



18-th INTERNATIONAL CONFERENCE
"FLUXES AND STRUCTURES IN FLUIDS"

Kaliningrad, June 23-26, 2015

SCIENTIFIC PROGRAM:

- Dynamic processes in the Ocean and the Atmosphere: from global to microscales;
- Waves, vortices, coherent structures, turbulence: transport and accumulation of substances on interfaces;
- Impact of physical, chemical and biological effects on formation of spatial structures in fluids;
- Analytical, numerical and laboratory modelling of environmental systems and processes;
- Conventional and novel instruments;
- Environmental and technological applications;
- Special young scientists session.

CONFERENCE SPONSORS:

RUSSIAN ACADEMY OF SCIENCES:

PRESIDIUM OF THE RUSSIAN ACADEMY OF SCIENCES

DEPARTMENT OF ENERGY, MACHINERY, MECHANICS AND CONTROL
PROCESS

RUSSIAN FOUNDATION FOR BASIC RESEARCH (15-05-20257-g)

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CONFERENCE ORGANIZING COMMITTEE

Prof. P.P. Chernyshkov, A.P. Chugainova, prof. V.A. Gritsenko,
N.A. Kostrikova (chair), A.M. Lakhtik, L.N. Nikitina, prof. N.Ya. Sinyavsky,
R.K. Suleymanov (co-chair).





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18-th INTERNATIONAL CONFERENCE
"FLUXES AND STRUCTURES IN FLUIDS"

will be held in Hotel "VOLNA"
236000, Russia, Kaliningrad region, Svetlogorsk,
Kaliningradsky avenue, 68 b

June 23-26, 2015



CONFERENCE WORKGROUP

A.Yu. Ilyinykh, A.I. Korshunov, A.I. Prostomolotov, E.V. Stepanova





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SCHEDULE OF THE
18-th INTERNATIONAL CONFERENCE
"FLUXES AND STRUCTURES IN FLUIDS"

Tuesday, June 23 – Friday, June 26, 2016

9:30 – 15:00 **Registration**

9:30 – 18:30 **Sections**

14:00 – 15:00 **Lunch**

**All the talks will be presented in the Hall
of the hotel "VOLNA"**

CONFERENCE SCIENTIFIC COMMITTEE

V.G. Baydulov (Rus) – Scientific Secretary, Yu.D. Chashechkin (Rus) – Chair,
J.-H. Chen (Twn), J.H. Fernando (USA), P. Fraunie (Fra), Y. Fukumoto (Jap),
U. Harlander (Ger), G.J.F. van Heijst (Nld), A.V. Ivanov (Rus), L.N. Karlin
(Rus), R.D. Kosyan (Rus), V.B. Lobanov (Rus), I.I. Mohov (Rus),
R.I. Nigmatulin (Rus), V.I. Nikishov (Ukr), J.M. Redondo (Spain),
V.M. Somsikov (Kaz), S.Ph. Urmancheev (Rus), V.A. Volkogon (Rus)

Talks types

Invited Plenary lectures – 30 minutes (including questions)

Oral presentations – 20 minutes (including questions)

Young Scientists presentations – 15 minutes (including questions)

Annotation poster presentations – 5 minutes (including questions)



Tuesday, June 23, 2015

16:00 – 16:30 **Opening ceremony of the Conference**
Greetings : Professor

16:30 – 17:00 *Prostomolotov A.I., Verezub N.A.* The Features of Flows in
Invited Molten Metal and Organic Substances during Crystallization

17:00 – 17:20 *Prostomolotov A.I., Verezub N.A., Lavrentev M.G., Osvenskii*
V.B. The Plastic Flows in Hot Forming Processes

17:20 – 17:40 *Nikulin V.V.* Motion of the Turbulent Buoyancy Vortex Rings

17:40 – 18:00 *Димитриева Н.Ф.* Влияние кривизны клиновидного
 препятствия на структуру течений, индуцированных
 диффузией



18:00 ***Ice-Break Reception***

Wednesday, June 24, 2015

1-st Morning section, June 24, 2015

9:30 – 9:45 *Korshunov A.I.* Oscillations of Falling Drop

9:45 – 10:00 *Stepanova E.V.* Mass Transfer in the Vortex Currents Visualized
 by Dye Injection

