vision Navigation and 3D Reconstruction of Underwater Objects with Autonomous Underwater Vehicle

9.20 – 9.40 35. **R. Fujdiak, P. Mlynek, J. Misurec, J. Slacik, J. Brychta** *(Brno University of Technology, **Czech Republic**)*
Efficiency Evaluation for Different Kind of Localization Methods for Android Devices

9.40 – 10.00 36. **V.I. Kulakova** (*LTD "Special Technological Center", St. Petersburg, **Russia***)
A Method of Evaluating the Accuracy of Phase Center Motion Parameters Estimation

10.00 – 10.20

37. **A.V. Abakumov, D.E. Gutsevich, R.V. Ermakov, D.Yu. Livshits, S.N. Romadin, A.A. Seranova, I.V. Sergushov, E.N. Skripal** (*Industrial Automatics Design Bureau JSC (KBPA JSC), Saratov*, ***Russia***)
Design Aspects of Flight and Navigation Systems for Small UAVs of Different Types

POSTER PAPERS[1]

10.20 – 10.40

38. **A.Yu. Rodionov, F.S. Dubrovin** (*Institute of Marine Technology Problems, Far East Branch of RAS, Vladivostok*, ***Russia***), **P.P. Unru, S.Yu. Kulik** (*Far Eastern Federal University, Vladivostok*, ***Russia***)
Experimental Research of Distance Estimation Accuracy Using Underwater Acoustic Modems to Provide Navigation of Underwater Objects

39. **G.I. Yemel'yantsev, A.P. Stepanov** (*Concern CSRI Elektropribor, JSC, ITMO University, St. Petersburg,* ***Russia***), **B.A. Blazhnov, D.A. Radchenko, I.Yu. Vinokurov, P.Yu. Petrov** (*Concern CSRI Elektropribor, JSC, St. Petersburg,* ***Russia***)
Using Satellite Receivers with a Common Clock in a Small-Sized GNSS Compass

40. **D.A. Antonov, K.K. Veremeenko, M.V. Zharkov, I.M. Kuznetsov, A.N. Pron'kin** (*Moscow Aviation Institute* (*National Research University*), ***Russia***)
Fault-Tolerant Airport Vehicle Integrated Navigation System

41. **W. Liu, Y.J. Zhang, F.X. Zhu** (*Institute of Traffic Information Engineering (ITIE), Dalian Maritime University (DMU), Dalian,* ***P.R. China***)
A Digital Image Stabilization Algorithm Using Inertial Sensors for Shipborne Video System
PAPER WAS NOT PRESENTED

42. **O.V. Zaitsev** (*ITMO University, Concern CSRI Elektropribor, JSC, St. Petersburg,* ***Russia***)
Account for Constraints in Estimating Precise Pont Positioning Error under Stochastic Uncertainty

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43. **K. Duan, X. Mao** (*Shanghai Jiaotong University (SJTU), **P.R. China***)
GPS/GLONASS/BDS Multi-System Fusion Positioning Based on Optimized Nonlinear Filter

44. **S.B. Berkovich, R.N. Sadekov** (*Interregional Social Foundation «Institute of Engineering Physics», Serpukhov, **Russia***), **D.B. Pazychev** (*TeKnol Ltd., Moscow, **Russia***), **S.L. Feodotov** (*RZD Trading Company, Moscow, **Russia**)*, **D.E. Bystrov** *(Ministry of Defense, Moscow, **Russia***), **G.Yu. Tretyakov** (*Academician Pilyugin Center, Moscow, **Russia***)
Using Inertial Navigation Systems to Monitor the Motion of a Train

10.40 – 10.50 **DISCUSSION OF THE POSTER PAPERS**

10.50 – 11.20 COFFEE BREAK

SESSION II – INERTIAL SYSTEMS AND SENSORS

Chairmen **Prof. Yu.V. Filatov, *Russia***
A.V. Motorin, ***Russia***

PLENARY PAPERS

11.20 – 11.40 45. **A. Szumski, B. Eissfeller** (*Institute of Space Technology and Space Applications (ISTA), University of the German Federal Armed Forces (UniBwM), Munich, **Germany***)
Inertial Attitude Determination System Designed for Low-Dynamics Applications in Low-Gravity Environment

