

VIII-th International Conference "SOLITONS,  
COLLAPSES AND TURBULENCE: Achievements,  
Developments and Perspectives" (SCT-17) in honor of  
Evgenii Kuznetsov's 70th birthday  
May 21 - May 25, 2017

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Program

**CHAIRMAN OF THE CONFERENCE:**

- Vladimir E. ZAKHAROV, Lebedev Institute, Moscow; Landau Institute, Chernogolovka; Novosibirsk State University, Russia & Arizona University, Tucson, USA;

**ORGANIZING COMMITTEE:**

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- Gregory FALKOVICH (Weizmann Institute of Science, Rehovot, Israel)
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- Mikhail P. FEDORUK, Novosibirsk State University, Novosibirsk, Russia;
- Vladimir V. LEBEDEV, Landau Institute, Chernogolovka, Russia;
- Alexandre V. MIKHAILOV, Leeds University, Leeds, UK;
- Jens J. RASMUSSEN, Riso National Laboratory, DTU, Denmark;
- Kirill P. ZYBIN, Lebedev Physical Institute, Moscow Russia.

Saturday, 20 May

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17:00-19:00 Registration at the hotel Chernogolovka

Sunday, 21 May

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8:30-9:15 Registration at the Landau Institute

09:15-09:30 Welcome

**Chairman - V.E. Zakharov**

09:30-10:00 **R. Bury, A.V. Mikhailov, J.P. Wang**

*Wave fronts and cascades of soliton interactions in the periodic two dimensional Volterra system*

10:00-10:30 **S.K. Turitsyn**

*Solitons in optical communications and fibre lasers: New dawn*

10:30-11:00 **VI.V. Kocharovsky , E.R. Kocharovskaya, A.S. Gavrilov, E.M. Loskutov, D.M. Mukhin, A.M. Feigin**

*Dynamical field patterns of superradiant lasing and empirical modes with a variable spatial-temporal structure*

**11:00-11:20 Coffee break**

**Chairman - A.V. Mikhailov**

11:20-11:50 **P.G. Grinevich, P.M. Santini**

*Direct problem for the defocusing NLS equation*

11:50-12:20 **G.A. Alekseev**

*Collision of gravitational and electromagnetic solitons with strong electromagnetic waves of arbitrary amplitudes and profiles in the expanding background space-time*

12:20-12:50 **A.A. Gelash, D.S. Agafontsev**

*Statistic of strongly interacting soliton gas and formation of rogue waves*

**12:50-14:10 Lunch**

**Chairman - P.G. Grinevich**

14:10-14:40 **A.C. Newell**

*Elastic sheets, phase surfaces and pattern universes*

14:40-15:10 **V.P. Drachev, Hari Bhatta, Ali Aliev**

*Spin-polarized plasmons in magnetic nanoparticles*

15:10-15:40 **A. Balakin, A.G. Litvak, V.A. Mironov, S. Skobelev**

*Collapse of the wave field in a system of weakly coupled light guides*

15:40-16:10 **I.A. Remizov , A.A. Levchenko, L.P. Mezhov-Deglin**

*Evolution of the energy flux in a system of nonlinear surface waves in He-II*

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Sunday, 21 May

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16:10-16:30 Coffee break

**Chairman - P.M. Lushnikov**

16:30-17:00 **A.I. Dyachenko**

*Nonlinear Nonlocal Equation for Envelope of Water Waves*

17:00-17:30 **A.I. Dyachenko, D.I. Kachulin, V.E. Zakharov**

*Soliton Turbulence and Water Wave Equations (Supercompact versus Fully Nonlinear)*

17:30-18:00 **L.P. Mezhov-Deglin A.A. Levchenko, I.A. Remizov**

*Quantum analog of the Kelvin-Helmholtz instability on the surface of superfluid He-II*

18:00-20:00 **Welcome Reception**

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Sunday, 21 May

Monday, 22 May

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**Chairman - A.C. Newell**

09:00-09:30 Vladimir Zakharov, Sergey Dyachenko  
*Variational approach to the problem of integrability of deep water wave equations*

09:30-10:00 L. Piterbarg  
*Finite size Lyapunov exponent for stochastic flows modeling 2D turbulence*

10:00-10:30 E. Pelinovsky  
*Nonlinear waves and modulational instability in high-order Korteweg-de Vries equations*

**10:30-10:50 Coffee break**

**Chairman - E. Pelinovsky**

10:50-11:20 P.M. Lushnikov  
*Dynamics of singularities in 2D hydrodynamics with free surface through time dependent conformal maps*