10:00 – 10:20 *Orlova N.S.* Application of OpenFoam for Studying the
 Vibrofluidized Bed Dynamics

10:20 – 10:40 *Bulatov V.V., Vladimirov Yu.V.* Wave Dynamics of Stratified
 Ocean with Non-Uniform Depth

10:40 – 11:00 *Akhmetov A.T., Zhurov A.A., Urmancheev S.F.* Propagation of
 Shock Waves in Bulk Gas-Water-Saturated Media

11:00 – 11:30 *Chashechkin Yu.D.* Flows Induced by Fluxes of Buoyancy
Invited Dynamics and Structure



11:20 – 11:40 ***Coffee- break***

Wednesday, June 24, 2015

2-nd Morning section, June 24, 2015

- | | |
|----------------------|---|
| 11:50 – 12:20 | <i>Chugainova A.P.</i> Spectral Stability of Special Discontinuities |
| 12:20 – 12:40 | <i>Churilov S.M.</i> Linear Stability of a Three-Layer Stratified Shear Flow with an Inflection-Free Velocity Profile |
| 12:40 – 13:00 | <i>Petkilev P.S.</i> The Spatial Distribution of Mesoscale Eddy Activity in the Drake Passage and the Scotia Sea for the Period 1992-2012 |



13:00 – 14:00 *Lunch*

Wednesday, June 24, 2015

1-st Afternoon section, June 24, 2015

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|--|---|
| 14:00 – 14:30
<i>Invited</i> | <i>Abarzhi S.I.</i> Scale Coupling in Richtmyer-Meshkov Flows |
| 14:30 – 14:50 | <i>Maryshev B.S.</i> The Forming, Evolution and Stability of Flow Structures within the Solutal Horton-Rogers-Lapwood Problem with Immobilization |
| 14:50 – 15:10 | <i>Reutov V.P., Rybushkina G.V.</i> Transformations of the Convective Structures in a Cooled Water Layer in the Presence of a Surfactant and a Drift Flow |
| 15:10 – 15:30 | <i>Churkin S.A., Kravtsova A.Yu., Pervunin K.S., Timoshevskiy M.V., Markovich D.M.</i> Influence of a Hydrofoil Surface Morphology on Inception and Evolution of Cavities |
| 15:30 – 15:50 | <i>Rozanova O.S., Turzynski M.K., Yu J.L.</i> Study of Nonlinear Stability of Axisymmetrical Vortex in Compressible Fluid with Respect to the Symmetry Breaking |



15:10 – 15:30 *Coffee- break*

Wednesday, June 24, 2015

2-nd Afternoon section, June 24, 2015

15:30 – 18:00 Presentation of the annotation talks and posters

Akperov M.G., Semenov V.A., Mokhov I.I., Lupo A. The Impact of the Arctic Sea Ice Retreat on Extratropical Cyclones and Anticyclones over Northern Eurasia: Atmospheric Model Simulations

Alabuzhev A.A., Shklyaev S.V., Khenner M. Longwave Marangoni Convection in a Thin Film Heated from Below

Alabuzhev A.A., Shklyaev S.V., Khenner M. Marangoni Convection in a Thin Film under Vertical Vibration

Altazin T., Golay F., Fraunié P. 3D Parallel Two Phase Flow Modelling of Breaking Waves

Bardakov R.N. The Dynamics of Fluid Flow around a Rotating Disc in a Stratified Fluid

Baydulov V.G., Levitskiy V.V. Comparative Analysis of Shadow-Schlieren Technique for the Visualization of the Field of Monochromatic Internal Waves

Budnikov A.A. The Specifics of the Different Solid Markers Motion on the Vortex Surface

Dosaev A.S., Shishina M.I., Troitskaya Yu.I. The Influence of Constant Vorticity on Nonlinear Surface Waves Dynamics

Druzhinin O.A., Ostrovsky L.A. On the Interaction Between Small-Scale Turbulence and Internal Gravity Waves

Evdokimov I.E. Polyhedral Meshes and Sliding Interfaces in the 3-Dimensional, Non-Stationary Numerical Simulation of the Rotor Hydrodynamics

