

PROGRAM

TUESDAY, 1 October 2019

8.00 – 9.50 REGISTRATION OF THE SYMPOSIUM PARTICIPANTS

10.00 – 10.20 OPENING CEREMONY

Welcome speech by the Chairman of the
International Scientific Committee
V.G. Peshkxonov (*Concern CSRI Elektropribor,
JSC, St. Petersburg, Russia*)

Welcome speech by the Vice-chairman of the
International Scientific Committee **H.Wziontek**
(*Federal Agency for Cartography and Geodesy
(BKG), Leipzig, Germany*)

10.20 – 11.00 INTRODUCTORY PAPER

1. **R. Forsberg** (*DTU Space, Lyngby, Denmark*)
From Pendulums to Cold Atoms -
Mapping the Global Gravity Field from Surface,
Aircraft and Space

11.00 – 11.30 COFFEE BREAK

SESSION 1. TERRESTRIAL, SHIPBOARD AND AIRBORNE GRAVIMETRY

Chairmen: **A.V.Sokolov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)
R.Forsberg (*DTU Space, Lyngby, Denmark*)

PLENARY PAPERS

- 11.30 – 11.50** 2. **A.V.Sokolov, A.A.Krasnov, N.V.Kuz'mina** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*), **Y.F.Stus'** (*Institute of Automation and Electrometry, Siberian Branch of the RAS, Novosibirsk, Russia*)
Measurement of Absolute Gravity and Deflections of the Vertical at Sea
- 11.50 – 12.10** 3. **T. Jensen, R. Forsberg** (*DTU Space, Lyngby, Denmark*), **A. Olesen** (*Westagard Geo Solutions, Copenhagen, Denmark*)
Airborne Gravity Measurements using Strapdown Inertial Measurement Systems and Temperature Control
- 12.10 – 12.30** 4. **F. Johann, M. Becker** (*Physical and Satellite Geodesy, Technical University of Darmstadt, Germany*), **D. Becker** (*School of Earth and Planetary Sciences, Curtin University, Perth, Australia*), **E.S. Ince** (*GFZ German Research Center for Geosciences, Potsdam, Germany*)
Multi-Scenario Evaluation of the Direct Method in Strapdown Airborne and Shipborne Gravimetry

12.30 – 12.50 5. **V.S.Vyazmin, Y.V.Bolotin, A.O.Smirnov** (*Lomonosov Moscow State University, Russia*)
Improving Gravity Estimation Accuracy for the
GT-2A Airborne Gravimeter using Spline-Based
Gravity Models

12.50 – 13.50 **LUNCH**

PLENARY PAPERS

13.50 – 14.10 6. **E.K.Grigorev, E.M.Krasinskii** (*Rosgeo, JSC, St. Petersburg, Russia*)
Experience of Usage Gravimetric Systems
Chekan-AM (Shelf-E) within Complex Regional
Geophysical Studies in the Laptev Sea

14.10 – 14.30 7. **V.A. Zhuravlev, S.V. Chelyshev** (*MAGE, JSC, Murmansk, Russia*)
A Case Study of Chekan Gravimeters and
Development Outlook for Marine Gravimetry
at JSC MAGE

14.30 – 14.50 8. **M.G.Valitov, R.G.Kulinich, T.N.Kolpashchikova, Z.N.Proshkina** (*V.I. Ilichyov Pacific Oceanological Institute, Far Eastern Branch of the RAS, Vladivostok, Russia*)
Gravimetric Studies in the Sea of Japan

14.50 – 15.10 9. **I.V. Lygin** (*Lomonosov Moscow State University, Russia*)
What gravimetry is needed? The Opinion of the
Geologist-Geophysics

15.10 – 15.40 **COFFEE BREAK**

Chairmen: **A.A.Krasnov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)