11.40 – 12.00 46. **L. Wang, W. Wu, X. Pan** (*National University of Defense Technology, Changsha, **P.R. China***)
Dynamic Error Compensation and Parameter Optimization for RLG SINS in Vibration Environments

POSTER PAPERS[1]

12.00 – 12.50

47. **D.A. Burov** (*All-Russian Scientific Research Institute "Signal" Joint Stock Company (AO "VNII "Signal"), Kovrov, **Russia***)
Analysis of SINS Structures with Error Autocompensation

48. **E.G. Kharin, I.A. Kopylov, V.A. Kopelovich, V.A. Yakushev, A.Yu. Makarova, A.D. Grekhneva** (*JSC "M.M. Gromov Flight Research Institute", Zhukovsky, **Russia***)
Methods to Improve the Efficiency of Estimating Characteristics of Strapdown Inertial Navigation Systems at Flight Tests

49. **V.V. Matveev** (*Tula State University, **Russia***)
Strapdown Inertial Navigation System of a Rotating Carrier

50. **M.M. Tchaykovsky, A.S. Kazakov, A.A. Gulyaev, A.S. Kapustin, I.E. Vinogradov, E.S. Smirnov** (*Academician Pilyugin Center, Moscow, **Russia***)
Comparative Analysis of Application of Various Filters in Problem of Filtering Measurement Disturbances of Sensors in SINS

51. **Ya.G. Sapunkov, Yu.N. Chelnokov, A.V. Molodenkov** (*Institute of Precision Mechanics and Control of RAS, Saratov, **Russia***), **S.E. Perelyaev** (*LLC "AeroSpecProekt", Moscow Region, Zhukovsky, **Russia***)
A New Version of Separating the Process of Integrating the Equations of Autonomous Strapdown INS into Rapid and Slow Loops

52. **S.A. Bolotnov, Yu.N. Gerasimchuk, N.E. Yamshchikov, S.I. Nazarov** (*«Elektrooptika» RPC, Moscow, **Russia***), **A.V. Chernodarov**, **A.P. Patrikeev** (*NaukaSoft Experimental Laboratory, Ltd., Moscow, **Russia***)
Sea Development of a Strapdown Inertial Navigation System Based on Laser Gyros

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53. **N.A. Elanskiy**, **D.G. Pikunov**, **F.V. Tatarinov**, **A.I. Logachev**, **D.A. Turkin** (*Research Institute for Applied Mechanics named after Academician V.I. Kuznetsov, Moscow,* ***Russia***)
Algorithmic Compensation of Thermal Errors of Sensors of a Strapdown Inertial Unit

54. **N.I. Krobka** (*Research Institute for Applied Mechanics named after academician V.I. Kuznetsov (Branch of FSUE «TsENKI») Moscow,* ***Russia***)
On the Critical Operating Modes and Adaptive Algorithms of Intellectual Strapdown Inertial Orientation Systems

55. **N.B. Vavilova, A.A. Golovan, I.A. Papusha, N.A. Parusnikov** (*Lomonosov Moscow State University, Moscow,* ***Russia***), **O.A. Zorina**, **E.A. Izmailov, S.E. Kukhtevich, A.V. Fomichev** (*JSC «MIEA», Moscow,* ***Russia***)
On the Criteria of Strapdown INS Accuracy Assessment upon Flight Test Results

56. **A.V. Kozlov, I.E. Tarygin, A.A. Golovan** (*Lomonosov Moscow State University, Moscow,* ***Russia***), **I.Kh. Shaymardanov, A.A. Dzuev** (*JSC «Inertial Technologies of Technocomplex», Ramenskoye, Moscow Region,* ***Russia***)
Calibration of an Inertial Measurement Unit at Changing Temperature with Simultaneous Estimation of Temperature Variation Coefficients: a Case Study on BINS-RT