Germankova N.U., Shokurov M.V. Numerical Simulation of Sea Breeze Gravity Current

Gimaltdinov I.K., Kildibaeva S.R. Dynamics of Multiphase Submerged Jet Considering Hydrate Formation

Gorodtsov V.A. Wave Drag on Bodies Moving Rapidly in Uniformly Stratified Fluid

Wednesday, June 24, 2015

2-nd Afternoon section, June 24, 2015

Isachenko I.A., Bityutskiy V.I., Gritsenko V.A. On the Features of Dynamics and Mixing in the Propagation of Density Currents from a Pulsed Source

Kistovich A.V. The Absence of Stationary Waves Satisfying to Mass Conservation Low

Kistovich A.V. The New Equation for the Form of 2D Surface Wave

Koshel K.V., Ryzhov E.A., Zhmur V.V. Ellipsoidal Vortex Model with Vertical Diffusion

Kozlov V.G., Kozlov N.V., Subbotin S.V., Ivanova A.A. Flows Excited by Oscillating Inner Core in Rotating Spherical Shell

Lyubimov D.V., Klimenko L.S., Lyubimova T.P., Filippov L.O. The Interaction of a Rising Bubble and a Particle in Oscillating Fluid as a Part of a Flotation Process

Lyubimova T.P., Zubova N.A. Onset of Convection in Ternary Mixture with Negative Soret Effect in Square Cavity Heating from above at Various Gravity Levels

Meshkov E.E., Fedorenko Ia.V., Yanbayev G.M. Why Did the Chelyabinsk Meteorite "Explode"?

Mirzoev A.A., Khodjaev Ya.D. The Flows of Multiphase with Complex Rheology Considering Volume Content Phases

Podrezova N., Tsarev V. Main Features of the Salty Near-Bottom Water Penetration in the White Sea Basin

Ryzhov E.A., Ovcharenko D.V. Two Vortex Evolution along the Boundary with a Cavity

Ryzhov E.A., Sokolovskiy M.A. Heton Propagation over a Submerged Cylinder in a Two Layer Fluid Flow

Scase M.M., Hill R.J.A., Baldwin K.A. Suppression of Rayleigh-Taylor Instability through Rotation

Sherstyankin P.P., Shimaraev M.N., Potemkin V.L., Kuimova L.N. On Vertical Stability of Lake Baikal

Shevtsov N. The Study of Waves on the Free Surface of the Compound Vortex Using Photometry Method

Wednesday, June 24, 2015

2-nd Afternoon section, June 24, 2015

Shvarts K.G., Shvarts J.A., Shklyayev V.A. New Two-Dimensional Model of Mesoscale Processes in the Lower Atmosphere with Allowance of Inhomogeneity of Temperature and Humidity

Sivertsen T.H., Grimenes A.A. The Current Situation of Recording of Values of Meteorological Parameters at the Norwegian University of Life Sciences at AAS; and the Potential for Future Use of the Agricultural Meteorological Experimental Field Station

Soustova I.A., Gorshkov K.A., Ermoshkin A.V., Rastegina K., Sofonov A. Evolution of the Compound Soliton of Gardner's Equation in Media with Variable Parameters

Sundeev R.V., Glezer A.M., Shalimova A.V. Formation of Nanostructure in Alloys Obtained by Quick Quenching from the Liquid State

Troitskaya E.S., Kotova N.A., Shimaraev M.N. Coastal and Pelagic Upwellings in Lake Baikal

Tsiberkin K.B., Kolchanova E.A., Lyubimova T.P. Interaction of Homogeneous Flow and Flow in Porous Medium: Stability with Different Models and Contaminant Diffusion

Vasiliev A. Periodic Flows in a Continuously Stratified Fluid Taking into Account the Effects of Diffusion. Analytical Solution and Numerical Simulation

Vologdin V., Cheremiskina A., Davydov V. A New Technique to Study the Flow Parameters of the Liquid Medium on the Basis of Nuclear Magnetic Resonance and Raman Laser

Загуменный Я.В., Чашечкин Ю.Д. Тонкоструктурные особенности стратифицированного течения около горизонтальной пластины