T. Jensen (*DTU Space, Lyngby, Denmark*)

- 15.40 – 16.00** 10. **M.Bilker-Koivula, T.Saari** (*Finnish Geospatial Research Institute, National Land Survey of Finland, Masala, Finland*), **J.Ågren, P.-A.Olsson** (*Lantmäteriet, Swedish mapping, cadastral and land registration authority, Gävle, Sweden*), **J.Schwabe, G.Liebsch** (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*), **G.Strykowski, R.Forsberg** (*DTU Space, Lyngby, Denmark*), **C.Förste, F.Barthelmes, S.Ince** (*GFZ German Research Centre for Geosciences, Potsdam, Germany*), **A.Ellmann** (*Tallinn University of Technology, School of Engineering, Tallinn, Estonia*), **J.Kaminskis** (*University of Latvia, Institute of Geodesy and Geoinformatics, Riga, Latvia*)
FAMOS Project to Improve the Baltic Sea Gravity Data and Geoid Model for the Baltic Sea Chart Datum 2000

POSTER PAPERS*

- 16.00 – 16.20** 11. **Y.V.Bolotin, V.S.Vyazmin** (*Lomonosov Moscow State University, Russia*)
New Results for Gravity Vector Estimation from Airborne Data Using Spherical Scaling-Functions
12. **A.A. Golovan, E.V.Gorushkina, I.A. Papusha** (*Lomonosov Moscow State University, Russia*)
About Identification of Instrument Error Parameters for a Gravity Gradiometer

* 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.

13. **M.Yu, T. Cai** (*Southeast University, Nanjing, China*)
Numerical Model of Moving-base Rotating Accelerometer Gravity Gradiometer

14. **Xiaochao Xu, Shihao Tang, Shitao Yan, Qian Wang, Yanyan Fang, Qiu Wang, Ji'ao Tian, Qiangwei Xu, Chun Zhao, Huafeng Liu, Fangjing Hu, Liangcheng Tu** (*Huazhong University of Science and Technology, Wuhan, China*)
Progress in the Development of a Three-Axis MEMS Borehole Gravimeter

16.20 – 16.40 **Discussion of the poster papers**

16.40 – 17.00 **Photo op**

17.00 – 18.30 **WELCOME PARTY**
(*at Concern CSRI Elektropribor, JSC*)

WEDNESDAY, 2 October 2019

SESSION 2. ABSOLUTE GRAVIMETRY

Chairmen: **L.F.Vitushkin** (*D.I.Mendeleev Institute for Metrology, St. Petersburg, Russia*)

A.Araya (*Earthquake Research Institute, University of Tokyo, Japan*)

PLENARY PAPERS

- 9.30 – 9.50** 15. **H.Wziontek** (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*), **V.Pálinkás** (*Research Institute of Geodesy, Topography and Cartography, Zdiby, Czechia*), **R.Falk** (*Federal Agency for Cartography and Geodesy (BKG), Frankfurt, Germany*), **M.Val'ko** (*Research Institute of Geodesy, Topography and Cartography, Zdiby, Czechia*), **A,Rülke** (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*)
The 2018 Comparison of Absolute Gravimeters at Wettzell, Germany in the Context of the International Gravity Reference System and Frame

