

RUSSIAN GRAVITATIONAL SOCIETY  
TOMSK STATE PEDAGOGICAL UNIVERSITY  
CENTRE FOR GRAVITATION AND FUNDAMENTAL METROLOGY  
of the RUSSIAN INSTITUTE FOR METROLOGICAL SERVICE

# GRG 11

International Conference

THEORETICAL AND EXPERIMENTAL  
PROBLEMS  
OF GENERAL RELATIVITY AND GRAVITATION

and  
International Workshop

GRAVITY, STRINGS AND QUANTUM FIELD  
THEORY

Tomsk, Russia

*SCIENTIFIC PROGRAMME*

July 2, Tuesday

Opening of conference 9:00 - 9:40

9:00 - 9:20 President of the Russian Gravitational Society **V.N. Melnikov**

9:20 - 9:40 Rector of TSPU **V.V. Obukhov**

Morning Session 9:40 - 13:30

Chairperson:

9:40 - 10:20 **D.V. Gal'tsov** (Moscow State University, Russia)

*Classical Solutions in Quantum Gravity and Superstring Theory*

10:20 - 11:00 **I.L. Buchbinder** (Tomsk State Pedagogical University, Russia)

*Recent Progress in Construction of Exact Low-Energy Effective Action  
in  $\mathcal{N} = 4$  Supersymmetric Yang-Mills Theory*

11:00 - 11:30 **Coffee break**

Chairperson:

11:30 - 12:10 **V.N. Melnikov** (Center for Gravitation and Fundamental Metrology, Russia)  
*G and Solutions in Many Dimensions*

12:10 - 12:50 **A. Sugamoto** (Ochanomizu University, Japan)

*Generation of 4D Gauge Theory and Gravity from 3D Ones-Asymptotic  
Disappearance of Space and Time*

12:50 - 13:30 **G.S. Bisnovaty-Kogan** (Space Research Institute RAS, Russia)

*Dynamic and Thermodynamic Stability of Relativistic Stellar Clusters*

13:30 - 15:00 **Lunch**

Afternoon Session 15:00 - 19:00

Chairperson:

15:00 - 15:15 **A.T. Banin** (Institute of Mathematics SD RAS, Russia)

*Application of Symbol-Operator Method for Calculation Traces of Operators*

15:15 - 15:30 **N.G. Pletnev** (Institute of Mathematics SD RAS, Russia)

*Effective action in supersymmetric YM-theories*

15:30 - 15:45 **Y. Hyakutake** (Yukawa Institute for Theoretical Physics, Japan)

*Expanded Strings in the Background of NS5-branes*

15:45 - 16:00 **S. Ogushi** (Yukawa Institute for Theoretical Physics, Japan)

*Holographic Entropy on the Brane in de Sitter-Schwarzschild Space*

16:00 - 16:15 **V.M. Khatsymovsky** (Institute of Nuclear Physics SD RAS, Russia)

*Path Integral Measure in Regge Calculus from the Functional  
Fourier Transform*

16:15 - 16:30 **T. Inagaki** (Hiroshima University, Japan)

*Dynamical Symmetry Breaking in Randall-Sundrum Background*

16:30 - 16:45 **V.A. Krykhtin** (Tomsk Polytechnic University, Russia)

*One-loop Renormalization of Noncommutative General Yang-Mills Field Model  
Coupled to Scalar and Spinor Fields*

16:45 - 17:00 **I.V. Gorbunov, A.A. Sharapov** (Tomsk State University, Russia)

*String with Noncommutative World-Sheet and Stringy Instantons*

17:00 - 17:30 **Coffee break**

Chairperson:

17:30 - 17:45 **P.M. Lavrov**, L.A. Malysheva (Tomsk State Pedagogical University, Russia)  
*Explicit Realization of "Triplectic" Algebra in General Coordinates*

17:45 - 18:00 **A. Bratchikov** (Kuban State Technological University, Russia)  
*A Realization of the Dirac Bracket Algebras and Quantization of Constrained Systems*

18:00 - 18:15 **V.A. Dolgushev** (Joint Institute for Nuclear Research, Russia)  
*Quantization of Triangular Lie Bi-Algebras*

18:15 - 18:30 **M.G. Ivanov** (Moscow Institute of Physics and Technology, Russia)  
*The Model of Delocalised Membranes*

18:35 - 18:45 **J. H. Quiroga** and Y.A. Shaiko (Tomsk State Pedagogical University, Russia)  
*Stabilization of Anti-de Sitter Universe*