Чаплина Т.О. Распад масляного тела на прямую и инвертную эмульсии в вихревом течении

Шерстянkin П.П., Шимараев М.Н., Потемкин В.Л., Куимова Л.Н. О вертикальной устойчивости озера Байкал

Thursday, June 25, 2015

1-st Morning section, June 25, 2015

9:30 – 9:45 *Gradov O.V.* SPIM-Like Techniques (SPIM, MSPIM, MUVISPIM and PIV/LDV/LDA/LDF Based on SPIM-Like Setups) as Novel Tools for Visualization, Measurements & Characterization of Supercritical Fluid Fluxes and Structures

9:45 – 10:00 *Kostarev K.G., Mizev A.I., Mosheva E.A.* The Influence of Diffusion Processes on the Stability of Zone of Counter-Flow Mixing

10:00 – 10:20 *Yurova A.A., Yurov V.A.* Inertial Oscillations Induced by the Propagation of the Vistula Lagoon Waters in the Coastal Zone of the Southeastern Baltic Sea

10:20 – 10:40 *Sivertsen T.H.* Draft of a Method for Numerical Solution of Non-Linear Equations of Two-Dimensional Stationary Mountain Waves of the Short Scale

10:40 – 11:00 *Nizamova A.D., Kireev V.N., Urmancheev S.F.* Linear Stability of Non-Isothermal Flow of Liquid with Exponential Dependence of Viscosity on Temperature

11:00 – 11:20 *Kiyashko S.V., Afenchenko V.O., Nazarovsky A.V.* Multistability of Parametrically Excited Roll Structures of Capillary Waves at Polygonal Boundaries



11:20 – 11:40 *Coffee- break*

2-nd Morning section, June 25, 2015

11:40 – 12:10 *Sommerfeld M., Lain S., Ernst M.* Structures in Turbulent Particle-Laden Flows: Particle Clustering and Segregation
Invited

12:10 – 12:30 *Fukumoto Ya., Miyachi Yu.* Mechanical Analogue of a Rotating Flow of a Strongly Stratified Fluid Confined in an Ellipsoid as Mathematics for Industry

12:30 – 12:50 *Aktershev S.P., Bartashevich M.V.* Heat Transfer in Locally Heated Laminar Falling Liquid Film



13:00 – 14:00 *Lunch*

Thursday, June 25, 2015

1-st Afternoon section, June 25, 2015

Young Scientists Session

- 14:00 – 14:15** *Kostarev K.G., Mizev A.I., Mosheva E.A.* Formation of Convective Structures under Conditions of Frontal Reaction of Neutralization
-
- 14:15 – 14:30** *Soe A.N., Kalinichenko V.A.* Vortex Damping of Liquid Oscillations in a Rectangular Tank
-
- 14:30 – 14:45** *Plaksina M.O., Pigolkina A.M., Elkin D.M., Zatsepin A.G.* Gravity Current at a Sloping Bottom in a Lineary Stratified Fluid
-
- 14:45 – 15:00** *Sukhanovskii A.N., Evgrafova A.V., Popova E.N.* The Small-Scale Convection in the Cylindrical Fluid Layer with Local Heating from below
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- 15:00 – 15:15** *Bolotnova R.Kh., Buzina V.A., Agisheva U.O.* Formation of Vortex Flow in Gas-Vapour-Liquid Media under Shock-Wave Loading



