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**P R O G R A M**

**THE 9TH SAINT PETERSBURG INTERNATIONAL CONFERENCE**

**ON INTEGRATED NAVIGATION SYSTEMS**

**27-29 MAY, 2002**

## MONDAY 27 MAY

8.30–9.50 REGISTRATION OF CONFERENCE PARTICIPANTS

10.00–10.15 **OPENING CEREMONY**

### SESSION I – SATELLITE SYSTEMS

Chairmen: ***Dr. B. Rivkin****, Russia*
***Dr. J. Niemela****, USA*

### PLENARY PAPERS

10.15-10.40 High Elliptical Orbit-Based Informational and Navigational Functional Augmentation of Global Navigation Satellite Systems
**Yu.P Semenov, V.P. Legostaev, B.Ye. Chertok, V.P. Gavrilov, G.A. Berzin** (S.P.Korolev Rocket and Space Corporation Energia, Korolev, Moscow region, Russia), **V.A.Udaloy, S.G. Revnivykh, V.N. Pochukaev** (Mission Control Center, Korolev, Moscow Region, Russia)

10.40-11.05 GNSS Function in Navigation and Control Systems: Trends of Improvement and Development
**I.K. Konarzhevsky, S.B. Pisarev, B.V. Shebshaevich** (Russian Institute of Radionavigation and Time, St.Petersburg, Russia)

11.05-11.30 **A Flexible GPS Tracking System for Sub-Orbital and Space Vehicles**
**M. Markgraf, O. Montenbruck, S. Leung** (DLR, German Space Operations Center, Wessling, Germany)

### POSTER PAPERS*

11.30-12.00

The Accuracy of DGPS System in the Area of Zalew Szczecinski
**A. Dolgopolow, Z. Kozlowski, M. Kaczmarek, T. Turczyn** (Maritime Office, Szczecin, Poland)**, A.Wolski** (Maritime University, Szczecin, Poland)

***Solution of Phase Ambiguity in a One-Base Interferometer***
*Yu. L. Fateev* ***(Krasnoyarsk State Technical University, Krasnoyarsk, Russia)***

**Anomaly Measurements Rejection Technique for Space Vehicle Trajectory Determination Based on GPS/GLONASS Data**
V.E. Hertzman **(Science Engineering Center of St.Petersburg State Electrotechnical University, Russia),** V.V. Chistyakov **(SoftNav Ltd., St.Petersburg, Russia)**

Onboard Ballistic-Navigational Support of Spacecraft *Solar Sail*
**V.D. Dishel, A.K. Bykov, D.K. Churikov** (N.A.Pylugin Automatics & Instru

Scientific Production Center, Moscow, Russia)

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

12.00–12.20 **COFFEE BREAK**

**PLENARY PAPERS**

12.20–12.45 Estimating Ionospheric GLONASS and GPS Signal Delay by Single Frequency Measurements

**A.V. Grebennikov, M.Yu. Kazantsev, Yu.L. Fateev** (Krasnoyarsk State Technical University, Krasnoyarsk, Russia)

12.45–13.10 *GALILEO - Only a Better GPS or More? Performance Analyse with the Tool NAV–SIM*
**Johann Furthner** (DLR, Institute of Communications and Navigation, Wessling, Germany)

13.10–13.35 Assessment of Using C-Band for Navigation Signals
**J. Hammesfahr, A. Dreher, A. Hornbostel, Z. Fu** (DLR, Institute of Communications and Navigation, Wessling, Germany)

13.35-14.20 LUNCH

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

**PLENARY PAPERS**

14.20-14.45 Airborne Monitoring System of Integrity of Navigational Data Based on Statistical Processing
**N. A. Golovanov Yu.V. Gavrilenko, V.V. Groshev, N.A. Zaitseva, I.V. Kalinina, E. V. Kochneva, V.G. Potekhin, T. P. Tkacheva** (Moscow Institute of Electromechanics and Automatics, Moscow, Russia)

14.45-15.10 Instantaneous Ambiguity Resolution for GPS/Galileo RTK Positioning
**Bernd Eissfeller** (Institute of Geodesy and Navigation, University FAF Munich, Neubiberg, Germany), **Christian Tiberius** (Delft University of Technology, Germany), **Thomas Pany, Robert Biberger, Torben Schueler** (Institute of Geodesy and Navigation, University FAF Munich, Neubiberg, Germany), **Gunter Heinrich** (MAN Technologie, A G, Dept., Satellite Navigation, Ausburg, Germany)

