

PROGRAMM

*of the
International Conference*

QUANTUM FIELD THEORY AND GRAVITY

*Tomsk State Pedagogical University
July 5 – 9, 2010
Tomsk, Russia*

SPONSORS

Russian Foundation for Basic Research

Dynasty Foundation

Tomsk State Pedagogical University

5th July, MONDAY

Registration 9:00 – 9:45

Opening of the Conference 9:45 – 10:00

Morning Session 10:00 – 13:10

Chairperson: I.L. Buchbinder

10:00 – 10:30 E. Elizalde (Catalonian Institute for Cosmic Research, Barcelona, Spain). Repulsive Casimir forces and GR alternative cosmologies.

10:35 – 11:05 F. Bastianelli (University of Bologna and INFN Bologna, Italy). Worldline approach to higher spin fields.

11:05 – 11:20 Coffee break

Chairperson:

11:20– 11:40 O. Corradini (University of Bologna and INFN Bologna, Italy). Spinning particle models and higher-spin fields.

11:45 – 12:15 Yu. Zinoviev (Institute for High Energy Physics, Protvino, Russia). On interaction of the massive particles with higher spins.

12:20 – 12:45 D.V. Fursaev (Dubna International University & Joint Institute for Nuclear Research, Dubna, Russia). Entropic force and entanglement in quantum gravity.

12:50 – 13:10 A. Burinskii (Institute of Nuclear Safety, Moscow, Russia). Twistor structure of the Kerr-Schild geometry as a way to Quantum Gravity.

13:10 – 15:00 Lunch

Afternoon Session 15:00 – 18:10

Chairperson:

15:00 – 15:30 D. Francia (University of Paris VII, France). String theory triplets and higher-spin curvatures.

15:35 – 16:05 A. Campoleoni (Max Plank Institute for Gravitational Physics, Golm, Germany). Metric-like Lagrangians for higher-spin fields of mixed symmetry.

16:10 – 16:30 V. Khatsimovsky (Institute of Nuclear Physics, Novosibirsk, Russia). Integration over connections in the discretized gravitational functional integrals.

16:30 – 16:45 Coffee break

Chairperson:

16:45 – 17:15 S. Odintsov (Catalonia Institute for Cosmic Research, Barcelona, Spain). Nonsingular modified gravity unifying inflation and dark energy.

17:20 – 17:50 S. Ketov (Tokyo Metropolitan University and Institute for Physics and Mathematics of Universe at University of Tokyo, Japan). F(R) supergravity and

early universe.

17:55 – 18:10 A. Reshetnyak (Institute of Strength Physics and Materials Science, Tomsk, Russia). On BFV-BRST construction of Lagrangian formulations for mixed-symmetry higher spin fields

19:00 Rector's reception

6th July, TUESDAY

Morning Session 9:00 – 13:10

Chairman:

- 9:00 – 9:30** **D. Sorokin** (INFN, Padova Section, Italy). Peculiarities of the superstring in the AdS₄ x CP³ superbackground.
- 9:35 – 10:05** **E. Buchbinder** (Imperial College, London, UK). Correlation functions of semiclassical vertex operators in AdS/CFT.
- 10:10 – 10:40** **D. Uvarov** (Kharkov Institute of Physics and Technology, Ukraine). Lagrangian and Hamiltonian formulations for AdS₄ x CP³ superstring in the light-cone gauge.
- 10:45 – 11:05** **C. Troessaert** (Universite Libre de Bruxelles, Belgium). The BMS/CFT correspondence: the symmetries of asymptotically flat space-times revisited.

11:05 – 11:20 *Coffee break*

Chairman:

- 11:20 – 11:50** **E. Ivanov** (Joint Institute for Nuclear Research, Dubna, Russia). Supersymmetric quantum mechanics with non-abelian target gauge fields as a worldline gauge theory.
- 11:55 – 12:25** **L. Mezincescu** (University of Miami, USA). Non-minimal Landau models on some supermanifolds.
- 12:30 – 12:50** **A. Galajinsky** (Tomsk Polytechnic University, Russia). Conformal mechanics in Newton-Hooke spacetime.
- 12:55 – 13:10** **H. Takata** (Tomsk State Pedagogical University, Russia). Calculation of 1-loop divergence of effective action of higher-spin gauge theory in AdS.

13:10 – 15:00 *Lunch*

Afternoon Session 15:00 – 18:00

Chairman:

- 15:00 – 15:30** **V. Krykhtin** (Tomsk State Pedagogical University, Russia). Universal approach to Lagrangian constructions in higher spin field theories.
- 15:35 – 15:55** **P. Lavrov** (Tomsk State Pedagogical University, Russia). External backgrounds in higher spin field theories
- 16:00 – 16:30** **X. Bekaert** (Universite Francois Rabelais, Tours, France). Manifestly conformal descriptions and higher symmetries of bosonic singletons.