57. **V.V. Avrutov, O.I. Nesterenko** (*National Technical University of Ukraine (Igor Sikorsky Kiev Polytechnic Institute), Kiev,* ***Ukraine***)
3D-Calibration of an Inertial Measurement Unit
PAPER WAS NOT PRESENTED

58. **E.V. Dranitsyna** (*Concern CSRI Elektropribor, JSC, ITMO University, St. Petersburg,* ***Russia***)
IMU Calibration Using SINS Navigation Solution: Selection of the Rate Table Motion Scenario

59. **A.A. Golovan, A.I. Matasov** (*Lomonosov Moscow State University, Moscow,* ***Russia***)
Application of Guaranteed Approach for the Calibration of an Accelerometer Unit on a High-Precision Motion Simulator

60. **W. Guan** (*Beijing Institute of Aerospace Control Device, Inertial Products Test Center, Beijing, **P.R. China***), **X.M. Dong, Z.M. Zhang** (*Changcheng Institute of Metrology and Measurement, Beijing, **P.R. China***)
Evaluation of Measurement Uncertainty for Calibration-Used Vibrafuge
PAPER WAS NOT PRESENTED

61. **R.V. Ermakov, A.N. Popov, E.N. Scripal** (*SC «Design Bureau of Industrial Automatics», Saratov, **Russia***), **D.M. Kalikhman** (*Academician Pilyugin Center, Production Association KORPUS, Saratov, **Russia***), **D.V. Kondratov** *(RANEPA, Saratov***, Russia**), **A.A. L'vov** (*Yuri Gagarin State Technical University of Saratov, Saratov, **Russia***)
Methods for Testing and Test Results of Inertial Sensors Intended for Operation in Helicopter-Type Aircraft

62. **B.V. Klimkovich** (*Scientific Production Limited Liability Company «OKB TSP», Minsk, **Belarus***)
Self-Calibration of a Digital Odometer Integrated with a Three-Component SINS for a Land Vehicle

12.50 – 13.00 **DISCUSSION OF THE POSTER PAPERS**

13.00 – 14.00 LUNCH

Chairmen **Dr. Yu.A. Litmanovich**, ***Russia***
Dr. A.Yu. Sokolov, *Russia*

PLENARY PAPERS

14.00 – 14.20 63. **Y.Liu, M. Shi, X. Wang** (*Beijing Institute of Aerospace Control Devices, Beijing, **P.R. China***)
Progress on Atomic Gyroscope

14.20 – 14.40 64. **J. Beitia**, **P. Loisel**, **C. Fell, I.M. Okon** (*InnaLabs Ltd, Blanchardstown, **Ireland***)
Miniature Accelerometer for High-Dynamic, Precision Guided Systems

POSTER PAPERS[1]

14.40 – 15.45

65. **D.M. Malyutin** (*Tula State University, **Russia***)
Gyroscopic Stabilization System on Micromechanical Sensing Elements

66. **A.P. Moschevikin** (*Petrozavodsk State University, **Russia***), **A. Sikora** (*Hahn-Schickard, Villingen-Schwenningen, **Germany***), **P.V. Lunkov, A.A. Fedorov** (*Nanoseti LTD, Petrozavodsk, **Russia***), **E.I. Maslennikov** (*GSNanotech, Gusev, **Russia***)
Hardware and Software Architecture of Multi MEMS Sensor Inertial Module

67. **V.V. Matveev, V.Ya. Raspopov** (*Tula State University, **Russia***)
MEMS-Based Devices and Systems for Orientation, Stabilization and Navigation

