

PROGRAMM

*of the
International Conference*

QUANTUM FIELD THEORY AND GRAVITY

*Tomsk State Pedagogical University
August 1 – August 7, 2016
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.

1st August, MONDAY

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 K. Stelle (Imperial College, London, UK) Black Holes and Higher Derivative Gravity.

10:35 – 11:05 A. Wipf (Jena University, Germany) Supersymmetric flows for the Effective Action.

11:05 – 11:20 Coffee break

Chairperson: K. Stelle

11:20 – 11:50 E. Ivanov (Joint Institute for Nuclear Research, Dubna, Russia) Higher-order invariants in $N=(1,0)$ and $N=(1,1)$ SYM theories from harmonic superspace.

11:55 – 12:25 E. Buchbinder (University of Western Australia, Crawley, Australia) Towards Heterotic Standard Model on a Calabi-Yau Manifold: an Overview.

12:30 – 13:00 M. Katanaev (Steklov Mathematical Institute, Moscow, Russia), **J. Zanelli** (Centro de Estudios Científicos, Valdivia, Chile) Chern-Simons term in the geometric theory of defects.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 17:50

Chairperson: A. Wipf

15:00 – 15:30 S. Krivonos (Joint Institute for Nuclear Research, Dubna, Russia) Minimal realization of l-conformal

Galilei algebra, Pais-Uhlenbeck oscillators and their deformation.

15:35 – 16:05 A. Galajinsky (Tomsk Polytechnic University, Russia) Near horizon black holes with NUT charges.

16:10 – 16:40 I. Shapiro (Federal University of Juiz de Fora, Brazil) Superrenormalizable models of quantum gravity.

16:40 – 16:55 *Coffee break*

Chairperson: A. Galajinsky

16:55 – 17:15 S. Sidorov (Joint Institute for Nuclear Research, Dubna, Russia) $SU(2|1)$ supersymmetric mechanics and long multiplets.

17:20 – 17:50 R. Bonezzi (University of Mons, Belgium) Generalized Frobenius Chern-Simons gauge theory.

19:00 *Welcome Party*

2nd August, TUESDAY

Morning Session 9:00 – 13:00

Chairperson: S. Krivonos

9:00 – 9:30 Yu. Zinoviev (Institute for High Energy Physics, Protvino, Russia) On the Fradkin-Vasiliev formalism in three dimensions.

9:35 – 10:05 N. Boulanger (University of Mons, Belgium) Issues on higher spin theory and duality.

10:10 – 10:40 S. Fedoruk (Joint Institute for Nuclear Research, Dubna, Russia) Twistor formulation of massive higher spin particle

10:45 – 11:05 V. Krykhtin (Tomsk State Pedagogical University, Russia) Quartic interaction vertex in the massive integer higher spin field theory in a constant electromagnetic field.

11:05 – 11:20 Coffee break

Chairperson: N. Boulanger

11:20 – 11:50 E. Skvortsov (L&M University, Munich, Germany and Lebedev Physical Institute, Moscow, Russia) Exceptional $F(4)$ Higher-Spin Theory at One-Loop and other Tests of the Duality.

11:55 – 12:25 E. Joung (Seoul National University, Korea) One-Loop Test of Free Adjoint Model Holographies.

12:30 – 13:00 M. Grigoriev (P.N. Lebedev Physical Institute, Moscow, Russia) Remarks on conformal higher spins in curved background.

13:00 – 15:00 Lunch

Afternoon Session 15:30 – 18:15

Chairperson: E. Ivanov

15:00 – 15:30 S. Kuzenko (University of Western Australia, Crawley, Australia) Partial supersymmetry breaking on curved backgrounds.

15:35 – 16:05 K. Stepanyantz (Moscow State University, Russia) Renormalization of supersymmetric theories with the higher derivative regularization.

16:10 – 16:30 B. Merzlikin (Tomsk State Pedagogical University, Russia) Divergences in the abelian six-dimensional gauge theory.