15.10-15.35 Precise Relative Navigation of Space Vehicles with GPS

**Michael Mittnacht, Mark Hartrampf** (Astrium GmbH, Munich, Germany), **M.V. Vasilev, N.V. Mikhailov** (Soft Nav Ltd., St.Petersburg, Russia),

15.35-15.55 COFFEE BREAK

**PLENARY PAPERS**

15.55-16.20 Integration of Multi-Station Long-Range DGNSS Data

**Tom Willems, Alain De Wulf, Marijke Brondeel** (Ghent University, Ghent, Belgium)

16.20-16.45 Blunder Detection and Estimation with Fuzzy Logic: Application to GPS Code- and Carrier-Phase Measurements
**Nicola Crocetto, Salvatore Ponte** (Second University of Naples, Aversa, Italy)

17.15–20.15 SIGHT-SEEING GUIDED BUS TOUR OF ST. PETERSBURG (including a visit to the Kazan Cathedral (1801-1811, architect A.I.Voronikhin)

## TUESDAY 28 MAY

### SESSION II: INTEGRATED SYSTEMS

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

### PLENARY PAPERS

9.00–9.25 Experience of Investigations Performed with the Help of Navigation System Aboard the Research Priroda Module on the Mir Space Station
**M.Yu. Beliaev, D.N. Rulev, T.V. Matveeva** (S.P.Korolev Rocket and Space Corporation Energia, Korolev, Moscow Region, Russia),**V.V. Sazonov** (M.V.Keldysh Institute of Applied Mathematics of RAS, Moscow, Russia), **S. Foeckersperger** (Kayser Threde, Munich, Germany), **H. Frank, W. Paeffgen** (DLR/GSOC, Germany)

9.25–9.50 Digital Magnetic Compass and Gyroscope Integration for Pedestrian Navigation
**Quentin Ladetto, Bertrand Merminod** (Institut du Développement Territorial, Lausanne, Switzerland)

9.50–10.15 The Marine Simulation System PANORAMA TS

**A.A. Koshevoy, A.V. Maranov, A.S. Grib, V.V. Ivanov, I.E. Nagirnaya** (Central Scientific and Research Institute of Navigation and Control, Kiev, Ukraine)

10.15–10.40 Application of a Stabilized Vehicle Model Based Navigation Filter on the Autonomous Underwater Vehicle DeepC
**Armin U. Schmiegel** (STN ATLAS Elektronik GmbH, Bremen, Germany)

### POSTER PAPERS

10.40–11.15

RKF Based Integrated Radio/INS Altimeter
**Ch. Hajiyev** (Istanbul Technical University, Turkey)

Algorithms of Low Cost INS and INS/GPS Integrated Systems for Short-Range Navigation
**V.B. Larin** (Institute of Mechanics of the Ukrainian Academy of Sciences, Kiev, Ukraine), **A.A. Tunik** (National Aviation University, Kiev, Ukraine)

Application of SISON – GPS for the Positioning of Line of Underground

Pipeline
P.K. Plotnikov, A.I. Sinev, V.B. Nikishin, A.P. Ramzaev **(Saratov State Technical University, Saratov, Russia)**

Iterative MMSE Method for ISAR Image Reconstruction
**Andon D. Lazarov** (Artillery and Air Defence Military Academy, Shoumen, Bulgaria)

Applications and Navigation Systems for Pedestrians in Urban Areas
**Darko Klinec** (University of Stuttgart, Institute for Photogrammetry, Stuttgart, Germany)

Exact Systems Pointing with the Help of Intelligent Control
**V.N. Pilishkin** (N.E.Bauman Moscow State Technical University, Moscow, Russia), **Ingmar Tollet** (Espoo-Vantaa Institute of Technology (EVITech), Espoo, Finland)

Astroinertial Navigation System for Aircraft Applications
**A.V. Zbrutsky, O.I. Nesterenko** (National Technical University of Ukraine - Kiev Polytechnical Institute, Kiev, Ukraine), **N.I. Lykholit, S.K. Fedorenko**, **B.P. Goncharov** (Central Design Office Arsenal, Kiev, Ukraine)