11:20-11:50 A. Slunyaev, M. Klein, G. Clauss  
*Laboratory and numerical study of intense envelope solitons of water waves*

11:50-12:20 S. Nazarenko, B. Gallet, B. Dubrelle  
*Wave Turbulence in Cosmology and Particle Physics*

12:20-12:50 V. Mezentsev, O. Zolotov, V. Grigoryan  
*Genuine low latency pipeline parallel algorithm for numerical modelling of 1D evolution equations*

**12:50-14:10 Lunch**

**Chairman - S. Nazarenko**

14:10-14:40 F. Calogero, O. Bihun, M. Bruschi  
*Zeros of polynomials and solvable nonlinear evolution equations*

14:40-15:10 N.M. Zubarev, E.A. Kochurin  
*Nonlinear waves at the interface between two ideal fluids in a horizontal electric field in the presence of tangential discontinuity of the velocity*

15:10-15:40 L.V. Bogdanov  
*SDYM equations on the self-dual background*

**15:40-16:00 Coffee break**

**Chairman - I.R. Gabitov**

16:00-16:30 V.B. Efimov  
*Tuning forks as a generation of quantum turbulence in superfluid turbulence*

Monday, 22 May

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- 16:30-17:00 A.P. Protogenov, R. Turkevich, E. Chulkov  
*Landau damping in Dirac semimetals and novel collective excitations*
- 17:00-17:30 E.M. Maslov, V. Koutvitsky  
*Instability of an oscillating scalar field in expanding Universe*
- 17:30-18:00 V.V. Geogjaev  
*Numerically solving the kinetic equation for deep water gravity waves:  
the new approach*

Tuesday, 23 May

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Chairman - N.N. Rosanov

09:00-09:30 I.M. Sigal

*Blowup Dynamics in the Keller-Segel Model of Chemotaxis*

09:30-10:00 L. Hadzievski

*Nonlinear localized flat-band modes in pseudo-spinor diamond chain*

10:00-10:30 E.V. Ermanyuk T. Dauxois, C. Brouzet, I. Sibgatullin, J. Sylvain

*Triadic instability in internal wave attractors: scale effect*

10:30-10:50 Coffee break

Chairman - S.K. Turitsyn

10:50-11:20 V.V. Lebedev

*Coherent structures in 2d turbulence*

11:20-11:50 A. Chabchoub

*Observation of hydrodynamic solitons and breathers*

11:50-12:20 S. Dobrokhotov, V. Nazaikinskii

*Fock quantization of singular trajectories, Carrier-Greenspan transformation, and the run-up problem in the framework of shallow water models*

12:20-12:50 S.I. Badulin, V.E. Zakharov

*On universality of spectral distributions of sea swell: estimates and numerical simulations*

12:50-14:10 Lunch

Chairman - V.K. Mezentsev

14:10-14:40 S. Fedorov, N.N. Rosanov, N. Veretenov

*Topological Bright and Dark 2D and 3D-Dissipative Optical Solitons: Internal Structure, Symmetry, and Motion*

14:40-15:10 J. Madsen, V. Naulin, A.H. Nielsen, J.J. Rasmussen

*Plasma turbulence and transport barriers*

15:10-15:40 D.S. Agafontsev, E.A. Kuznetsov, A.A. Mailybaev

*Development of high-vorticity structures in incompressible 3D Euler equations: comparison with exact solution*

15:40-16:00 Coffee break

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Tuesday, 23 May

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**Chairman - V.V. Kocharovsky**

16:00-16:30 **N.S. Erokhin, N.N. Zolnikova, L.A. Mikhailovskaya**

*Resonance tunneling of electromagnetic waves through inhomogeneous plasma with small scales structures*

16:30-17:00 **V.P. Ruban**

*The dynamics of quantum vortices in a quasi-two-dimensional Bose-Einstein condensate with two "holes"*

17:00-17:30 **E.A. Kochurin, N.M. Zubarev**

*Nonlinear waves on the boundary of finite depth dielectric liquid in a strong tangential electric field*

17:30-18:00 **G. Alfmov**

*An algorithm for demonstrative computation of solitons in NLS-type models*

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Tuesday, 23 May



Wednesday, 24 May

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Chairman - A.M. Kamchatnov

- 09:00-09:30 V. Steinberg  
*Search for direct relation between elastic turbulence and turbulent drag reduction*
- 09:30-10:00 V. Krasnoselskikh, A. Voshchepynets, A. Volokitin, C. Krafft  
*Beam plasma interaction in strongly randomly inhomogeneous plasma*
- 10:00-10:30 F. Abdullaev, M. Salerno  
*Compactons in BEC with periodically modulated interactions in deep optical lattices*