68. **W.Y. Zhou, X.F. Wang, Y.C. Deng, Y.X. Liu** (*Beijing Institute of Aerospace Control Devices, Beijing, **P.R. China***)
Research on Influence of Pump Laser Frequency Fluctuation on the Bias Drift of Nuclear Magnetic Resonance Gyro

69. **E.N. Pyatyshev, Ya.B. Enns, I.M. Komarevtsev** (*Peter the Great Saint Petersburg Polytechnic University, **Russia***), **M. Wurz, A. Glukhovskoy** (*Leibnitz University Hannover, Garbsen, **Germany***)
A Micromechanical Gyroscope with Bistable Suspension of Microdrive

70. **E.N. Pyatyshev, Ya.B. Enns, A.N. Kazakin, R.V. Kleimanov, A.V. Korshunov, N.Yu. Nikitin** (*Peter the Great Saint Petersburg Polytechnic University, **Russia***)
MEMS Gyro Comb-Shaped Drive with Enlarged Capacity Gradient

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71. **I.V. Lemko, Ya.V. Belyaev, D.V. Kostygov, N.N. Nevirkovets, Yu.A. Andryakov** (*Concern CSRI Elektropribor, JSC, St. Petersburg,* ***Russia***), **A.A. Mikhteeva** (*Concern CSRI Elektropribor, JSC, ITMO University, St. Petersburg,* ***Russia***)
Integrated Circuit Layout Design for Micromechanical Accelerometer

72. **A.V. Yakimova, A.N. Bocharov, Ya.V. Belyaev, A.A. Belogurov** (*Concern CSRI Elektropribor, JSC, St. Petersburg,* ***Russia***)
Methods to Increase the Resistance of Inertial Measurement Unit to External Mechanical and Thermal Actions

73. **M. Schwaab** (*Hahn-Schickard, Villingen-Schwenningen,* ***Germany***), **S.A. Reginya** (*Petrozavodsk State University, Nanoseti, Petrozavodsk,* ***Russia***), **A. Sikora** (*Hahn-Schickard, Villingen-Schwenningen,* ***Germany***), **E.V. Abramov** (*Karelian Research Centre of the RAS, Petrozavodsk,* ***Russia***)
Measurement Analysis of Multipe MEMS Sensor Array

74. **S.E. Perelyayev**, **B.P. Bodunov, S.B. Bodunov** (*JSC RPE MEDICON, Miass,* ***Russia***)
Solid-State Wave Gyroscope: A New-Generation Inertial Sensor

75. **M.A. Barulina, V.M. Pankratov** (*Precision Mechanics and Control Institute, Russian Academy of Sciences, Saratov,* ***Russia***), **A.V. Krysko** (*Yuri Gagarin State Technical University of Saratov,* ***Russia***)
Mathematical Model of Motion of a Rotary Micromechanical Gyro Sensing Element as an Orthotropic Round Plate Clamped at its Center

76. **A.V. Derevyankin** (*Huawei Technologies Co., Ltd., Moscow,* ***Russia***)
Calibration Algorithms for a MEMS Accelerometer Unit Using an Icosahedron Bench from MOLI Meccano

77. **L.Ya. Kalikhman, D.M. Kalikhman, V.I. Grebennikov, V.V. Skorobogatov, S.F. Nakhov** (*Academician Pilyugin Center, Production Association KORPUS, Saratov, **Russia***)
A Method Providing Scale Factor Linearity in Compensation Type Angular Rate and Linear Acceleration Meters with Digital Feedback and Pulse Width Modulation Control of Torquer Current

78. **D.S. Gnusarev, E.A. Deputatova, D.M. Kalikhman, A.S. Chibirev** (*Academician Pilyugin Center, Production Association KORPUS, Saratov, **Russia***)
A Method to Measure Linear Output Characteristic of a Compensation Type Accelerometer by Means of a Non-Ideal Centrifuge

79. **I.Yu. Bykanov, F.R. Fakhretdinov, E.S. Smirnov** (*Academician Pilyugin Center, Moscow, **Russia***)
Influence of the Upper Limiting Temperature on the Scale Factor of a Compensating Pendulum Accelerometer