Efficient Algorithm of Geometric Modeling for the Problem of Navigation and Guidance of Moving Objects
**V.B. Kostousov, I.G. Onuchin** (Institute of Mathematics and Mechanics, Urals Branch of RAS, Yekaterinburg, Russia)

The Results of the Research on the Measuring Block of the Integrated System for Motor Transport
**V.A Tikhonov., V.E. Plekhanov** (Joint-Stock Company PRIN, Moscow State Aviation Institute, Moscow, Russia)

11.15–11.35 COFFEE BREAK

## PLENARY PAPERS

11.35-12.00 **Linear Joint IPDA (LJIPDA) Algorithm**
**Darko Mušicki, Rob Evans** (Center for Sensor and Signal Processing, University of Melbourne, Parkville, Australia)

12.00-12.25 An Integrated Angular Motion Control System for a Remote Sensing Satellite
**G.P. Anshakov, Yu.G. Antonov, A.I. Manturov, Yu.M. Ustalov** (State Space Rocket Center TsSKB-Progress, Samara, Russia), **B.Ye. Landau, V.G. Peshekhonov** (State Research Center of Russia - CSRI Elektropribor, St.Petersburg, Russia)

12.25-12.50 Integrating Navigation and Communication Systems for Innovative Services
**Ernst Kesseler, Ronald Grosmann** (National Aerospace Laboratory (NLR), Amsterdam, The Netherlands), **Rudy Ehrmanntraut** (Eurocontrol Experiment Centre, Bretigny–sur-Orge, France)

## POSTER PAPERS

12.50–13.25

Creation of Hyperbolic System for Search of Distress Moving Objects in the Sea, in the Air, on the Land Using Radiation from Their Transmitters

**A.A. Koshevoy, A.V. Maranov, O.T Chigirin, Y.T Chigirin, A.A. Ostapov** (Central Scientific and Research Institute of Navigation and Control, Kiev, Ukraine)

Universal Hardware and Software Complex for Processing and Displaying Radar and Chart Information

**A.A. Koshevoy, A.S. Grib, V.M Konshin, A.V. Maranov, V.P. Medvedev, V.N. Sadiy, I.Ph. Smaglyuk, G.I. Reshetnikov** (Central Scientific and Research Institute of Navigation and Control, Kiev, Ukraine)

**Restriction of Maximum Errors in Guidance, Navigation and Motion Control Systems**
**A.V. Nebylov** (State University of Aerospace Instrumentation, St.Petersburg, Russia)

Estimation of Gyrocompassing Accuracy and Techniques of Course and Gyro Drift Correction in Integrated Navigation System
**A.A. Fomichev, A.B. Kolchev, K.Yu. Schastlyvets, V.B. Uspensky** (JSC Lasex, Dolgoprudny, Moscow region, Russia), **V.V. Timofeev** (Research Institute AE, Zhukovsky, Moscow region, Russia)

Mobile Vehicle Tracking System Tests
**D.A. Antonov, A.I. Chernomorsky, A.I. Peterburg, A. Tuvin, K.K. Veremeenko, R.Yu. Zimin** (Moscow Aviation Institute (Technical State University), Moscow, Russia)

Adaptive Flight Control Based on Parametric Identification in Sliding Mode
**A.L. Fradkov, B. R. Andrievsky** (Institute for Problems of Mechanical Engineering of the Russian Academy of Sciences, St. Petersburg, Russia)

Privacy Concerns When Introducing Telematics in the Market
**Carlos Rodríguez Casal** (Universidad Pública de Navarra, Pamplona, Spain)

Using Post-Processing Methods for Signal Filtration
**V.I. Kremer, A.V. Molchanov, E.F. Polikovsky, V.A. Troitsky** (Moscow Institute of Electromechanics and Automatics, Moscow, Russia)

Simulation Model of the Aircraft Movement
**Yu.Yu. Broslavets**, **A.A. Fomichev, A.B. Kolchev, V.B. Uspensky** (JSC Lasex, Dolgoprudny, Moscow region, Russia)

13.25-14.10 LUNCH

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

## PLENARY PAPERS

14.10–14.35 **CNS/ATM for Tactical Military Aircraft**
Steven Frain **(Naval Air Systems Command, Patuxent River, MD, USA),**
Garth Van Sickle **(DCS Corporation, Lexington Park, MD, USA)**

14.35–15.00 An Integrated Mobile Gravimetric System. Development and Test Results