16:30 – 16:45 Coffee break

Chairperson: E. Joung

16:45 – 17:15 . D. Francia (Scuola Normale Superiore and INFN, Pisa, Italy) Cubic interactions for Maxwell-like higher spins.

- 17:20 – 17:50 . M. Taronna** (Universite Libre de Bruxelles, Belgium) Cubic interactions in Higher-Spin Theories from CFT.
- 17:55 – 18:15 . T. Snegirev** (Tomsk State Pedagogical University, Russia) Unfolded formulation of massive higher spin supermultipletst in 3D.

3rdAugust, WEDNESDAY

Morning Session 9:00 – 13:00

Chairperson: S. Kuzenko

- 9:00 – 9:30. G. Zoupanos** (National Technical University, Athens, Greece) Higher-Dimensional Unified Theories with continuous and fuzzy coset spaces as extra dimensions.
- 9:35 – 10:05. A. Isaev** (Joint Institute for Nuclear Research, Dubna, Russia) R-matrix, star-triangle relations and Yangians for conformal algebras.
- 10:10 – 10:35 T. Morozumi** (Hiroshima University, Japan) Time dependence of particle number asymmetry induced with CP violating interaction.
- 10:40 – 11:05 S. Nicolis** (François Rabelais University, Tours, France) Supersymmetric constraints and stochastic processes: controlling the fluctuations in worldvolume and target space.

11:05 – 11:20 Coffee break

Chairperson: T. Morozumi

- 11:20 – 11:50 E. Musaev** (Max-Planck-Institute for Gravitational Physics, Potsdam, Germany) Exotic branes from double field theory monopole.
- 11:55 – 12:25 I. Bakhmatov** (Kazan Federal University, Russia) Fermionic T-duality in massive type IIA supergravity.
- 12:30 – 13:00 R. Rahman** (Max Planck Institute for Gravitational

Physics, Potsdam-Golm, Germany) Comments on Higher-Spin Fields in Nontrivial Backgrounds.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 18:00

Chairperson: A. Isaev

15:00 – 15:30 I. Batalin (Lebedev Physical Institute, Moscow, Russia, **P. Lavroy** (Tomsk State Pedagogical University, Russia) Representation of a gauge field via intrinsic "BRST" operator.

15:35 – 16:05 A. Burinskii (Institute of Nuclear Safety, Moscow, Russia) Supersymmetric source of the Kerr-Schild geometry specifies new path to the consistency of gravitation and quantum theory.

16:10 – 16:30 N. Kozyrev (Joint Institute for Nuclear Research, Dubna, Russia) $N=4$, $d=3$ Born-Infeld theory in component approach.

16:30 – 16:45 Coffee break

Chairperson: G. Zoupanos

16:45 – 17:05 . C. Sleight (Max Planck Institute for Physics, Munich, Germany) Quartic Interactions in Higher-Spin Theory from CFT.

17:10 – 17:30 . H. Takata (Tomsk State Pedagogical University, Russia) An unified approach for massive integer and half-integer higher spin field theory.

17:35 – 17:55 A. Reshetnyak (Institute of Strength Physics and Materials Science, Tomsk, Russia) Lagrangian quantization rules for BRST-BFV Lagrangian formulations of totally symmetric HS fields on flat and AdS spaces.

4st AUGUST, THURSDAY

Morning Session 9:00 – 13:00

Chairperson: I. Shapiro

- 9:00 – 9:30** **S. Sushkov** (Kazan Federal University, Russia)
General dynamical properties in a scalar field model
with nonminimal kinetic coupling
- 9:35 – 10:05** **Ya. Shnir** (Joint Institute for Nuclear Research, Dubna,
Russia) Thermodynamics of black holes with non-
Abelian hairs in AdS spacetime.
- 10:10 – 10:35** **A. Deriglazov** (Federal University of Juiz de Fora,
Brazil) Mathisson-Papapetrou-Tulczyjew-Dixon
equations in ultra-relativistic regime and
gravimagnetic moment.
- 10:40 – 11:00** **P. Kazinski** (Tomsk State University, Tomsk, Russia)
Unambiguous one-loop effective action.