80. **D.P. Lukyanov, A.S. Kukaev, S.Yu. Shevchenko** (*St. Petersburg Electrotechnical University LETI, **Russia***)
Design Optimization of a Microgyroscope on Standing Surface Acoustic Waves

81. **N.I. Krobka, N.V. Tribulev, D.A. Turkin** (*Research Institute for Applied Mechanics named after academician V.I. Kuznetsov (Branch of FSUE «TsENKI»), Moscow, **Russia***)
On the Development of the Error Model of Gyroscopes Based on the De Broglie Waves

82. **V.M. Nikiforov, A.A. Gusev, S.S. Zolotukhin, T.A. Zhukova** (*Academician Pilyugin Center, Moscow, **Russia***), **A.A. Nizhegorodov** *(Military Academy of the Strategic Missile Forces named after Peter the Great, Serpukhov, **Russia***)
Synthesis of Pendulous Accelerometer Feedback Controller Using Linear Matrix Inequalities and Invariant Ellipsoids Construction

83. **V.M. Nikiforov, A.A. Gusev, S.S. Zolotukhin, T.A. Zhukova** (*Academician Pilyugin Center, Moscow, **Russia***), **A.A. Nizhegorodov** *(Military Academy of the Strategic Missile Forces named after Peter the Great, Serpukhov, **Russia***)
Identification of Pendulous Accelerometer Mathematical Model with Account for Parametric Uncertainty

15.45 – 16.00 **DISCUSSION OF THE POSTER PAPERS**

16.00– 16.30 COFFEE BREAK

PLENARY PAPERS

16.30– 16.50 84. **N.I. Krobka, D.A. Turkin** (*Research Institute for Applied Mechanics named after academician V.I. Kuznetsov, Moscow, **Russia***)
Laser Gyroscopes Frequency Dither and Fiber Optic Gyroscopes Phase Biasing: Similarities and Differences

16.50– 17.10 85. **Y. Tao, S. Li** (*School of Automation, Northwestern Polytechnical University, Xi'an, **P.R. China***), **G. Zhou, J. Lin** (*Shanghai Aerospace Control Technology Institute, **P.R. China***)
Mechanical Dither Control Optimization for Laser Gyro with Total Reflection Prisms

POSTER PAPERS[1]

17.10– 17.40 86. **V.A. Zborovsky, A.E. Fyodorov** (*JSC Ramensky Instrument Engineering Plant, Ramenskoye, **Russia***), **D.A. Rekunov** (*JSC "Inertial Technologies of Technocomplex", Ramenskoye, **Russia***), **A.N.Kurylev** (*Research and Production JSC «Temp-Avia», Arsamas, **Russia***)
Digital Laser Gyroscope with Lock-in Minimization System

[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.*

87. **Yu.Yu. Broslavets, A.A. Fomichev, D.M. Ambartsumyan, E.A. Polukeev** (*Moscow Institute of Physics and Technology (State University), JSC «Lasex», Dolgoprudny, **Russia***)
Multifrequency Laser Gyro and its Operation Modes

88. **P.K. Plotnikov** (*Yuri Gagarin State Technical University of Saratov, **Russia***)
Comparison Analysis of Single Magnetron and Double Magnetron Gyroscopic Angular Rate Meters

PAPER WAS NOT PRESENTED

89. **A.A. Maslov, D.A. Maslov, I.V. Merkuryev, V.V. Podalkov** (*Moscow Power Engineering Institute, **Russia***)
Compensation Methods of Ring Resonator Microgyroscope Drift

90. **A.S. Bessonov** (*Moscow Technological University (MIREA), **Russia***), **A.P. Makeev** (*Polyus Research and Development Institute named after M.F. Stelmakh, Moscow, **Russia***), **E.A. Petrukhin** *(Serpukhov Plant Metallist, Serpukhov, **Russia***)
Simulation of a Slow Beat Frequency Drift in a Large Laser Gyro