18:45 - 19:00 **I.B. Samsonov** (Tomsk State University, Russia)  
*On Superconformal Invariance of  $N=3$  Super-Yang-Mills Model*

19:30 **Dinner**

July 3, Wednesday

9.30 - 12.30 **A Ship Excursion along the River Tom**

13.00 - 14.00 **Dinner**

14.30 - 17.30 **An Excursion to the Siberian Botanic Garden**

19.00 **Welcome Party**

## July 4, Thursday

Morning Session 9:00 - 13:30

Chairperson:

- 9:00 - 9:30 **S.D. Odintsov** (Tomsk State Pedagogical University, Russia)  
*Brane New World and dS/CFT correspondence*
- 9:30 - 10:00 **S. Nojiri** (National Defence Academy, Japan)  
*Higher Derivative Gravities and Negative Entropy*
- 10:00 - 10:30 **K.A. Bronnikov**  
(Center for Gravitation and Fundamental Metrology, Russia)  
*Scalar Vacuum Structure in General Relativity  
and Alternative Theories of Gravity*
- 10:30 - 11:00 **R. Woodard** (University of Florida, USA)  
*Photon Mass from Inflation*
- 11:00 - 11:30 **Coffee break**

Chairperson:

- 11:30 - 12:10 **A.A. Starobinsky** (Institute for Theoretical Physics RAS, Russia)  
*Unclustered Dark Matter and Dark Energy in the Universe*
- 12:10 - 12:50 **V.N. Rudenko** (Moscow State University)  
*Current State of Gravitational Wave Experiment*
- 12:50 - 13:30 **N. Mankoc Borstnik** (University of Ljubljana, Slovenia)  
*Why Nature Has Made a Choice of One Time and Three Space?*
- 13:30 - 15:00 **Lunch**

Afternoon Session 15:00 - 19:00

Chairperson:

- 15:00 - 15:15 **M. Kenmoku** (Nara Women's University, Japan)  
*Expression of the Gravitational Energy for the Black Holes and the Universe*
- 15:15 - 15:30 **J. Gaite** (The High Council of Scientific Research, Spain)  
*Relative Entropy for Curved Space and Its Application in Cosmology*
- 15:15 - 15:30 **V.M. Villanueva**  
(University of Michoacana de San Nicolás de Hidalgo, Mexico)  
*Non Minimal Coupling for Spin 3/2 Fields*
- 15:45 - 16:00 **L.M. Chechin** (Astrophysical Institute, Kazakhstan)  
*Stretch of a Cosmic String by a Domain Wall*
- 16:00 - 16:15 **F. Darabi** (Azarbaijan University of Tarbiat Moallem, Iran)  
*Expansion of the Universe and Compactification of Extra Dimensions*
- 16:15 - 16:30 **L.I. Tsaregorodtsev** (Altay State Technical University, Russia)  
*The Radiative Processes in the Robertson-Walker Universes of a Special Type*
- 16:30 - 16:45 **M.I. Wanas** (Cairo University, Egypt)  
*Effect of Spin Gravity Interaction on Chandrasekhar Limit*
- 16:45 - 17:00 **N.A. Koshelev, S.V. Chervon,** (Ulyanovsk State University, Russia)  
*Non-linear Sigma Model Parametrization and Scalar Perturbations in  
Cosmological Models Non-Minimally Coupled to Gravity*

17:00 - 17:30 **Coffee break**

Chairperson:

17:30 - 17:45 **M.L. Fil'chenkov** (People's Friendship University, Russia)  
*Quantum Rotating Universe*

17:45 - 18:00 **V.F. Panov** (Perm State University, Russia)  
*A Quantum Birth of a Universe With Rotation*

18:00 - 18:15 **E.V. Kuvshinova** (Perm State University, Russia)  
*Cosmological Model With Rotation*

18:15 - 18:30 **B.P. Mordvinov** (Russian Federal Nuclear Center)  
*Choice of the Friedmann Cosmological Model*

18:30 - 18:45 **V.V. Uchaikin** (Ulyanovsk State University, Russia)  
*Mesofractal Model of Large-Scale Structure of the Universe*

18:45 - 19:00 V.A. Bordovitsyn, **V.Ya. Epp** (Tomsk State Pedagogical University, Russia)  
*Kinematic Projecting of Pulsar Synchrotron Radiation Profiles*

19:30 **Dinner**

July 5, Friday

Morning Session 9:00 - 13:30

Chairperson:

- 9:00 - 9:30 **V.D. Pershin** (University of Estadual Paulista, Brasil)  
*D=10 Super-Born-Infeld from the Superstrings*
- 9:30 - 10:00 **F. Dolan** (Cambridge University, UK)  
*Conformal Field Theory*
- 10:00 - 10:30 **Yu.S. Vladimirov** (Moscow State University, Russia)  
*Gravitation and Binary Geometrophysics*
- 10:30 - 11:00 **Yu.V. Grats** and A.A. Rossikhin (Moscow State University, Russia)  
*Vacuum Polarization Near Topological Defects in RS2 Brane World*
- 11:00 - 11:30 **Coffee break**

Chairperson:

- 11:30 - 12:10 **J. Sola** (Universitat Autònoma de Barcelona, Spain)  
*Cosmological Constant, Renormalization Group and Anomaly-Induced Inflation*
- 12:10 - 12:50 **T.K. Thiemann** (Max Planck Institut für Gravitationsphysik, Germany)  
*Introduction to Modern Canonical Quantum General Relativity*
- 12:50 - 13:30 **J.-P. Mbelek** (Commissariat à l'Énergie Atomique, France)  
*Possible Evidence for a Coupling Between Gravitation and Electromagnetism*
- 13:30 - 15:00 **Lunch**

Afternoon Session 15:00 - 19:15

Chairperson:

- 15:00 - 15:15 **A.A. Popov** (Kazan State Pedagogical University, Russia)  
*Vacuum Polarization of a Scalar Field in the Wormhole Spacetime*
- 15:30 - 15:45 **B.N. Frolov** (Moscow State Pedagogical University, Russia)  
*Can a Rotating Mass Be the Source of a Still Unknown Physical Field?*
- 15:45 - 16:00 **A.E. Filippov**, A.N. Makarenko, K.E. Osetrin, V.V. Obukhov  
(Tomsk State Pedagogical University, Russia)  
*Classification of Homogeneous Stackel Spacetimes*
- 16:00 - 16:15 **B.G. Aliev** (Moscow State University Design and Technology, Russia)  
*Maxwell Equations at Small Distances in the 5-dimensional unified theory*
- 16:15 - 16:30 **H.M. Kopteva**, M.P. Korkina (Dnipropetrovsk National University, Ukraine)  
*On The Cosmological Constant In Gravitational Collapse*
- 16:30 - 16:45 **N.I. Kolosnitsin**  
(Center for Gravitation and Fundamental Metrology, Russia)  
*Form of Relativistic Orbit and Anomalies in the Motion of the Space Vehicle Pioneer 10/11*
- 16:45 - 17:00 **T.S. Boronenko** (Tomsk State Pedagogical University, Russia)  
*Relativistic Effects in Motion of the Satellites of the Planets-Giants*

17:00 - 17:30 **Coffee break**

Chairperson:

17:30 - 17:45 **V.A. Filippov** (Astrophysical Institute, Kazakhstan)  
*Nonlinearity of Physical Values as a Leading Factor of Possible Variation of Gravity Constant*

17:45 - 18:00 **Yu.E. Pokrovsky** (Kurchatov Institute, Russia)  
*Generally Invariant Quadrupole Formula, Essential Suppression of Gravitational Wave Radiation in General Relativity and Scalar-Vector-Metric Gravitation*

18:00 - 18:15 **F.T. Shumakov** (Kharkov Polytechnic Institute, Ukraine)  
*Theoretical Studies of a Relativistic Gravitation*

18:15 - 18:30 **N.A. Zhuck** (Research and Technological Institute of Transcription, Translation and Replication, Ukraine)  
*Unknown Properties of the Yukawa Potential*

18:30 - 18:45 **R.V. Filippov** (Kazakh National State University, Kazakhstan)  
*Faint Blue Galaxies Problem and Indications for Inhomogeneity of Metagalaxy at Great Scales*

18:45 - 19:00 **M. Abishev** (Kazakh National State University, Russia)  
*Towards Justifications of Relativistic Equation for Rotary Motion in General Relativity Mechanics*

19:00 - 19:15 **I.A. Vereschagin** (Perm State University)  
*The Gravitation Divaricate*

19:30 **Banquet**

## July 6, Saturday

Morning Session 9:00 - 13:30

Chairperson:

- 9:00 - 9:30 M.Yu. Khlopov, **S.G. Rubin**, A.S. Sakharov  
(Moscow Engineering Physics Institute, Russia)  
*Primordial Nonlinear Structures From Particle Physics of  
Inflationary Universe*
- 9:30 - 10:00 **S.V. Chervon** (Ulyanovsk State University, Russia)  
*Cosmological Models of Global Universe Evolution  
and Decomposition of Scalar Perturbations*
- 10:00 - 10:30 **A.Y. Burinskii** (Nuclear Safety Institute RAS, Russia)  
*A New Type of Particlelike Solutions Based on Regular Black Holes*
- 10:30 - 11:00 **B.P. Kosyakov** (Russian Federal Nuclear Center)  
*Physical Meaning of Renormalizability*
- 11:00 - 11:30 **Coffee break**