**B.A. Blazhnov, L.P. Nesenjuk, V.G. Peshekhonov, A.V. Sokolov, L.S. Elinson** (State Research Center of Russia - CSRI Elektropribor, St.Petersburg, Russia), **L.K.Zheleznyak** (Institute of Physics of the Earth of the Russian Academy of Sciences, Moscow, Russia)

15.00–15.25 GT-1A Inertial Gravimeter System Design Experience and Results of Flight Tests

**V.N. Berzhitzky , V.N. Ilyin , E.B.Saveliev, Y.L. Smoller, S.S. Yurist** (Scientific and Technological Company Gravimetric Technologies , Moscow, Russia), **Yu.V. Bolotin, A.A.Golovan, N.A.Parusnikov** (Lomonosov Moscow State University, ( Moscow, Russia), **G.V. Popov, M.V. Chichinadze** ( Central Scientific & Research Institute Delphin, Moscow, Russia)

## POSTER PAPERS

15.25–15.50

Numerical Realization of Adaptive Algorithm for Nonlinear Filtering of Maneuvering Object Trajectory Parameters

**O.S Amosov** (Komsomolsk-on-Amur State Technical University, Komsomolsk-on-Amur, Russia)

*Ballistic Support and Supervision of Research and Technological Experiments of Foton SC*

**G.P. Anshakov, Yu.G. Antonov, A.I. Manturov, Yu.M. Ustalov, A.E. Kovaltsova** (State Rocket-Space Center TsSKB-Progress, Samara, Russia), **Yu.N. Gorelov, S.B. Danilov** (Samara State University, Samara, Russia)

Fault-Tolerant Onboard Computer for Satellite Control Loop

**Yu.G. Antonov, Ya.A. Mostovoi** (TsSKB, Samara, Russia),**V. N. Filatov, I.D. Yakushev** (Close Corporation NPO-ELAK, Zelenograd, Moscow region, Russia)

Off-Line Processing Tasks for Inertial Gravimetry System GT-1A

*Yu.V. Bolotin, A.A. Golovan, N.A. Parusnikov*

***(M.V.Lomonosov Moscow State University, Moscow, Russia)***

Using Wiener Models for Describing Gyro Drifts and Measurement Errors in INS State Estimation

**V.A. Tupysev** (State Research Center of Russia - CSRI Elektropribor, St.Petersburg, Russia)

**The Use of an Airborne Electronically Agile Radar During Autonomous Landing of Planes**

**G.V. Antsev, V.A. Sarychev, V.A. Tupikov, L.S. Tournetsky** (JSC Radar MMS, St.Petersburg, Russia)

15.50–16.10 COFFEE BREAK

## PLENARY PAPERS

16.10-16.35 The Efficiency of Using Velocity and Coordinate Satellite Measurements in Determining Gravity Aboard an Aircraft
**O.A. Stepanov, B.A. Blazhnov, D.A. Koshaev,** (State Research Center of Russia - CSRI Elektropribor, St.Petersburg, Russia)

16.35-17.00 ***Low Cost Strapdown IMU/DGPS Integrated Navigator with Fuzzy Logic Adaptive Tuning***
**B. Leach, R. Rahbari, J. Dillon** (Flight Research Laboratory, IAR/NRC, Ottawa, Canada)

17.00-17.25 Integrated Inertial-Satellite Systems of Navigation, Attitude Control and External Trajectory Monitoring of the Orbital Injection Vehicles. Strategy of Synthesis, Creation Experience and On-Earth Development Results
**V.D. Dishel** (N.A.Pylugin Automatics & Instruments Scientific Production Center (AISPC), Moscow, Russia)

17.25-17.50 Development and Performance Analysis of a Tightly Coupled GNSS/INS System
**Bernd Eissfeller, Christian Kreye, Daniel Sanroma, Thorsten Lück,** (Institute of Geodesy and Navigation, University FAF Munich, Neubiberg, Germany)

18.30-22.00 BANQUET

## WEDNESDAY 29 MAY

### SESSION II: INTEGRATED SYSTEMS (*continued*)

Chairmen: ***Prof. A. Nebylov****, Russia*
***Dr. D. Lynch****, USA*

### PLENARY PAPERS

9.00-9.25 PHINS: the First High Performances Inertial Navigation System Based on Fibre Optic Gyroscopes
**F. Napolitano, T. Gaiffe, Y. Cotreau, T. Loret** (Ixsea S.A.S., Marly-le-Roi, France)