- 9.50 – 10.10** 16. **J.Mäkinen, M.Bilker-Koivula, H.Ruotsalainen** (*Finnish Geospatial Research Institute, Masala, Finland*), **R.A.Sermyagin, I.A.Oshchepkov, N.A.Gusev, V.I.Kaftan, N.N.Korolev, A.V.Basmanov, A.V.Pozdnyakov** (*Federal Scientific Research Center of Geodesy, Cartography and Spatial Data Infrastructure, Moscow, Russia*), **Yu.F.Stus, D.A.Nosov** (*Institute of Automation and Electrometry, Siberian Branch of the RAS, Novosibirsk, Russia*), **V.D.Yushkin** (*Lomonosov Moscow State University, Sternberg Astronomical Institute, Moscow, Russia*), **R.Falk, W.Hoppe** (*Federal Agency for Cartography and Geodesy (BKG), Frankfurt, Germany*), **O.Gitlein** (*Institute of Geodesy, Leibniz University Hannover, Germany*)
Russian-Finnish-German Comparisons of Absolute Gravimeters (2004-2013) Revisited
- 10.10 – 10.30** 17. **C. Ullrich** (*Federal Office of Metrology and Surveying, Vienna, Austria*), **R. Pail** (*Institute of Astronomical and Physical Geodesy, Technical University of Munich, Germany*)
Gravity Activities in Austria
- 10.30 – 10.50** 18. **L.F. Vitushkin, D.D. Gidasov, F.F. Karpeshin, O.A. Orlov, I.S. Khasiev, V.I. Sheremet** (*D.I.Mendeleyev Institute for Metrology, St. Petersburg, Russia*)
Influence of Magnetic Fields on Errors in Free-Fall Acceleration Measurements by Absolute Laser-Interference Ballistic Gravimeter

- 10.50 – 11.10** 19. **P.-A.Olsson** (*Lantmäteriet, Swedish mapping, cadastral and land registration authority, Gävle, Sweden*), **K.Breili** (*Norwegian Mapping Authority and Norwegian University of Life Sciences, Ås and Hønefoss, Norway*), **V.Ophaug** (*Norwegian University of Life Sciences, Ås, Norway*), **H.Steffen** (*Lantmäteriet, Swedish mapping, cadastral and land registration authority, Gävle, Sweden*), **M.Bilker-Koivula** (*National Land Survey of Finland, Masala, Finland*), **T.Oja** (*Estonian Land Board, Tallin, Estonia*), **L.Timmen** (*Leibniz University Hannover, Germany*)
The Nordic-Baltic Absolute Gravity Project and its Relation to GNSS-derived Vertical Surface Deformation Rates

11.10 – 11.40 **COFFEE BREAK**

Session 3: Relative Gravimetry, Gravity Networks
and Applications of Gravimetry

Chairmen: **L.F.Vitushkin** (*D.I.Mendeleev Institute for Metrology, St. Petersburg, Russia*)

J.Mäkinen (*Finnish Geospatial Research Institute, Masala, Finland*)

PLENARY PAPERS

- 11.40 – 12.00** 20. **A. Araya** (*Earthquake Research Institute, University of Tokyo, Japan*), **K. Kasai**, **M. Yoshida**, **M. Nakazawa** (*Research Institute of Electrical Communication, Tohoku University, Miyagi, Japan*), **T. Tsubokawa** (*Shin-ei Keisoku, Iwate, Japan*)
Evaluation of Systematic Errors of the Compact Absolute Gravimeter TAG-1 for Network-Monitoring of Volcanic Activities
- 12.00 – 12.20** 21. **A.Prato**, **S.Desogus**, **C.Origlia**, **A.Germak** (*INRiM – Istituto Nazionale di Ricerca Metrologica, Torino, Italy*)
Design of New Launch and Interferometer Systems for the IMGC-02 Absolute Gravimeter
- 12.20 – 12.40** 22. **E. V. Utemov**, **A G Kharisov** (*Kazan Federal University, Russia*)
About Usage of Chebyshev Polynomials of the First Kind in Order to Process Measurements of Ballistic Gravimeters
- 12.40 – 13.00** 23. **V.A. Smith**, **G.M. Appleby** (*Herstmonceux Geodetic Observatory, Herstmonceux Castle, East Sussex, United Kingdom*)
online
Twelve Years of High Frequency Absolute Gravimetry Measurements at the Herstmonceux Geodetic Observatory, UK
- 13.00 – 14.00** **LUNCH**

**SESSION 3: RELATIVE GRAVIMETRY, GRAVITY NETWORKS
AND APPLICATIONS OF GRAVIMETRY**

- Chairmen:** **V.N.Koneshov** (*The Schmidt Institute of Physics of the Earth of the RAS, Moscow, **Russia***)
P.Dykowski (*Institute of Geodesy and Cartography, Warsaw, **Poland***)

