



QFT & g
2014



PROGRAMME

of the
International Conference

QUANTUM FIELD THEORY AND GRAVITY

Tomsk State Pedagogical University
July 28 – August 3, 2014
Tomsk, Russia

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The main topics:

Supersymmetric Field Theory, String/Brane Theory, Higher Spin Field Theory, Classical and Quantum Gravity, Cosmology, Field Theory and Mathematical Physics.

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Tomsk State Pedagogical University

29st July, TUESDAY

Registration 9:00 – 9:45

Opening of the Conference 9:45 – 10:00

Morning Session 10:00 – 13:00

Chairperson: I.L. Buchbinder

10:00 – 10:30 S. Kuzenko (University of Western Australia, Perth)
Superconformal structures on the three-sphere.

10:35 – 11:05 D. Gal'tsov (Moscow State University, Russia)
Oxidation dualities in $D \leq 6$ supergravities and solitons.

11:05 – 11:20 Coffee break

Chairperson: D.V. Gal'tsov

11:20 – 11:50 Yu. Zinoviev (Institute for High Energy Physics,
Protvino, Russia) On massive higher spin interactions.

11:55 – 12:25 E. Buchbinder (University of Western Australia,
Perth) The $1/N$ correction in the D3-brane description
of circular Wilson loop at strong coupling.

12:30 – 13:00 M. Katanaev (Steklov Mathematical Institute,
Moscow, Russia) Passage through the Einstein-Rosen
bridge.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 18:10

Chairperson: S.M. Kuzenko

15:00 – 15:30 B. Ovrut (University of Pennsylvania, Philadelphia, USA) Spontaneous R-parity breaking, stop LSP decays and the neutrino mass hierarchy.

15:35 – 16:05 D. Kazakov (Joint Institute for Nuclear Research, Dubna, Russia) Amplitudes in $D=6$, $N=2$ supersymmetric Yang-Mills theory.

16:10 – 16:30 A. Golubtsova (Peoples' Friendship University, Moscow, Russia) Shock waves in Lifshitz-like backgrounds and holographic description of QGP.

16:30 – 16:45 Coffee break

Chairperson: M.O. Katanaev

16:45 – 17:15 M. Grigoriev (P.N. Lebedev Physical Institute, Moscow, Russia) Ambient approach to boundary values of AdS gauge fields.

17:20 – 17:50 D. Uvarov (Institute for Theoretical Physics, Kharkov Institute of Physics and Technology, Ukraine) Doubleton supermultiplets in twistor string theory.

17:55 – 18:10 K. Osetrin (Tomsk State Pedagogical University, Russia) Classification of metric and energy-momentum tensor of dust matter in coordinate systems that admit a separation of variables in the Hamilton-Jacobi equations.

18:30 Welcome Party

30th July, WEDNESDAY

Morning Session 9:00 – 13:00

Chairperson: B.A. Ovrut

- 9:00 – 9:30** **I. Samsonov** (Padua University, Italy) Superfield models on three-sphere and two-sphere.
- 9:35 – 10:05** **K. Stelle** (Imperial College, London, UK) Localizing braneworlds in infinite spaces.
- 10:10 – 10:40** **E.A. Ivanov** (Joint Institute for Nuclear Research, Dubna, Russia) Auxiliary superfields in N=2 Born-Infeld theory.
- 10:45 – 11:05** **K. Koutrolikos** (University of Maryland, College Park, USA) A dynamical theory for massive superspin 3/2.

11:05 – 11:20 *Coffee break*

Chairperson: D.I. Kazakov

- 11:20 – 11:50** **K. Stepanyantz, A.L. Kataev** (Moscow State University, Russia) NSVZ scheme and the regularization by higher derivatives.
- 11:55 – 12:25** **S. Zerbini** (Trento University, Italy) Vacuum fluctuations as quantum probes in FRW space-time.
- 12:30 – 13:00** **N. Kawamoto** (Hokkaido University, Sapporo, Japan) Off-shell invariant super Yang-Mills with gauged central charges for N=D=2 and N=D=4: - Do we need constraints ? -

13:00 – 15:00 *Lunch*

Afternoon Session 15:00 – 18:00

Chairperson: S. Zerbini

15:00 – 15:30 S. Odintsov (Catalonia Institute for Cosmic Research, Barcelona, Spain) Modified gravity cosmology and neutron stars.

15:35 – 16:05 S. Nojiri (Nagoya University, Japan) Some extension of bigravity.

16:10 – 16:40 M. De Laurentis (Tomsk State Pedagogical University, Russia) Axially symmetric solutions in $f(R)$ -gravity.