15:10 – 15:30 *Coffee- break*

2-nd Afternoon section, June 25, 2015

Young Scientists Session

- 15:30 – 15:45** *Kulakov P.A.* Long Waves in Two-Layered Fluid
-
- 15:45 – 16:00** *Parshakova Ya.N., Lyubimova T.P.* The Problem of the Morphological Behavior of a Sandpit
-
- 16:00 – 16:15** *Петкилёв П.С.* Пространственное распределение мезомасштабной вихревой активности в проливе Дрейка и море Скотия за период 1992-2012
-
- 16:15 – 16:30** *Valger S.A., Fedorova N.N.* Mathematical Modeling of Wind Flow in the Vicinity of Buildings and Their Complexes
-
- 16:30 – 16:45** *Natyaganov V.L., Doda L.N., Skibitskii A.N., Stepanov I.V.* Ring Structures as a Sign of Conducting an Active Geophysical Experiment
-
- 16:45 – 17:00** *Samoilova A.E.* Longwave Marangoni Convection in a Two-Layer Liquid-Gas System Heated from below
-
- 17:00 – 17:15** *Elkin D.N., Zatsepin A.G.* Laboratory Study of Submesoscale Eddy Formation Mechanisms at Sea Shelf
-
- 17:15 – 17:30** *Goncharov D.A., Pozhalostin A.A.* Experimental Study of Double-Layer Fluid Motions in Elastic Tank
-
- 17:30 – 17:45** *Prokofyeva M.A., Akperov M.G., Mokhov I.I.* Characteristics of Extratropical Cyclones and Anticyclones in the Northern Hemisphere
-
- 17:45 – 18:00** *Петкилёв П.С.* Пространственное распределение мезомасштабной вихревой активности в проливе Дрейка и море Скотия за период 1992-2012

Friday, June 26, 2015

1-st Morning section, June 26, 2015

9:30 – 9:45

Ilinykh A.Yu. Development of Fine Streams at the First Stages of Droplet Splash

9:45 – 10:00

Vasilkin V.O., Isachenko I.A., Gritsenko V.A. Study of Motions of a Finite Fluid Volume on the Slopes of Bottom

10:00 – 10:20

Znamenskaya I.A., Koroteeva E.Y. Experimental Realization of Two Inertial Intervals in a Turbulent Jet Flows

10:20 – 10:40

Stetsuok I.V., Tkachenko I.V. Numerical Investigation of the Flow over a Sphere in the Presence of Background Internal Waves

10:40 – 11:00

Muzylev S.V. Waves in the Ocean under an Ice Cover

11:00 – 11:20

Сулейманов Р.Х., Иванов А.М. Об использовании методов фотонной корреляционной спектроскопии для исследования министруйных течений



11:20 – 11:40 *Coffee- break*

2-nd Morning section, June 26, 2015

11:40 – 12:10
Invited

Druzhinin O.A., Troitskaya Yu.I., Zilitinkevich S.S. On the Effect of the Surface Wave on Turbulent Stably-Stratified Boundary Layer Air-Flow

12:10 – 12:30

Shishkina O.D. A Criterion to Distinguish “Deep” and “Shallow” Shelf

12:30 – 12:50

Reutov V.P., Rybushkina G.V. The Wave Patterns and Mode Switching in Quasi-Two-Dimensional Jet Flows



13:00 – 14:00 *Lunch*

Friday, June 26, 2015

1-st Afternoon section, June 26, 2015

14:00 – 14:30
Invited

Reznik G.M. On the Concept of Wave Adjustment

14:30 – 14:50

Kuibin P.A. Models of Helical Vortices with Smooth Vorticity Distribution

14:50 – 15:10

Наумов В.А. Моделирование турбулентных течений газозвеси в прикладных задачах

15:10 – 15:30

Arsen'yev S.A. Generation of the Main Magnetic Field of the Earth and Plan



15:30 – 15:40 *Coffee- break*

2-nd Afternoon section, June 26, 2015

15:40 – 16:00

Arsen'yev S.A. Initiation of Earthquakes in Active Faults of Lithosphere

16:00 – 16:20

Novitskii M.A., Shmerlin B.Ya., Petrichenko S.A., Tereb L.A., Kalmikova O.V. Using the Indices of Convective Instability for Analyzing and Forecasting a Tornado-Risk Situations

16:20 – 16:40

Shagalov S.V., Rybushkina G.V. Nonlinear Dynamics of Weakly Unstable Rossby Wave Packets and Formation of Coherent Vortex Structures in Horizontally Sheared Stratified Zonal Flows

16:40 – 17:00

Shmerlin B.Ya., Shmerlin M.B. Convective Instability of a Cloud Medium

17:00 – 17:20

Зайцев А.А. Динамика двумерных вихрей Н.Е. Кочина

17:20 – 17:40

Зайцев А.А. Принцип сохранения конформных отображений для квадрик

17:40 – 18:00

Prokhorov V.E. Capillary Waves Excited by Droplet Splash

18:00

Closure ceremony of the Conference