PLENARY PAPERS

- 14.00 – 14.20** 24. **V.N.Koneshov, V.B.Nepoklonov, V.N.Solovyov, L.K.Zheleznyak** (*The Schmidt Institute of Physics of the Earth of the RAS, Moscow, **Russia***)
Comparison of Experimental Results with Modern Global Models of the Gravitational Field of the Earth
- 14.20 – 14.40** 25. **V.F.Kanushin, A.P.Karpik, I.G.Ganagina, D.N.Goldobin** (*Siberian State University of Geosystems and Technologies, Novosibirsk, **Russia***)
Determination of Vertical Gradient of Gravitation by Geopotential Global Model Data
- 14.40 – 15.00** 26. **A.P.Karpik, V.F.Kanushin, I.G.Ganagina, D.N.Goldobin** (*Siberian State University of Geosystems and Technologies, Novosibirsk, **Russia***), **E.M.Mazurova** (*Federal Scientific-Technical Center of Geodesy, Cartography and Spatial Data Infrastructure, Moscow, **Russia***)
Studying the Evolution of Resolution Capabilities and Approximation Accuracy of Global Models by Spectral Characteristics
- 15.00 – 15.20** 27. **V.V.Mitrikas, I.O.Skakun, V.V.Ianishevskii** (*TSNIImash, Korolov, **Russia***)
The role of Non-Tidal Atmospheric Loads in the task of Gravity Field Estimation by Inter-Satellite Measurements

POSTER PAPERS*

- 15.20 – 15.50 28. **S.B.Berkovich, N.I.Kotov, A.V.Sholokhov** (*Institute of engineering physics, Serpukhov, **Russia***),
M.Belonozhko (*The Military Academy of Strategic Rocket Troops after Peter the Great, Serpukhov, **Russia***)
Formation of Self-Consistent Navigational Gravity Maps for Local Areas and Evaluation of their Factor of Navigation Efficiency
29. **V.F.Fateev, D.S.Bobrov** (*VNIIFTRI, Moscow region, Mendeleevo, **Russia***)
Results of the Geopotential Derivatives Computation using Digital Elevation Data
30. **M.Lederer** (*Land Survey Office, Prague, **Czechia***),
O.Nesvadba (*Land Survey Office, Research Institute of Geodesy, Topography and Cartography, Prague, **Czechia***)
On a Transformation between Different Reference Gravity Systems: Case study for the Czech Republic
31. **M.M.Murzabekov** (*VNIIFTRI, Moscow region, Mendeleevo, **Russia***)
Results of Astro-Measurements of the Vertical Deflection Using the New Observation Technique
32. **V.P.Lopatin, V.F.Fateev** (*VNIIFTRI, Moscow region, Mendeleevo, **Russia***)
Methods of Bistatic GNSS-radio Altimetry for Determining the Height Profile of the Ocean and Their Experimental Verification

* 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.

33. **E.A.Chistiakova** (*Federal Scientific-Technical Center of Geodesy, Cartography and Spatial Data Infrastructure, Moscow, **Russia***)
Computing Tidal Parameters with gPhone Observations in Moscow
34. **V.N.Baranov** (*State University of Land Use Planning, Moscow, **Russia***), **A.S.Matveev** (*PRIN JSC, Moscow, **Russia***)
To the Question of Research and Accounting of Local Gravity Anomalies
35. **F.Greco** (*National Institute of Geophysics and Volcanology, Catania, **Italy***), **P.Vajda**, **P. Zahorec** (*Earth Science Institute, Slovak Academy of Sciences, Bratislava, **Slovakia***), **J.Papčo** (*Dept. of Theoretical Geodesy, Slovak University of Technology, Bratislava, **Slovakia***), **D. Carbone**, **M.Cantarero** (*National Institute of Geophysics and Volcanology, Catania, **Italy***)
On Predictability and Applicability of Vertical Gradients of Gravity in Microgravimetry