9.25-9.50 Local Navigation Integrated System on the Base of GNSS and Pseudolites Network
V.I. Baburov, N.V. Ivanszevich, E.A. Panov, N.V. Vasileva **(AUSRIRE-NAVIGATOR - Branch Office of the Federal Government Unitary Enterprise AUSRIRE (All Union Scientific Research Institute of Radio Equipment), St.Petersburg, Russia)**

9.50-10.15 **Implementation and Testing of GPS Integrity Monitoring with Supplementary Navigation Sensors**
Chang Sun Yoo, Iee Ki Ahn **(Korea Aerospace Research Institute, Daejon, Korea)** Sang Jeong Lee **(Chungnam National University, Daejon, Korea)**

10.15–10.40 A Comparison of Two Integrated Airborne Positioning and Orientation Systems
**O. Schiele, A. Kleusberg** (Institute of Navigation, Stuttgart University, Stuttgart, Germany), **R. Horn** (Institut für Hochfrequenztechnik und

Radarsysteme, German Aerospace Center (DLR), Wessling, Germany)

10.40-11.00 COFFEE BREAK

**SESSION III – INERTIAL SYSTEMS AND SENSORS**

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

**PLENARY PAPERS**

11.00-11.25 A Miniature FOG with Built-In Diagnostics and Instant Start-Up
**V. Logozinski, I. Safoutine, V. Solomatin** (Fizoptika Co., Moscow, Russia)

11.25–11.50 Precision Fiber Optical Gyroscope with Linear Digital Output
**V.E. Prilutskii, Yu.K. Pylaev, A.G. Gubanov** (R&D Corp. ANTARES, Saratov, Russia), **Yu.N. Korkishko, V.A. Fedorov, E.M. Paderin** (OPTOLINK, MIEE, Experimental Plant Proton, Zelenograd, Moscow region, Russia)

11.50–12.15 Experience in Developing and Certifying a Strapdown Inertial Navigation System for Civil Aviation (SINS-85) and Creating on Its Basis Modified Systems for Controlling Marine, Ground-Based and Aerospace Objects and Solving Geodetic and Gravimetry Problems
**S.P. Kryukov, G.I. Chesnokov, V.A. Troitskiy** (Moscow Institute of Electromechanics and Automatics, Moscow, Russia)

**POSTER PAPERS**

12.15–12.45

Particularities of Multi-Component Electromagnetic Measuring Suspensions Design
**G.A. Sapozhnikov, S.V. Bogoslovsky, A.O. Kadkin** (Saint Petersburg University of Aerospace Instrumentation, St.Petersburg, Russia)

Active Damping of ESG Rotor Nutation By Dry Friction
**V.Z. Gusinsky, O.I. Parfenov, S.V. Shipilov** (State Research Center of Russia - CSRI Elektropribor, St.Petersburg, Russia)

Mathematical Models of Thermal Control Systems for Micromechanical Gyros **M.A. Barulina, V.E. Dzhashitov, V.M. Pankratov** (Precision Mechanics and Control Institute of RAS, Saratov, Russia)

High-Q Quartz Resonator Using Piezo-Electric Excitation and Control of the Third Oscillation Mode
**Yu.A. Yatsenko, V.V. Chikovani** (Ukrainian Center for Optical Instrument Technology, Kiev, Ukraine)

On the Micromechanical Vibratory Gyro Motions
**S.A.Kharlamov** (N.E.Bauman Moscow State Technical University, Moscow, Russia)

**The Probability Distribution of the Inertial Dead Reckoning Errors**
V.D. Sharov, Yu.N. Saraiskii **(Academy of Civil Aviation, St.Petersburg, Russia)**

The Linear Acceleration Meters Unit with Precision Quartz Accelerometers as Sensing Devices

**L.Ya. Kalihman, D.M. Kalihman, N.A. Kaldymov, S.Ph. Nahov** (FSUE PC Korpus, Saratov, Russia)

**12.45-13.30** LUNCH

Chairmen: ***Prof. V. Gusinsky****, Russia*
***Dr. J. Sinkiewicz****, USA*

**PLENARY PAPERS**

**13.30-13.55** Simulation Software and Hardware Implementation for a Low Cost Electronic Inertial Navigation System Test-Bench