91. **H. Shi** (*Beijing Aerospace Time Optical-Electronic Technology Co., Ltd, Beijing, **P.R. China***), **W. Wang** (*Beijing Institute of Aerospace Control Devices, Beijing, **P.R. China***), **H. Yu, Z. Zhao** (*Beijing Aerospace Time Optical-Electronic Technology Co., Ltd, Beijing, **P.R. China***)
A Method of Starting Fiber Optic Gyroscope Outside its Optical Measuring Range

92. **M. Li, L. Ma, H. Yu, F. Hui, X.M. Zhang, X.Y. Zhang** (*Tianjin Navigation Instruments Research Institute, **P.R. China***)
The Express Test of Winding Symmetry Quality in FOG Fiber Coils

93. **F. Hui, M. Li, L. Ma, W. Zuo, S. Zhang, X.M. Zhang** (*Tianjin Navigation Instruments Research Institute, **P.R. China***)
Investigation on near Gaussian-Shaped Spectrum Erbium-Doped Fiber Source Applied in Fiber Optic Gyroscope

94. **X. Zhang, J. Du, C. Zhuo, L. Ren, H. Tang** (*Beijing Aerospace Automatic Control Institute, National Key Laboratory of Science and Technology on Aerospace Intelligent Control, Beijing, **P.R. China***)
An Error Compensation Method for FOG Temperature Effect Based on Data Classification
PAPER WAS NOT PRESENTED

17.40 – 17.50 **DISCUSSION OF THE POSTER PAPERS**

18.00 **DRINK RECEPTION**

WEDNESDAY, 31 MAY

SESSION III – SPACECRAFT CONTROL AND NAVIGATION

Chairmen **Corresponding member of the Russian Academy of Sciences Prof. G.P. Anshakov**, ***Russia***
Dr. N.V. Mikhaylov, *Russia*

INVITED PAPER

9.00 – 9.45 95. **I.V. Belokonov, I.A. Timbai, P.N. Nikolaev** (*Korolev National Research University (Samara University), Samara, **Russia***)
Problems and Features of Navigation and Motion Control for Nanosatellites: Design Experience and Lessons Learned

POSTER PAPERS[1]

9.45 – 10.25 96. **A.V. Kramlikh, M.E. Melnik** (*Korolev National Research University (Samara University), Samara, **Russia***)
Algorithm for Reorientation of the CubeSat Nanosatellites

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.

97. **V.V. Lyubimov** (*Korolev National Research University (Samara University), Samara, **Russia***)
Resonant Mechanical Moment During Rotation of the Microsatellite with a Magnet and Flywheels on Board: Features, Time Interval, Measurement Methods

98. **A.M. Bogatyrev, I.A. Lomaka, P.N. Nikolaev** *(Korolev National Research University (Samara University), Samara, **Russia***)
Technology for Calibration of Measuring Instruments of SamSat Nanosatellites' Family

99. **A.M. Bogatyrev, K.E. Shilov** (*Korolev National Research University (Samara University), **Russia***)
The Algorithm of Relative Orientation for a Formation Flight of a Group of Nanosatellites Based on the Radionavigation Ranging Method

100. **I.V. Belokonov, I.A. Timbai, M.S. Kurmanbekov** (*Korolev National Research University (Samara University), **Russia***)
Passive Gravitational Aerodynamic Stabilization of Nanosatellite

101. **I.V. Belokonov, A.V. Kramlikh, M.E. Melnik** (*Korolev National Research University (Samara University), **Russia***)
Estimation of Nanosatellite Attitude and Angular Rate Based on Analyzing the Navigation Spacecraft Geometrical Visibility Using the Controllable Pattern of Navigation Antenna