15.50 – 16.00

Discussion of the poster papers

THURSDAY, 3 October 2019

**SESSION 3: RELATIVE GRAVIMETRY, GRAVITY NETWORKS
AND APPLICATIONS OF GRAVIMETRY**

(Continued)

Chairmen: **O.A.Stepanov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)

F.Greco (*National Institute of Geophysics and Volcanology, Catania, Italy*)

PLENARY PAPERS

- 9.30 – 9.50** 36. **I.A.Oshchepkov** (*Center of Geodesy, Cartography and Spatial Data Infrastructure, Moscow, Russia*)
OpenGrav: Open Science Initiative in High-Precision Gravimetry
- 9.50 – 10.10** 37. **P.Dykowski, J.Krynski, M.Sekowski** (*Institute of Geodesy and Cartography, Warsaw, Poland*),
P.Kane, K.Fitzpatrick, R.Healy, M.Byrne (*Ordnance Survey Ireland, Dublin, Ireland*), **G.Bell, M.Aiken** (*Land and Property Services, Belfast, Northern Ireland*)
Establishment of the Absolute Gravity Network Ireland – First Results

- 10.10 – 10.30** 38. **P.Dykowski, M.Sekowski, J.Krynski** (*Institute of Geodesy and Cartography, Warsaw, Poland*), **D.Olszewska** (*Institute of Geophysics, Warsaw, Poland*), **A.Araszkiewicz** (*Military University of Technology, Warsaw, Poland*), **J.Kaplon, A.Borkowski, M.Ilieva, W. Rohm** (*Wroclaw University of Environmental and Life Sciences, Poland*), **G.Mutke , A.Kotyrbra** (*Central Mining Institute, Katowice, Poland*), **A.Baranski** (*Polska Grupa Górnicza, Katowice, Poland*)
Gravity, GNSS, InSAR Combination for Monitoring Deformation Related To Industrial Activity on Multidisciplinary Upper Silesian Episode within the EPOS-PL Project
- 10.30 – 10.50** 39. **F.Greco, D.Carbone, F.Cannavò, A.A.Messina, G.Siligato** (*National Institute of Geophysics and Volcanology, Catania, Italy*)
Absolute and Relative Gravity Measurements at Volcanoes: Current State and New Developments under the NEWTON-g Project
- 10.50 – 11.10** 40. **T.Olszak, A. Pachuta, M. Rajner, V. Szabo** (*Faculty of Geodesy and Cartography, Warsaw University of Technology, Warsaw, Poland*)
online
Absolute Gravity Changes at the Points of Polish Gravimetric Calibration Lines and it's Interpretation in Hydrological, Hydrogeological Contexts

POSTER PAPERS *

- 11.10 – 11.20** 41. **R.A.Davlatov, V.F.Fateev** (*VNIIFTRI, Moscow region, Mendeleevo, Russia*)
Metrological Support for Space Gravimetric Projects

* 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.

42. **O.A.Stepanov, A.S.Nosov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***)
The Effect of Measurement Preprocessing in Gravity-aided Navigation
43. **O.A.Stepanov , D.A.Koshaev, O.M.Yashnikova , A.V.Motorin, L.P.Starosel'tsev** (*Concern CSRI Elektropribor, JSC, St. Petersburg, **Russia***)
Sensitivity of Algorithms for Estimating the Gravity Disturbance Vector to its Model Uncertainty

11.20 – 11.30 **Discussion of the poster papers**

11.30 – 12.00 **COFFEE BREAK**

**SESSION 4: COLD ATOM AND SUPERCONDUCTING
GRAVIMETERS. GRAVITATIONAL EXPERIMENTS**

Chairmen: **V.F.Fateev** (*VNIIFTRI, Moscow region, Mendeleevo, Russia*)
H.Wziontek (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*)