10:30-10:50 Coffee break

Chairman - I.V. Kolokolov

- 10:50-11:20 G. Falkovich  
*Wonders of viscous electronics*
- 11:20-11:50 I.R. Gabitov, A. Maimistov  
*Surface Waves on the Interface of Hybrid Metamaterials*
- 11:50-12:20 I.V. Oladyshkin, S.B. Bodrov . Yu.A. Sergeev, M. D. Tokman, A.N. Stepanov, A.I. Korytin  
*Optical emission of graphene due to Landau-Zener transitions in strong THz field*
- 12:20-12:50 F. Dias, F. Fedele, J. Brennan, S. Ponce de Leon, J. Dudley  
*Real world ocean rogue waves explained without the modulational instability*

12:50-14:10 Lunch

Chairman - J.J. Rasmussen

- 14:10-14:40 I.V. Kolokolov  
*Evolution of magnetic field fluctuations in two-dimensional chaotic flow*
- 14:40-15:10 K.P. Zybin  
*Singularity in Navier-Stokes equation under an action of non-uniform, random force*
- 15:10-15:40 S.S. Vergeles  
*Large vortices generation by surface waves excited on a free surface*

15:40-16:00 Coffee break

Chairman - A. Slunyaev

- 16:00-16:30 A.K. Pogrebkov  
*Symmetries of the Hirota difference equations*
- 16:30-17:00 V.M. Kontorovich  
*Stimulated scattering on surface waves and pulsar radiation*

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Wednesday, 24 May

Wednesday, 24 May

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- 17:00-17:30 **E.V. Sereshchenko, E.A. Kuznetsov**  
*Isotropization of two-dimensional hydrodynamic turbulence*
- 17:30-18:00 **S.A. Aliev, S.V. Filatov A.A. Levchenko, D.A. Khramov**  
*Experimental observation of nonlinear generation of vorticity by gravity  
surface waves*
- 19:00 **Conference dinner**

Thursday, 25 May

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**Chairman - V.V. Lebedev**

09:00-09:30 V. Naulin, F. Hariri, J. J. Rasmussen

*Nonlocal effects in transport: The role of turbulence energy*

09:30-10:00 M.D. Bustamante, B.P. Murray

*Energy flux enhancement, intermittency and turbulence via triad Fourier phase dynamics in dispersive and non-dispersive PDEs*

10:00-10:30 G. Bisnovatyi-Kogan

*Self-similar solution for the strong shock in a uniformly expanding universe*

**10:30-10:50 Coffee break**

**Chairman - E.A. Kuznetsov**

10:50-11:20 A.M. Kamchatnov

*Polarization waves in a two-component Bose-Einstein condensate*

11:20-11:50 V.V. Kiselev, A.A. Raskovalov

*Solitons in spiral structure of magnets and multiferroics*

11:50-12:20 B. Baizakov, Sh. R.Otajonov, K. K. . Ismailov

*On stability of multi-soliton bound states in dispersion-managed optical fibers*

12:20-12:50 S. Konstantenou-Rizos

*Discrete integrable systems and lifts to Yang-Baxter maps: Grassmann extension scheme*

**12:50-14:10 Lunch**

**Chairman - M.D. Bustamante**

14:10-14:40 A.I. Zenchuk

*Multidimensional linearizable n-wave type equation*

14:40-15:10 S. Roudenko, L.G. Farah, Holmer J.

*Instability of solitary waves in Zakharov-Kuznetsov equation*

15:10-15:40 A.A. Levchenko, L.P. Mezhev-Deglin, A.A. Pelmenev

*Visualization of the surface patterns in superfluid He-II*

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Thursday, 25 May

Thursday, 25 May

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15:40-16:00 Coffee break

**Chairman - A.I. Dyachenko**

16:00-16:30 **S. Wabnitz**

*Spatiotemporal beam nonlinear dynamics in multimode fiber*

16:30-17:00 **S. Minaev, R. Fursenko**

*Propagation Velocity of Flame Balls Array in Low Lewis Number Gas Premixture*

17:00-17:30 **O.V. Zubareva, N.M. Zubarev, N.B. Volkov**

*Equilibrium configurations of an uncharged conducting liquid jet in a transverse electric field*

17:30-18:00 **E.A. Kuznetsov, D.S. Agafontsev, A.A. Mailybaev**

*Towards developed hydrodynamic turbulence*

18:00 **Conference closing**

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Thursday, 25 May