11:00 – 11:15 Coffee break

Chairperson: S. Sushkov

- 11:15 – 11:45.** **Y. Aldabergenov, S. Ketov** (Tokyo Metropolitan
University and University of Tokyo, Japan)
Cosmological inflation and grand unification.
- 11:50 – 12:10.** **A. Rudenko** (Institute of Nuclear Physics,
Novosibirsk, Russia) Separated matter and antimatter
domains with vanishing domain walls.
- 12:15 – 12:35.** **H. Sakamoto** (Hiroshima University, Japan) Inflation
in Gauged Nambu-Jona-Lasinio model.
- 12:40 – 13:00.** **R. Kashapov** (Kazan Federal University, Russia)
Casimir-Polder and Casimir effects for layered
system.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 17:10

Chairperson: P. Lavrov

15:00 – 15:20. A. Avdoshkin (Institute of Theoretical and Experimental Physics, Moscow; Moscow Institute of Physics and Techniogy, Russia) Microscopic description of chiral vortical effect.

15:25 – 15:40. S. Aleshin (Moscow State University, Russia) Structure of loop integrals, regularized by the dimensional reduction, in N=1 SQED.

15:45 – 16:00. A. Kazantsev (Moscow State University, Russia) Verification of NSVZ-type relations between the RG functions by calculating Feynman supergraphs in the three-loop approximation.

16:00 – 16:15 Coffee break

Chairperson: E. Musaev

16:15 – 16:30. K. Orekhov (Tomsk Polytechnic University, Russia) N=2 superparticle near black hole horizons.

16:35 – 16:50. A. Magazev, I. Shirokov (Omsk State Technical University, Russia) The method of cohomological inclusion of an external electromagnetic field in the relativistic wave equations of Dirac and Klein-Gordon.

16:55 – 17:10. E. Mosman (Tomsk State University, Russia) Symmetry algebra of Dirac equation on Lie groups.

17:15 – 17:30. A.V. Shapovalov, A. Breev (Tomsk State University, Russia) Vacuum quantum effects and noncommutative symmetry

17:35 – 17:50. A.I. Breev, D. Ivanov (Tomsk State University, Russia) Noncommutative integration method and partition functions on the Heisenberg-Weyl group.

17:55 – 18:10. T. Adorno (Tomsk State University, Russia) Vacuum instability by a peak electric field as a t-electric

potential step.

19:00 *Banquet*

5th AUGUST, FRIDAY

Morning Session 9:00 – 13:00

Chairperson: S. Nicolis

- 9:00 – 9:20.** **V. Khatsimovsky** (Institute of Nuclear Physics, Novosibirsk, Russia) GL(4,R) representation of the gravity action on the piecewise flat spacetime.
- 9:25 – 9:45.** **P. Fiziev** (Joint Institute for Nuclear Research, Dubna, Russia) New Physics in GRB150914.
- 9:50 – 10:05** **T. Boronenko** (Tomsk State Pedagogical University, Russia) Lie transformations algorithm for the autonomous Birkhoffian systems.
- 10:10 – 10:25.** **N. Chuprikov** (Tomsk State Pedagogical University, Russia) On the one-particle formulation of the Dirac theory
- 10:30 – 10:45.** **Yu. Kunashenko** (Tomsk State Pedagogical University, Russia) Gravitational radiation from channeled particles.
- 10:50 – 11:00.** **I. Fartushev** (Tomsk State Pedagogical University, Russia) Single-photon positron annihilation on bound electron.

11:00 – 11:15 **Coffee break**

Chairperson: A. Burinskii

- 11:15 – 11:40.** **P. Tretyakov** (Joint Institute for Nuclear Research, Dubna, Russia) Dynamical stability of extended teleparallel gravity.
- 11:45 – 12:05.** **A. Addazi** (University of L'Aquila, LNGS INFN,

Italy) Anti evaporation in extended theories of gravity.