PLENARY PAPERS

- 12.00 – 12.20** 44. **C.Janvier, V.Menoret, B.Desruelle, P.Vermeulen** (*Muquans, Talence, France*), **F.Pereira dos Santos, A.Landragin** (*LNE-SYRTE, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, Paris, France*)
New Developments for Commercial Quantum Gravimeters
- 12.20 – 12.40** 45. **J.Glässer** (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*), **B.Desruelle, L.Antoni-Micollier, V.Menoret** (*Muquans, Institut d'Optique d'Aquitaine, Talence, France*), **A.Rülke, H.Wziontek** (*Federal Agency for Cartography and Geodesy (BKG), Leipzig, Germany*)
First Experiences with the Quantum Gravimeter AQG-A02 at the Geodetic Observatory Wettzell, Germany
- 12.40 – 13.00** 46. **V.F.Fateev, E.A.Rybakov** (*VNIIFTRI, Moscow region, Mendeleevo, Russia*)
Gravitational Experiments to Measure the Difference of Geopotential Numbers using Atomic Clock Synchronized by Fiber Optic Links
- 13.00 – 14.00** **LUNCH**

PLENARY PAPER

- 14.00 – 14.20 47. **L.F.Vitushkin, E.P.Krivtsov, V.V.Nalivaev, O.A.Orlov** (*D.I.Mendeleyev Institute for Metrology, St. Petersburg, Russia*), **R.Reineman, R.Warburton** (*GWR Instruments Inc., San Diego, CA, USA*)
Superconducting Gravimeter iGrav at the Gravimetric Site Lomonosov in Lomonosov Branch of D.I.Mendeleyev Institute for Metrology

POSTER PAPERS *

- 14.20 – 14.35 48. **H.Virtanen, A.Raja-Halli** (*Finnish Geospatial Research Institute, National Land Survey, Masala, Finland*)
Superconducting gravimeters and observations during 2014-2019 at Metsähovi geodetic research station
49. **A.B.Manukin, I.I.Kalinnikov, V.P.Matyunin, O.S.Kazantseva** (*The Schmidt Institute of Physics of the Earth of the RAS, Moscow, Russia*), **N.F.Sajakina, N.A.Chernogorova** (*Space Research Institute of the RAS, Moscow, Russia*)
Development of a Seismic Accelerometer for Measurements on Mars
50. **I.I. Kalinnikov, A.B. Manukin, V.N. Koneshov, O.S. Kazantseva, V.P. Matyunin** (*The Schmidt Institute of Physics of the Earth of the RAS, Moscow, Russia*)
Gravitational Constant and Torsion Pendulum: Physical, Mathematical and Methodological Aspects
51. **S.A.Matviienko** (*SIC Kurs, JSC, Kyiv, Ukraine*)
The Results of Experimental Testing of Radiophysical Gravimeter

* 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.

**Session 4: Cold Atom and Superconducting Gravimeters.
Gravitational Experiments**

52. **D.Ma, X.Liu, J.Yu, J.Yang, N.Zhang, L.Chen, X.Liu** (*Huazhong University of Science and Technology, Wuhan, China*)
Progress in the Development of a Squid-Based Wideband Superconducting Gravimeter

14.35 – 14.45 Discussion of the poster papers

14.45 – 15.00 COFFEE BREAK

**15.00 – 16.30 Panel Discussion
V Symposium TG-SMM. Present, Past and Future**

Moderators: **A.V.Sokolov** (*Concern CSRI Elektropribor, JSC, St. Petersburg, Russia*)

L.F.Vitushkin (*D.I.Mendeleyev Institute for Metrology, St. Petersburg, Russia*)

16.30 – 16.40 CLOSING CEREMONY

17.00 Departure to the drink reception venue

17.30 – 20.00 DRINK RECEPTION
(the Blagodat Frigate restaurant)

FRIDAY, 4 October 2019

CULTURAL PROGRAM (10:00 to 18:00)