16:30 – 16:45 *Coffee break*

Chairman:

- 16:45 – 17:10** **A. Sagnotti, M. Taronna** (Scuola Normale Superiore, Pisa, Italy). String lessons for higher-spin interactions.
- 17:15 – 17:40** **V. Didenko** (P.N. Lebedev Physical Institute, Moscow, Russia). Black holes in higher spin gauge theory.

17:45 – 18:00 A. Reshetnyak (Institute of Strength Physics and Materials Science, Tomsk, Russia). Effective action within Lagrangian BRST quantization with Riemannian and Poisson structures: standard and superfield formalism

7th July, WEDNESDAY

Morning Session 9:00 – 13:15

Chairman:

- 9:00 – 9:30 S. Kuzenko** (University of Western Australia). The hierarchy of supercurrent multiplets.
- 9:35 – 10:05 G. Zoupanos** (National Technical University, Athens, Greece). Unified theories: from finiteness to fuzzy extra dimensions.
- 10:10 – 10:40 A. Smilga** (Universite de Nantes, France). Witten index in supersymmetric 3d theories revisited.
- 10:45 – 11:05 K. Stepanyantz** (Moscow State University, Russia). Application of higher covariant derivative regularization to calculations in supersymmetric theories.

11:05 – 11:20 Coffee break

Chairman:

- 11:20 – 11:50 C. Schubert** (University of Michoacan, Morelia, Mexico). One-loop photon-graviton amplitudes.
- 11:55 – 12:20 A. Isaev** (Joint Institute for Nuclear Research, Dubna, Russia), **O.V. Ogievetsky** (France). Representations of Birman-Murakami-Wenzl algebras.
- 12:25 – 12:50 V. Gershun** (Kharkov Institute of Physics and Technology, Ukraine). Discrete string model approach to high spin massive fields.
- 12:55 – 13:15 Z. Popowicz** (University of Wroclaw, Poland). The Odd Hamiltonian structures in the supersymmetrical integrable models.

13:15 – 15:00 Lunch

15:00 Excursion

8th July, THURSDAY

Morning Session 9:00 – 13:05

Chairman:

- 9:00 – 9:30** **S. Krivonos** (Joint Institute for Nuclear Research, Dubna, Russia).
Supersymmetric mechanics in non Abelian backgrounds.
- 9:35 – 10:05** **F. Toppa**n (Brazilian Center for Physics Reserccch, Rio de Janeiro, Brazil).
Features of supersymmetry in one-dimension.
- 10:15 – 10:45** **M. Grigoriev** (P.N. Lebedev Physical Institute, Moscow, Russia). Unified first-order formulation of gauge theories: a multidimensional analogue of canonical formalism for reparametrization invariant systems
- 10:50 – 11:05** **A. Burinskii** (Institute of Nuclear Safety, Moscow, Russia). Consistent superconducting source of the Kerr-Newman solution.

11:05 – 11:20 Coffee break

Chairman:

- 11:20 – 11:45** **E. Skvortsov** (Lebedev Physical Institute, Moscow, Russia). Frame-like formulation for arbitrary-spin fields.
- 11:50 – 12:15** **A. Nurmagambetov** (Kharkov Institute of Physics and Technology, Ukraine). Two models of strings in space-time with tensorial-type coordinates.
- 12:20 – 12:40** **Z. Popowicz** (University of Wroclaw, Poland). The Integrability of the generalized Gurevich - Zybin equation.
- 12:45 – 13:05** **V. Zhotikov** (Moscow Institute of Physics and Technology, Russia). On Wagner's generalized groups and their applications in physics and geometry.

13:15 – 15:00 Lunch

Afternoon Session 15:00 – 18:00

Chairman:

- 15:00 – 15:25** **M. Katanaev** (V.A. Steklov Mathematical Institute, Moscow, Russia). Tube dislocations in gravity
- 15:30 – 15:50** **T. Inagaki** (Hisoshima University, Japan). Nonequilibrium thermofield dynamics for relativistic fields.
- 15:55 – 16:15** **M. Bordag** (Leipzig University, Germany), **V. Demchik**, **V. Skalozub** (Dnepropetrovsk National University, Ukraine). Characteristics of gluon plasma in chromomagnetic field at high temperature.
- 16:20 – 16:30** **K. Osetrin** (Tomsk State Pedagogical University, Russia). On Conformal transformations of the Einsten spaces.