16:40 – 16:55 *Coffee break*

Chairperson: S. Nojiri

16:55 – 17:25 S. Capozziello (Universita' di Napoli "Federico II", Italy) Cosmographic bounds on the cosmological deceleration-acceleration transition redshift in $f(R)$ gravity.

17:30 – 17:45 A. Makarenko (Tomsk State Pedagogical University, Russia) Born-Infeld- $f(R)$ gravity.

17:50 – 18:00 Yu. Rybalov (Tomsk State Pedagogical University, Russia) Accelerating and decelerating cosmology from spinor and scalar fields non-minimally coupled to $f(R)$ gravity.

31st July, THURSDAY

Morning Session 9:00 – 13:00

Chairperson: K. Stelle

9:00 – 9:30 S. Ketov (Tokyo Metropolitan University & IPMU, Japan) Minimal models of inflation in supergravity and superstrings.

9:35 – 10:05 R. Rahman (Université Libre de Bruxelles, Belgium) Massive higher-spin fields in a gravitational background.

10:10 – 10:35 N. Khusnutdinov (Kazan Federal University, Russia) Bremsstrahlung in wormhole space-time.

10:40 – 11:05 I. Pirozhenko (Joint Institute for Nuclear Research, Dubna, Russia) On electromagnetic vacuum energy yielding repulsion in sphere-plane geometry.

11:05 – 11:20 Coffee break

Chairperson: Yu.M. Zinoviev

11:20 – 11:45 A. Reshetnyak (Institute of Strength Physics and Materials Science, Tomsk, Russia) BRST-BFV Lagrangian formulations for HS fields subject to two-column Young tableaux.

11:50 – 12:10 H. Takata (Tomsk State Pedagogical University, Russia) Gauge-invariant Lagrangian formulations for mixed-antisymmetric fermionic higher spin fields.

12:15 – 12:40 S. Sushkov (Kazan Federal University, Russia) On certain cosmological model with nonminimal derivative coupling.

12:45 – 13:00 B. Merzlikin (Tomsk State Pedagogical University, Russia) Two-loop low-energy effective action in Abelian supersymmetric Chern-Simons matter models.

13:00 – 15:00 Lunch

15:00 Excursion

1st AUGUST, FRIDAY

Morning Session 9:00 – 13:00

Chairperson: E.A. Ivanov

- 9:00 – 9:30** **A. Galajinsky** (National Research Tomsk Polytechnic University, Russia) Near horizon black hole geometries and integrable models.
- 9:35 – 10:05** **G. Zoupanos** (National Technical University, Athens, Greece) Recent developments and new challenges in unified theories.
- 10:10 – 10:35** **P. Lavrov** (Tomsk State Pedagogical University, Russia) Field theories invariant under one-parameter supersymmetry.
- 10:40 – 11:00** **T.P. Shestakova** (Southern Federal University, Rostov-on-Don, Russia) The role of BRST charge as a generator of gauge transformations in quantization of gauge theories and gravity.

11:00 – 11:20 *Coffee break*

Chairperson: N. Kawamoto

- 11:20 – 11:50** **V. Ivashchuk** (Center for Gravitation and Fundamental Metrology, Moscow, Russia) Quantum billiards with branes.
- 11:55 – 12:25** **T. Inagaki** (Hiroshima University, Japan) Schwinger-Dyson analysis of 1+2 dimensional QED.
- 12:30 – 12:45** **A. Avdoshkin** (Institute of Theoretical and Experimental Physics, Moscow & Moscow Institute of Physics and Technology, Russia) On consistency of hydrodynamic approximation for chiral media.

1st AUGUST, FRIDAY

12:50 – 13:00 E. Kirillova (Tomsk State Pedagogical University, Russia) Quantization of massive non-abelian 2-forms in curved space-time.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 18:05

Chairperson: G. Zoupanos

15:00 – 15:15 T. Snegirev (Tomsk State Pedagogical University, Russia). On massive spin 3/2 field interactions.

15:20 – 15:35 S. Sidorov (Joint Institute for Nuclear Research, Dubna, Russia) N=4 Mechanics in deformed harmonic superspace.

15:40 – 15:55 E. Musaev (Higher School of Economics, Moscow, Russia) Exceptional field theory: E6 supergravity.

16:00 – 16:20 A. Burinskii (Nuclear Safety Institute, Moscow, Russia). Solitonic source of Kerr-Newman solution as a bridge between gravity and quantum theory.

16:20 – 16:45 Coffee break

Chairperson: T. Inagaki

16:45 – 17:05 P. Kazinski (National Research Tomsk State University, Russia) Propagator of a vector field on a stationary slowly varying gravitational background.

17:10 – 17:20 I. Kalinichenko (National Research Tomsk State University, Russia) Non-perturbative corrections to the one-loop free energy induced by a massive scalar field on a stationary slowly varying in space gravitational background.