**Richard Giroux, René Jr. Landry** (École de Technologie Supérieure)**, Richard Gourdeau** (École Polytechnique de Montreal, Montreal, Canada)

**13.55-14.20** A New Russian Standard in the Field of Low-Frequency Motion Quantities Measurements

**A.Ye. Sinelnikov, V.N. Kudryavtsev,** (D.E.Mendeleev Institute for Metrology, St.Petersburg, Russia), **P.A. Pavlov** (State Electrotechnical University, St. Petersburg, Russia)

**POSTER PAPERS**

**14.20-15.00**

Dynamics of the Sensitive Element of the Micromechanical Accelerometers

*V.Ya. Raspopov, Yu.V. Ivanov, S.A. Zotov* ***(Tula State University, Tula, Russia)***

INS Initial Alignment and Calibration on Moving Base: Aligned and Reference System Interaction

**L.V. Vodicheva** (Science and Production Association of Automatics, Yekaterinburg, Russia)

Application of Quartz Micromachining to the Realization of Micro-Gyro

**Zhang Qiaoyun, Lin Rile, Zhang Ting, Li Maochen, Lu Zhiqing** (Sichuan Institute of Piezoelectric and Acoustooptic Technology, Chongqing, China)

High-Precision Land-Based Gyrocompass

**V.V. Kozlov, A.A. Konovchenko, A.P. Mezentsev, L. A. Dudko, A.I. Tereshkin** (V.I.Kuznetsov Research Institute of Applied Mechanics, Moscow, Russia)**, N.Yu. Mezhuev** (29 RI DM RF, Moscow, Russia)

The General Methods for Synthesis and Analysis of High-Precision Algorithms for Quaternions Calculation by Gyro Data

**A.P. Panov** (National Technical University of Ukraine KPI, Kiev, Ukraine), **M.V. Sinkov** (Institute for Information Registration Problems, Kiev, Ukraine), **N.N. Aksenov** (Space Research Institute of NAS and NSA of Ukraine, Kiev, Ukraine)

Multivariate Analysis of Different Inertial Navigation Systems – the Way to Their Versatility

**A.G.Andreev, V.S.Ermakov, S.M.Yakoushin** (JSC Perm Scientific Industrial Instrument Making Company, Perm, Russia)

On Application of the Modulating Gyroscope in Marine Gyrocompass

**V.S.Ermakov, A.G.Maksimov, V.F.Kroupnov, I.A.Dedok** (JSC Perm

Scientific-Industrial Instrument Making Company, Perm, Russia)

Function-Oriented Processors as the Basis for Digital Electronics of the Intelligent Sensors for Navigation Systems
**N.A. Lookin** (Institute of Engineering Sciences of the Ural Division of RAS, Science & Production Association of Automatics, Yekaterinburg, Russia)

**15.00–15.20** COFFEE BREAK

## PLENARY PAPERS

15.20–15.45 System of Diagnostics of a Construction Structure State
**A.A Elizarov, B.S. Konovalov, S.F. Konovalov, D.T. Mayorov, A.V. Polynkov, A.A. Trunov** (N.E.Bauman Moscow State Technical University, Moscow, Russia) **V.V.Yurasov** (Scientific and Production Center Automatics and Instrument Making, Moscow, Russia), **Kwan Sup Lee** (KRRI, Seoul, Korea)

15.45–16.10 Calibration of Laser Inertial Measurement Units on the Basis of Guaranteeing Estimation Procedures
**A.V. Chernodarov, S.A. Bystrov, V.V. Enyutin, A.P. Patrikeev** (Air Force Engineering University, Moscow, Russia), **Yu.D. Golyaev, M.S. Drozdov** (Research & Design Institute Polyus, Moscow, Russia)

16.10–16.35 A Power Gyroscopic Attitude Control System of a Space Vehicle *Resource - DK*
**A.V. Sorokin, N.I. Bashkeev, V.V. Yaremenko** (FSUE Command Devices Research Institute, St.Petersburg, Russia), Yu**.G. Antonov, N.A. Kuroedov, B.K. Suchkov** (FSUE TsSKB-Progress, Samara, Russia), **Ye.I. Somov** (Research Institute of Mechanical System Reliability, Samara, Russia)

16.35-16.55 CLOSING CEREMONY

17.10–18.10 EXCURSION TO THE MUSEUM OF ELEKTROPRIBOR