

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:**

- Alexandre I. DYACHENKO (Landau Institute, Russia) (Chairman)
- Gregory FALKOVICH (Weizmann Institute of Science, Rehovot, Israel)
- Pavel M. LUSHINKOV (University of New Mexico Albuquerque, USA) (Vice Chairman)
- Sergei K. TURITSYN (Aston University, Birmingham, UK)

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- Alan NEWELL, Arizona University, Tucson, USA (Chairman);
- 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 A.C. Newell

*Elastic sheets, phase surfaces and pattern universes*

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

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

10:30-11:00 VI.V. Kocharovskiy , E.R. Kocharovskaya, A.S. Gavrillov, 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 - P.G. Grinevich

11:20-11:50 R. Bury, A.V. Mikhailov, J.P. Wang

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

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 - A.V. Mikhailov

14:10-14:40 P.G. Grinevich, P.M. Santini

*Direct problem for the defocusing NLS equation*

14:40-15:10 V.P. Drachev, A. Hari

*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

Sunday, 21 May

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16:10-16:30 Coffee break

Chairman - P.M. Lushnikov

16:30-17:00 L. Hadzievski

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

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

*Dissipation of water waves due to wave breaking*

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

*Visualization of the surface patterns in 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 V.E. Zakharov

*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*

Monday, 22 May

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Tuesday, 23 May

- 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 F. Abdullaev, M. Salerno  
*Compactons in BEC with periodically modulated interactions in deep optical lattices*
- 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 A.I. Dyachenko  
*Nonlinear Nonlocal Equation for Envelope of Water Waves*
- 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*

Tuesday, 23 May

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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 V.S. Gerdjikov

*Symmetric spaces and new 2-component integrable NLS equations*

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

Chairman - V.V. Kocharovskiy

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. Alfimov

*TBA*

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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 A.K. Pogrebkov  
*Symmetries of the Hirota difference equations*

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. Gabbitov  
*TBA*
- 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 - I.R. Gabbitov

- 16:00-16:30 V.B. Efimov  
*Tuning forks as a generation of quantum turbulence in superfluid turbulence*
- 16:30-17:00 V.M. Kontorovich  
*Stimulated scattering on surface waves and pulsar radiation*



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 J. Madsen, V. Naulin, A.H. Nielsen, J.J. Rasmussen  
*Plasma turbulence and transport barriers*
- 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. Bisnovaty-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 O.V. Zubareva, N.M. Zubarev, N.B. Volkov  
*Equilibrium configurations of an uncharged conducting liquid jet in a transverse electric field*
- 14:40-15:10 S. Roudenko, L.G. Farah, H. Justin  
*Instability of solitary waves in Zakharov-Kuznetsov equation*
- 15:10-15:40 L.P. Mezhov-Deglin A.A. Levchenko, I.A. Remizov  
*Quantum analog of the Kelvin-Helmholtz instability on the surface of 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 **V.V. Vladimirov**

*Vibrodynamics of dynamical systems*

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

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

17:00-17:30 **S. Wabnitz**

*Spatiotemporal beam nonlinear dynamics in multimode fiber*

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