17:25 - 17:50 V. Khatsimovsky (Institute of Nuclear Physics, Novosibirsk, Russia) An analog of the Regge calculus for the Faddeev gravity.

17:55 – 18:05 P. Chumarov (Kazan Federal University, Russia) Static cylindrically symmetric exact solutions in six-dimensional Kaluza-Klein theory and their properties.

19:00 *Banquet*

2nd AUGUST, SATURDAY

Morning Session 9:00 – 13:00

Chairperson: V.D. Ivashchuk

- 9:00 – 9:20** **X. Meng** (Nankai University, Tianjin, China) Entropy relations of multi-horizon black holes.
- 9:25 – 9:40** **R. Kashapov, N. Khusnutdinov** (Kazan Federal University, Russia) The Casimir effect for graphenes.
- 9:45 – 10:00** **A. Timoshkin** (Tomsk State Pedagogical University, Russia) The representation of dark energy models in the fluid-like form in the FRW universe.
- 10:05 – 10:20** **K. Orekhov** (National Research Tomsk Polytechnic University, Russia) Superintegrable systems associated with near-horizon Myers-Perry-AdS-dS black hole.
- 10:25 – 10:50** **R. Korolev, S.V. Sushkov** (Kazan Federal University, Russia) Scalar wormholes with nonminimal derivative coupling.

10:50 – 11:10 Coffee break

Chairperson: N.R. Khusnutdinov

- 11:10 – 11:30** **A. Zayats** (Kazan Federal University, Russia) Electromagnetic waves in an axion - active ultrarelativistic plasma.
- 11:35 – 11:45** **N. Pletnev** (Institute of Mathematics, Novosibirsk, Russia) Towards unconstrained superfield formulation of N=4 super Yang-Mills theory.
- 11:50 – 12:15** **V. Krykhtin**(Tomsk State Pedagogical University, Russia) Interaction of massive fermionic higher spin fields with constant electromagnetic field.

12:20 – 12:35 **S.V. Abdrashitov, V.A. Bordovitsyn**, (National Research Tomsk State University, Russia), **Yu.L. Pivovarov** (National Research Tomsk Polytechnic University, Russia) Angular momentum of radiation from channeling relativistic electrons and positrons.

12:40 – 13:00 **A. Deriglazov** (Juiz de Fora University, Brazil) Spinning particle for the Dirac equation.

13:00 – 15:00 *Lunch*

Afternoon Session 15:00 – 18:00

Chairperson: S.V. Sushkov

15:00 – 15:15 **V. Epp** (Tomsk State Pedagogical University, Russia) On some features of the dipole field and the field of rectilinearly moving charge.

15:20 – 15:40 **A.A. Magazey, I.V. Shirokov** (Omsk State Technical University, Russia) The method of integration for classical and quantum differential equations on Lie groups based on connection between generating function of canonical transformations and matrix elements of irreducible representations.

15:45 – 16:00 **O. Radchenko** (Tomsk State Pedagogical University, Russia) Jacobi type identities in algebras and superalgebras.

16:05 - 16:15 **P. Moshin** (National Research Tomsk State University, Russia), **A. Reshetnyak** (Institute of Strength Physics and Materials Science, Tomsk, Russia) Finite field dependent BRST-antiBRST transformations in Yang--Mills and Gribov - Zwanziger theories.

16:15 – 16:35 *Coffee break*

Chairperson: V. Epp

- 16:35 – 16:45 V.G. Bagrov, V.A. Bordovitsyn** (National Research Tomsk State University, Russia), **V. Bulenok** (Tomsk State Pedagogical University), **A. Kulikova** (National Research Tomsk State University, Russia) Linear polarization of radiation from an arbitrarily moving relativistic charge.
- 16:50– 17:00 A. Breev, A.V. Shapovalov** (National Research Tomsk State University, Russia) Noncommutative integration of the Dirac equation with an external Yang-Mills gauge field.
- 17:05 – 17:15 T. Boronenko** (Tomsk State Pedagogical University, Russia) Analytical proper elements for the satellites systems.
- 17:20 – 17:30 N. Amirov** (National Research Tomsk State University, Russia) Polarization of the allocated harmonicas in the case of synchrotron radiation. Quantum features of SR.
- 17:35 – 17:45 M.A. Masterova** (Tomsk State Pedagogical University, Russia) Effective potential energy in the field of rotating magnetized sphere.
- 17:50 – 18:00 N. Chuprikov** (Tomsk State Pedagogical University, Russia) Quantum particle scattering on the potential step: Characteristic times for transmission and reflection.

Closure of the Conference 18:00 – 18:15