12:10 – 12:35. M. Khurshudyan (Institute for physical research, Yerevan, Armenia) On holographic dark energy models with Nojiri-Odintsov cut-off in general relativity.

12:40 – 13:00 D. Saez Gomez (Institute of Astrophysics, Lisbon, Portugal and Institute of Space Sciences, Barcelona, Spain) Analysing viable modified gravities as an alternative to dark energy.

13:00 – 15:00 Lunch

Afternoon Session 15:00 – 18:00

Chairperson: A. Addazi

15:00 – 15:20. A. Zayats (Kazan Federal University, Russia) On the self-force in the Bopp-Podolsky electrodynamics on the curved spacetime background.

15:25 – 15:45. K. Osetrin (Tomsk State Pedagogical University, Russia) Pure radiation in space-time models that admit a separation of variables in the eikonal equation.

15:50 – 16:10. A. Timoshkin (Tomsk State Pedagogical University, Russia) Cosmological models coupled with dark matter in a dissipative universe.

16:15 – 16:30. V. G. Bagrov^{1, 2, 3}, D. M. Gitman^{1, 3, 4}, A. D. Levin³, A. S. Loginov¹, A. D. Saprykin¹ (¹Tomsk State University, Russia; ²Institute of High Current Electronics, SB RAS, Tomsk, Russia; ³Institute of Physics, University of São Paulo, Brazil; ⁴P.N. Lebedev Physical Institute, Moscow, Russia) Effective width of the synchrotron radiation spectrum.

16:30 – 16:45 Coffee break

Chairperson: Ya. Shnir

- 16:45 – 17:00. S. Abdrashitov** (Tomsk Polytechnic University, Russia) Channeling radiation as a source of high energy twisted photons.
- 17:00 – 17:15. V.A. Bordovitsyn, A.V. Kulikova** (Tomsk State University, Russia) Spin as a source of relativistic radiation of electromagnetic angular momentum.
- 17:20 – 17:35. J. Janz** (Tomsk Polytechnic University, Russia) Radiation of a charged particle in periodically modulated crystal.
- 17:40 – 18:00. V. Epp, M.A. Masterova** (Tomsk State Pedagogical University, Russia) The field of rotating asymmetric source in spiral coordinate system.

6th AUGUST, SATURDAY

Morning Session 9:00 – 13:00

Chairperson: M. Katanaev

- 9:00 – 9:30. S. Odintsov** (Catalonia Institute for Cosmic Research, Barcelona, Spain) The unified inflation-dark energy universe evolution in modified gravity.
- 9:35 – 10:05. S. Capozziello** (University of Napoli "Federico II", Italy) Massive, massless and ghost models of Extended Gravity.
- 10:10 – 10:35. M. De Laurentis** (Tomsk State Pedagogical University, Russia) Cosmological application of $f(R,G)$ gravity.
- 10:40– 11:00. V. Oikonomou** (TUSUR University, Tomsk, Russia, Tomsk State Pedagogical University, Russia) Some Classes of Gravitational Shock Waves from Higher Order Theories of Gravity.

11:00 – 11:15 Coffee break

Chairperson: S. Odintsov

- 11:15 – 11:35. A. Makarenko** (Tomsk State Pedagogical University, Russia) Bounce cosmology in Gauss-Bonnet gravity.
- 11:35 – 11:45. E. Osetrin** (Tomsk State Pedagogical University, Russia) Space-time models with dust matter, admitting the integration of the Hamilton-Jacobi equation by separation of variables method.
- 11:50 – 12:00. A. Kozlov** (Tomsk State University, Russia) Vacuum polarization in Bianchi IX cosmological model.
- 12:15 – 12:25. A. Filippov** (Tomsk State Pedagogical University, Russia) Stackel spaces with pure radiation and cosmological constant in Einstein theory of gravity.

Closure of the Conference 12:25