16:30 – 16:45 Coffee break

Chairman:

- 16:45 – 17:05 L. Chechin** (National Center for Cosmic Research, Almaty, Kazakhstan).
The cosmic vacuum effects in multiple galaxies.
- 17:10 – 17: 30 M. Shakenov** (National Center for Cosmic Research, Almaty, Kazakhstan). On
application of statistic criteria to the double galaxies' catalogue.
- 17:35 – 17:45 T. Boronenko** (Tomsk State Pedagogical University, Russia). Post-Newtonian
effects in the motion of a test particle near the gas giant planets.
- 17:50 – 18:00 A. Baranov, A Osipov** (Siberian Federal University, Krasnoyarsk, Russia). The
modelling of stars with the stratified structure

19:00 Banquet

9th July, FRIDAY

Morning Session 9:00 – 13:00

Chairman:

- 9:00 – 9:20 **V. Ivashchuk** (Center for Gravitation and Fundamental Metrology, Moscow, Russia). On brane solutions related to finite Euclidean and Lorentzian Kac-Moody algebras.
- 9:25 – 9:45 **P. Kazinski** (Tomsk State University, Russia). One-loop effective potential of the Higgs field on the Schwarzschild background.
- 9:50 – 10:10 **R. Myrzakulov** (L.N. Gumilev Eurasian National University, Astana, Kazakhstan). Reconstruction of some modified gravities
- 10:15 – 10:30 **I. Zhogin** (Novosibirsk State University and Institute of Solid State Chemistry and Mechanochemistry, Novosibirsk, Russia). On relevance of a modified gravity.
- 10:35 – 11:00 **B. Kosyakov** (Russian Federal Nuclear Center, Sarov, Russia). Inertial frames of reference and space and time measurements.

11:00 – 11:15 **Coffee break**

Chairman:

- 11:15 – 11:35 **B. Dragovich** (Institute of Physics, Belgrade, Serbia). Field theory of p-adic scalar strings.
- 11:40 – 11:55 **E. Mychelkin** (National Center for Cosmic Research, Almaty, Kazakhstan). Not beyond, but inside: three fundamental fields in physics.
- 12:00 – 12:10 **N. Chuprikov** (Tomsk State Pedagogical University, Russia). A new quantum-mechanical model of a purely symmetrical setting of the two-slit experiment.
- 12:15 – 12:30 **V. Varlamov** (Siberian State University of Industry, Novokuznetsk, Russia). Group averaging for inner products on homogeneous spaces of the de Sitter group.
- 12:35 – 12:45 **E. Kirillova** (Tomsk State Pedagogical University). Quantum equivalence of massive p-form models in in curved 4d-space.
- 12:50 – 13:00 **A. Makarenko** (Tomsk State Pedagogical University, Russia). Cosmological solutions in the Lovelock theory with a dilaton.

13:00 – 15:00 **Lunch**

Afternoon Session 15:00 – 18:00

Chairman:

- 15:00 – 15:15 **S. Myrzakul** (L.N. Gumilev Eurasian National University, Astana, Kazakhstan). Evolution of large scale structures in the universe.
- 15:20 – 15:30 **O. Gorbunova** (Tomsk State Pedagogical University, Russia). Viscous dark energy.
- 15:35 – 15:45 **A. Filippov** (Tomsk State Pedagogical University, Russia). Some solutions in scalar-tensor Brans-Dicke gravity, admitting the separation of variables in the test particles
- 15:55 – 16:05 **I. Masterov** (Tomsk State University, Russia). Remark on quantum mechanics

with $N=2$ Schrodinger supersymmetry.

16:10 – 16:20 O. Radchenko (Tomsk State Pedagogical University, Russia). Nilpotent BRST charge for non-linear superalgebras.

16:20 – 16:35 Coffee break

Chairman:

16:35 – 16:45 V. Epp, J. Janz (Tomsk State Pedagogical University, Russia). The inverse problem for the dipole field.

16:55– 17:05 V. Bagrov, A. Burimova (Tomsk State University, Russia). Quantum deformation of angular momentum of synchrotronic radiation.

17:10 – 17:20 V. Bordovitsyn, O. Konstantinova, E. Nemchenko (Tomsk State University, Russia). Torque of radiation from relativistic charged particles.

17:25 – 17:35 L. Ryskina (Tomsk State Pedagogical University, Russia). Lagrangian formulation of totally antisymmetric fermionic field.

17:40 – 17:50 T. Snegirev (Tomsk State Pedagogical University, Russia). Divergences of the effective action for free massless spin 3 field in AdS space.

17:55 – 18:05 B. Merzlikin (Tomsk State University, Russia). On low energy effective action in supersymmetric Freedman-Townsend model.

18:10 – 18:30 E. Latini (University of California, Davis, USA). BRST detour complex, higher spin & $N=2$ SUSY black hole

Closure of the Conference 18:30 – 18:45