102. **D.V. Malygin** (*Astronomikon Laboratory, St. Petersburg, **Russia***), **Yu.V. Zhigulina** (*Astronomikon Laboratory, Baltic State Technical University «VOENMEH», St. Petersburg, **Russia***)
Design of Mechatronic Hydrodynamic Damper for Orientation and Stabilization System of Nanosatellite

103. **Ye.I. Somov, S.A. Butyrin, S.Ye. Somov** (*Samara State Technical University, **Russia***)
Satellite Guidance and Gyromoment Attitude Control at an Area Scanning Land-Survey

104. **Ye. I. Somov, S.A. Butyrin** (*Samara State Technical University, **Russia***)
Digital Signal Processing in an Astroinertial System for Determining Attitude and Angular Rate of a Maneuvering Land-Survey Satellite

105. **T.Ye. Somova** (*Samara State Technical University, **Russia***)
Guidance and Digital Attitude Control of a Maneuvering Land-Survey Satellite

106. **I.N. Kornilov** (*Ural Federal University, Yekaterinburg, **Russia***)
Studying the Operation of GPS/GLONASS User Navigation Equipment in Tough Environment
PAPER WAS NOT PRESENTED

107. **V.I. Baburov, N.V. Ivantsevich, O.I. Sauta**
(*OJSC AUSRIRE, NTC Navigator, St Petersburg, **Russia***)
GLONASS Technologies for Controlling the Fields of Short-Range Navigation and Landing Systems

108. **O.L. Starinova, R.M. Khabibullin** (*Korolev National Research University (Samara University), **Russia***)
Solar Sail Spacecraft System Guidance for Monitoring of Potentially Hazardous Asteroids

10.25– 10.40 **DISCUSSION OF THE POSTER PAPERS**

10.40 – 11.10 COFFEE BREAK

SESSION IV – METHODS AND MEANS OF GRAVITY FIELD MEASUREMENT

Chairmen **Dr. A.V. Sokolov, *Russia***
A.A. Krasnov, *Russia*

INVITED PAPER

11.10 – 11.55 109. **V.E. Kosenko, V.D. Zvonar, S.G. Revnivykh** (*JSC Academician M.F. Reshetnev Information Satellite Systems, Zheleznogorsk, Krasnoyarsk Region, **Russia***) Satellite Methods for Gravity Field Study. Status and Development Prospects.

PLENARY PAPER

11.55 – 12.15 110. **S.V. Gayvoronsky, N.V. Kuzmina, V.V. Tsodokova** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***) High-Accuracy Determination of the Earth's Gravitational Field Parameters Using Automated Zenith Telescope

POSTER PAPERS[1]

12.15 – 12.30 111. **L.V. Kiselev, A.V. Medvedev** (*Institute of Marine Technology Problems, Far Eastern Branch of RAS, Vladivostok, **Russia***), **V.B. Kostousov, A.E. Tarkhanov** *(N.N. Krasovskii Institute of Mathematics and Mechanics, Ural Branch of RAS, Yekaterinburg, **Russia***) Autonomous Underwater Robot as an Ideal Platform for Marine Gravity Survey

112. **X. Mu** (*School of Automation, Northwestern Polytechnic University, Xi'an, **P.R. China***), **T.Y. Shao** (*Shanghai Aerospace Control Technology Institute, **P.R. China**), **Q.W. Fu, S. H. Li** (*School of Automation, Northwestern Polytechnic University, Xi'an, **P.R. China***), **F.E. Zhang** (*Xinxiang Aviation Industry* (*Group*) *Co., Ltd., **P.R. China***) Direct Compensation and Kalman Filter Compensation of Gravity Vertical Deviation Based on Grid Database

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113. **Yu.V. Bolotin, V.S. Vyaz'min** (*Lomonosov Moscow State University, **Russia***)
Using Markov Random Fields for Gravity Modeling in the Vector Airborne Gravimetry Problem

12.30-12.40 **DISCUSSION OF THE POSTER PAPERS**

12.40 – 12.50 **CLOSING CEREMONY**

13.00 – 14.00 LUNCH