Chairperson:

- 11:30 - 11:45 **V.G. Bagrov** (Tomsk State University, Russia)  
*New Results in the Classical Theory of Synchrotron Radiation*
- 11:45 - 12:00 **A.P. Yefremov** (People's Friendship University, Russia)  
*Structure Equations and Preliminary Classification of Quaternionic Spaces*
- 12:00 - 12:15 **A.V. Borisov**, A.V. Shapovalov, Yu. V. Kistenev, A.Yu. Trifonov  
(Tomsk Polytechnic University, Russia)  
*Asymptotical Solitary Waves in External Fields of Special Form*
- 12:15 - 12:30 **A.Yu. Trifonov** and D.E. Yakovlev (Tomsk Polytechnic University, Russia)  
*Semiclassical Quasi-energy Spectral Series of the Hartree Type Equation in  
Fields of a Special Type*
- 12:30 - 12:45 **V.V. Kassandrov**, V.N. Trishin (People's Friendship University, Russia)  
*Algebroid dynamics on the Space-Time Manifold*
- 12:45 - 13:00 **A.K. Guts** (Omsk State University, Russia)  
*Theory of the Deutsch Multiverse*
- 13:00 - 13:15 **E.V. Palesheva** (Omsk State University, Russia)  
*The Guts-Deutsch Multiverse and Interference of Quantum Particles*
- 13:15 - 13:30 **A.V. Solov'yov** (Moscow State University, Russia)  
*On the Relation of Twistors to Finslerian 4-Spinors*
- 13:30 - 15:00 **Lunch**

Afternoon Session 15:00 - 18:45

Chairperson:

- 15:00 - 15:15 **V.G. Dubrovsky**, B.I. Formusatik  
(Novosibirsk State Technical University, Russia)  
*New Exact Rational Solutions of Integrable Veselov-Novikov Equation  
and New Transparent Rational Potentials of Two-dimensional Stationary  
Schrödinger Equation Via  $\bar{\partial}$ -dressing Method*
- 15:15 - 15:30 **V.G. Zhotikov** (Ministry of Industry, Science and Technologies of Russia)  
*Geometrical Interpretation of Notion of Gauge Invariance*
- 15:30 - 15:45 **M.S. Shapovalova** (Omsk State University, Russia)  
*Metric Fluctuations in Fractal Spacetime*
- 15:45 - 16:00 **M.B Golubev** (Russian Federal Nuclear Center)  
*Point Charge and Absence of Electrodynamical Limit in the  
Einstein-Maxwell Equations*
- 16:00 - 16:15 **V.R. Terrovere** (Perm State University, Russia)  
*Description of Physics of Particles by Means of Vernacular of Two-digit Logic*
- 16:15 - 16:30 **A.A. Pecheritsin**, B.F. Samsonov, E.O. Pozdeeva  
(Tomsk State University, Russia)  
*Darboux Transformation for the Dirac Equation*
- 16:30 - 16:45 **T.G. Mitrofanova** (Tomsk State Pedagogical University, Russia)  
*Calculation of Matter Density and Electromagnetic Fields from  
Energy-Momentum Tensor*
- 16:45 - 17:00 **G.F. Kopytov** (Adyg State University, Russia)  
*Radiation of a Charged Particle Moving along a Curved Helix*
- 17:00 - 17:15 **O.V. Demidova** (Yaroslavl' State Pedagogical University, Russia)  
*History of gravitational seminars in Moscow State University*
- 17:15 - 17:45 **Coffee break**
- 17:45 - 18:00 **K.A. Milton** (University of Oklahoma, USA)  
*Casimir Energy and the Cosmological Constant*
- 18:00 - 18:15 **I.V. Tyutin** (Lebedev Physical Institute RAS, Russia)  
*Hamiltonization of Theories with Degenerate Variables*
- 18:15 - 18:30 **V.M. Chechetkin** (Institute of Applied Mathematics RAS, Russia)  
*Mechanisms of Supernova Explosions*
- 18:30 - 18:45 **V.N. Lukash** (Lebedev Physical Institute RAS, Russia)  
*Cosmological Parameters from Observations of Large Scale Structure*
- 18:45 **Close**
- 19:30 **Dinner**

Chairperson: