PROGRAM

WORKSHOP ON COMPUTING TECHNOLOGIES AND APPLIED MATHEMATICS

FAR EASTERN FEDERAL UNIVERSITY

VLADIVOSTOK

JULY 11–15, 2022

The International Workshop on Computing Technologies and Applied Mathematics provides a forum for experts and researchers to exchange original results and valuable ideas in different aspects of using computing technologies and advanced methods of applied mathematics in science and engineering.

Organized by Far Eastern Federal University and Amur State University

PROGRAM COMMITTEE

Prof. Alexander Chebotarev
Prof. Valeriya Gribova
Prof. Andrey Kovtanyuk
Prof. Anna Maslovskaya
Prof. Evgeni Nurminski
Prof. Sergey Shary

ORGANIZING COMMITTEE

Prof. Alexander Samardak
Prof. Andrey Plutenko
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Dr. Elena Veselova
Mr. Andrei Sushchenko
Mr. Nikolai Park

CONFERENCE VENUE

Far Eastern federal University (Ajax Bay 10, Russky Island, 690922 Vladivostok, Russia)

WORKSHOP HOST

Far Eastern Center for Research and Education in Mathematics

TOPICS

- Computer technologies and data analysis in engineering and bioinformatics
- Mathematical modeling and computer simulation of physical and biological phenomena
- Optimization-based simulation for complex systems
- High performance scientific computing in applications

July 11 Monday

Time	Announce
16:00–17:30	Arrival day, **Registration** **Location: Registration Desk, Hall at the Entrance of the Building B, Level 6**
17:00–19:00	Welcome Party **Location: Café, Building B, B507, Level 5**

July 12 Tuesday

Location: Pacific Rim Hall ("Tihookeanskij Rubezh", "Tochka Kipeniya"), Building A, Level 8

Time	Announce
8:30–9:00	**Late Registration, Location: Registration Desk, Hall at the Entrance**
9:00–9:30	**Workshop Opening** **Evgeni Nurminski** *Far Eastern Mathematical Center* **Andrey Plutenko** *Amur State University* **Elena Kharisova** *Far Eastern Federal University*
Plenary Session **Chair: Evgeni Nurminski**	
9:30–10:15	**Sergey Shary** SOLVING DATA FITTING PROBLEMS UNDER INTERVAL UNCERTAINTY *Novosibirsk State University*
10:15–11:00	**Nataliya Stankevich** MATHEMATICAL MODELLING OF PATHOLOGICAL DYNAMICS OF NEURON-LIKE NETWORKS *National Research University Higher School of Economics*
11:00–11:30	**Coffee Break**
Session # 1 **Chair: Vladimir Pimenov**	
11:30–11:50	**Alexey Rukavishnikov** INFLUENCE OF WEIGHTED FUNCTION EXPONENT IN WFEM ON ERROR OF SOLUTION FOR HYDRODYNAMIC PROBLEMS WITH SINGULARITY *Khabarovsk Federal Research Center FEB RAS*
11:50–12:10	**Anna Ryabokon,** Oleg Tkachenko, Viktor Rukavishnikov FINITE ELEMENT ANALYSIS OF MATHEMATICAL MODEL FOR PIPE SYSTEM *Khabarovsk Federal Research Center FEB RAS*
12:10–12:30	Andrey Kovtanyuk[1], **Evgeni Marushchenko**[2], Renée Lampe[1] FINITE ELEMENT MODELING OF THE MICROVASCULAR BLOOD FLOW [1] *Technical University of Munich* [2] *Far Eastern Federal University*
12:30–12:50	**Ekaterina Tashirova**, Vladimir Pimenov COMPUTER IMPLEMENTATION OF NUMERICAL METHODS FOR SOLVING FRACTIONAL DIFFUSION EQUATIONS WITH DRIFT TERM AND FUNCTIONAL DELAY *Ural Federal University*
12:50–13:10	**Lubov Moroz**, Anna Maslovskaya 2D TIME-FRACTIONAL MODEL OF DIFFUSION-WAVE PROCESSES AND COMPUTING TECHNIQUES FOR ITS BIOLOGICAL APPLICATION *Amur State University*

Time	Announce
13:10–14:00	**Lunch**
Session # 2 **Chair: Alexander Chebotarev**	
14:00–15:30	**Aleksandr Gonchenko**[1], Evgeniya Samylina[2] CHAOTIC DYNAMICS IN THE NONHOLONOMIC MODELS OF CELTIC STONE [1] *Lobachevsky State University of Nizhny Novgorod*, [2] *National Research University Higher School of Economics*
14:20–14:40	**Elena Chausova** MODEL PREDICTIVE CONTROL OF CONSTRAINED DYNAMIC SYSTEMS WITH INTERVAL AND STOCHASTIC UNCERTAINTY AND ITS APPLICATION IN SUPPLY CHAIN MANAGEMENT *Tomsk State University*
14:40–15:00	**Alexander Prolubnikov** ON THE REPRESENTATIVENESS OF APPROXIMATE SOLUTIONS OF DISCRETE OPTIMIZATION PROBLEMS WITH INTERVAL OBJECTIVE FUNCTION *Omsk State University*
15:00–15:20	**Andrey Kovtanyuk**[1]**,** Alexander Chebotarev[2], Tim Seleznev[2], Renée Lampe[1] OPTIMIZATION PROBLEM OF CEREBRAL OXYGEN TRANSPORT [1] *Technical University of Munich* [2] *Far Eastern Federal University*
15:20–15:40	**Nadezhda Maksimova**[1], Roman Brizitskii[2] INVERSE PROBLEM FOR ELECTRON DIFFUSION COEFFICIENT RECOVERING [1] *Amur State University* [2] *Institute of Applied Mathematics FEB RAS*
15:40–16:00	Roman Brizitskii, **Zhanna Saritskaia** BOUNDARY CONTROL PROBLEMS FOR NONLINEAR REACTION-DIFFUSION-CONVECTION MODEL *Institute of Applied Mathematics FEB RAS*
16:00–16:30	**Coffee Break**
16:30–16:50	Roman Brizitskii[1], **Angelina Donchak**[2], Anna Brizitskaya[2] MATHEMATICAL MODEL OF GAMMA OPTION GREEK BASED ON THE REACTION-DIFFUSION EQUATION [1] *Institute of Applied Mathematics FEB RAS* [2] *Far Eastern Federal University*
16:50–17:10	Robert Namm[1], **Georgiy Tsoy**[1], Ellina Vikhtenko[2] ON THE CONVERGENCE OF THE METHOD OF SUCCESSIVE APPROXIMATIONS FOR THE QUASI-VARIATIONAL SIGNORINI INEQUALITY [1] *Khabarovsk Federal Research Center FEB RAS* [2] *Pacific National University*
17:10–17:30	**Alexander Zhiltsov** MODELING A BODY CONTAINING A THIN DEFECT WITH A PARAMETER *Far Eastern State Transport University*

July 13 Wednesday

Location: Pacific Rim Hall ("Tihookeanskij Rubezh", "Tochka Kipeniya"), Building A, Level 8

Time	Announce
Plenary Session **Chair: Sergey Shary**	
9:00–9:45	**Vladimir Pimenov** NUMERICAL METHODS FOR SYSTEMS OF DIFFUSION AND SUPERDIFFUSION EQUATIONS WITH NEUMANN BOUNDARY CONDITIONS AND WITH FUNCTIONAL DELAY *Ural Federal University*
9:45–10:30	**Anna Maslovskaya** MATHEMATICAL MODELING OF BACTERIAL COMMUNICATION UNDER VARYING DYNAMICAL REGIMES *Amur State University*
10:30–11:00	**Coffee Break**
Session # 3 **Chair: Andrey Kovtanyuk**	
11:00–11:20	**Sergey Gordin** SIMULATION MODELING OF DYNAMIC PROCESSES IN DISTRICT HEATING'S *Komsomolsk-na-Amure State University*
11:20–11:40	Konstantin Nefedev[1], **Igor Nalivaiko**[2], Mikhail Chesnokov[1], Vladislav Strongin[1], Konstantin Soldatov[1] DEVELOPMENT OF AN ALGORITHM FOR NUMERICAL CALCULATION OF THERMODYNAMIC CHARACTERISTICS OF TRIMERIZED AND TRIDENT LATTICES DIPOLE SUPERSPIN ICE [1] *Far Eastern Federal University* [2] *Institute of Applied Mathematics FEB RAS*
11:40–12:00	Oxana Zhdanova, **Galina Neverova** *MATHEMATICAL MODELING OF THE EVOLUTIONARY DYNAMICS OF PLANKTON COMMUNITY* *Institute for Automation and Control Processes FEB RAS*
12:00–12:20	**Nikolai Park**[1], Alexander Chebotarev[1], Andrey Kovtanyuk[2] COMPUTER MODELING OF COMPLEX HEAT TRANSFER WITH MOVING SOURCES [1] *Far Eastern Federal University* [2] *Technical University of Munich*
12:20–12:40	Konstantin Nefedev[1], **Mikhail Chesnokov**[1], Igor Nalivaiko[2], Vladislav Strongin[1], Konstantin Soldatov[1] THE DEVELOPMENT OF AN ALGORITHM FOR CALCULATING THE DENSITY OF STATES FOR ISING-TYPE MODELS [1] *Far Eastern Federal University* [2] *Institute of Applied Mathematics FEB RAS*
12:40–13:00	**Elena Veselova**[1], Anna Maslovskaya[1], Alexander Chebotarev[2] COMPUTER SIMULATION OF FERROELECTRIC DOMAIN STRUCTURE DYNAMICS: IMPLEMENTATION IN COMSOL MULTIPHYSICS [1] *Amur State University* [2] *Far Eastern Federal University*
13:00–14:00	**Lunch**

Local Time in Vladivostok: → GMT + 10 or →Moscow + 7

Session # 4

Chair: Konstantin Nefedev

Administrator of online session (MS TEAMS): Andrei Sushchenko (sushchenko.aa@dvfu.ru)

Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_MmJhYmE2Y2EtZWJhMi00ODUzLTk0YjYtODgzYWM3NDIzYmU1%40thread.v2/0?context=%7b%22Tid%22%3a%22ab3ff91d-e10f-425e-b177-3b4548adbb61%22%2c%22Oid%22%3a%22464b9edc-0caf-4f56-a661-81e81baaa44b%22%7d

Time	Announce
14:00–14:15	**Zhengmao Ye** FUZZY ADAPTIVE CONTROL FOR TARGET TRACKING SIMULATION OF AUTONOMOUS VEHICLES *Southern University (USA)*
14:15–14:30	Polina Vinogradova, **Albert Livashvili** SIMULATION DYNAMICS OF THE NANOPARTICLES IN A LIQUID-PHASE MEDIUM, TAKING INTO ACCOUNT THE CONCENTRATION DEPENDENCE OF THE VISCOSITY COEFFICIENT *Far Eastern State Transport University*
14:30–14:45	Lyubov Grishina[1], **Arthur Zhigalov**[1], Irina Bolodurina[3], Evgeniy Borshhuk[2], Dmitry Begun[2], Yulia Varennikova[3] DATA REPRESENTATION FOR A CARDIOVASCULAR DISEASE PREDICTIVE MODEL BY DEEP LEARNING METHODS [1] *Orenburg State University,* [2] *Orenburg State Medical University of the Ministry of Health* [3] *Medical Information and Analytical Center of the Orenburg region*
14:45–15:00	**Alexey Golubev** MODELING AND SIMULATION OF CEREBRAL BLOOD FLOW AUTOREGULATION CONSIDERED AS AN OUTPUT REGULATION CONTROL PROBLEM *Ishlinsky Institute for Problems in Mechanics RAS*
15:00–15:15	**Vladimir Bogdanov**[1], Igor Chabunin[2], Semen Silaev[2], Yaroslav Oreshin[2] SHOCK-ABSORBING DEVICES BASED ON TOROIDAL THIN-SHELL STRUCTURES AND ALGORITHMS FOR THEIR CALCULATIONS [1] *Moscow Higher Combined-Arms Command School; State University of Management* [2] *Moscow Higher Combined-Arms Command School*
15:15–15:30	**Ivan Kazantsev**[1], Rauan Turebekov[2], Murat Sultanov[2] REMOVAL OF STRIPE NOISE IN REMOTE SENSING IMAGES USING RIDGE FUNCTIONS [1] *The Institute of Computational Mathematics and Mathematical Geophysics* [2] *Khoja Akhmet Yassawi International Kazakh-Turkish University*
15:30–15:45	**Coffee Break**
15:45–16:00	**Andrei Banshchikov** SYMBOLIC COMPUTATION IN ANALYSIS OF DYNAMICS OF ORBITAL GYROSTAT *Matrosov Institute for System Dynamics and Control Theory SB RAS*
16:00–16:15	**Andrey Kechahmadze**, Yury Kosolapov DETECTION METHOD OF ILLEGITIMATE CODE EXECUTION *Southern Federal University*
16:15–16:30	**Artem Menisov** THE METHODS FOR DETECTING AND NEUTRALIZING INFORMATION SECURITY THREATS OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES *A.F. Mozhaysky Military-Space Academy*
16:30–16:45	**Murat Sultanov**[1], Vladimir Misilov[2], Yerkebulan Nurlanuly[1] EFFICIENT PARAREAL ALGORITHM FOR SOLVING TIME-FRACTIONAL DIFFUSION EQUATION [1] *Khoja Akhmet Yassawi International Kazakh-Turkish University (Kazakhstan)* [2] *N.N. Krasovskii Institute of Mathematics and Mechanics UB RAS*
16:45–17:00	**Vladimir Bogdanov**, Igor Chabunin, Vitaly Peyders, Roman Mukhin COMPUTER SIMULATION OF KINEMATIC EFFECT ON THE DRIVER OF SOLID MODELS OF WHEELED AND TRACKED VEHICLES *Moscow Higher Combined-Arms Command School*
17:00–17:15	**Wang Fengling** APPLICATION OF LAGRANGE RELAXATION METHOD TO MAXIMUM COVERAGE PROBLEM *Heihe University (China)*

July 14 Thursday

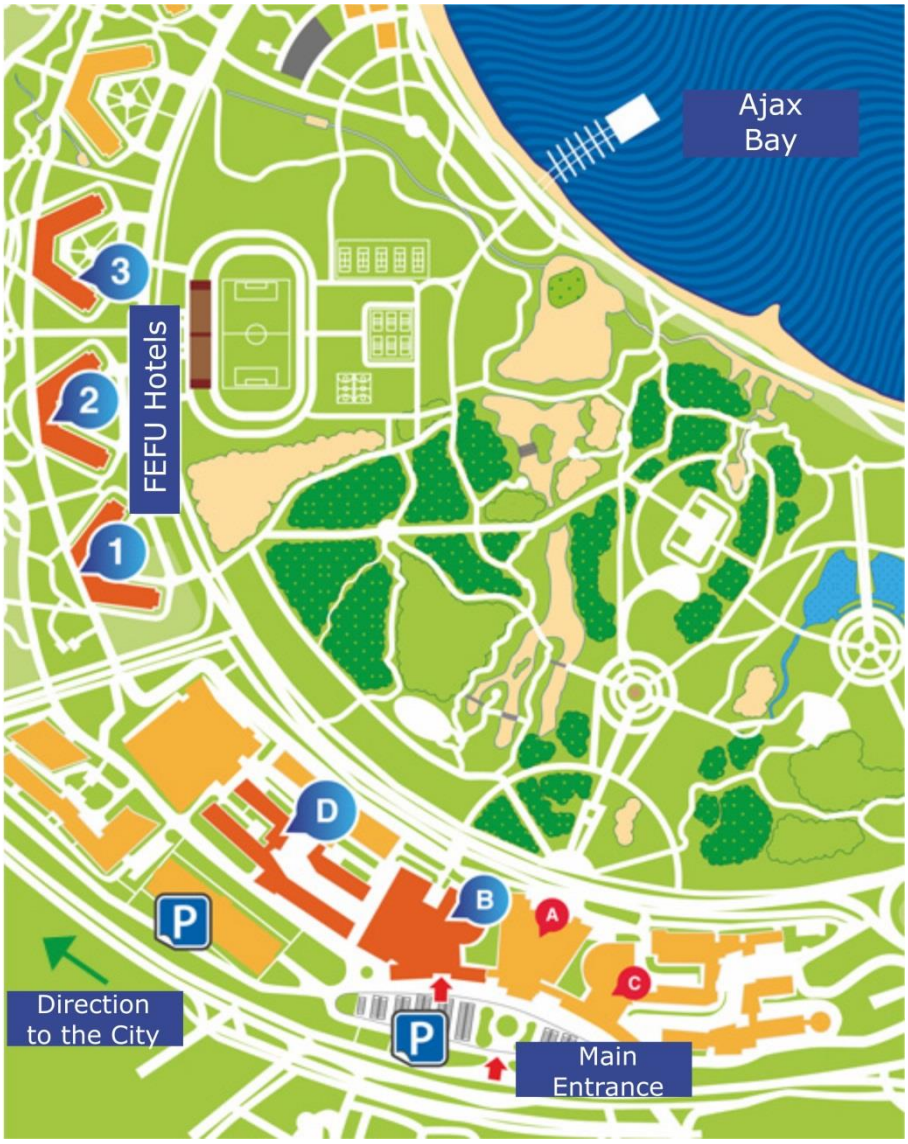
Location: Pacific Rim Hall ("Tihookeanskij Rubezh", "Tochka Kipeniya"), Building A, Level 8

Time	Announce
Plenary Session **Chair: Alexander Chebotarev**	
9:00–9:45	**Gennady Alekseev** INVISIBILITY PROBLEM IN ELECTROMAGNETISM, ACOUSTICS AND HEAT CONDUCTION. INVERSE DESIGN METHOD *Institute of Applied Mathematics FEB RAS, Far Eastern Federal University*
9:45–10:30	**Oleg Tkachenko** COMPUTATIONAL SIMULATION OF NONLINEAR DYNAMIC BENDING OF A CURVED CYLINDRICAL SHELL *Khabarovsk Federal Research Center FEB RAS*
10:30–11:00	**Coffee Break**
Session # 5 **Chair: Gennady Alekseev**	
11:00–11:20	**Ivan Yarovenko**[1], Igor Prokhorov[1], Ivan Kazantsev[2] SCATTER CORRECTION TECHNIQUE USING MULTIPLE-IMPULSE SOURCES IN COMPUTED TOMOGRAPHY [1] *Institute of Applied Mathematics FEB RAS* [2] *The Institute of Computational Mathematics and Mathematical Geophysics*
11:20–11:40	**Evgeny Kovalenko**, Andrei Sushchenko MULTI-ANGLE FOCUSING OF HYDROACOUSTIC IMAGES OBTAINED FROM SIDE-SCAN SONAR *Far Eastern Federal University*
11:40–12:00	Igor Prokhorov[1], **Polina Vornovskikh**[1], Evgeny Ermolaev[2] COMPARATIVE ANALYSIS OF THE ERROR OF THE SINGLE SCATTERING APPROXIMATION FOR 2D AND 3D IMPULSE OCEAN SOUNDING MODELS [1] *Institute of Applied Mathematics FEB RAS* [2] *Far Eastern Federal University*
12:00–12:20	**Aleksei Kashirin**, Sergei Smagin NUMERICAL SOLVING OF BOUNDARY INTEGRAL EQUATIONS OF SCATTERING PROBLEMS AT IRREGULAR FREQUENCIES *Khabarovsk Federal Research Center FEB RAS*
12:20–12:40	**Yuliya Spivak** COMPUTER DESIGN OF CYLINDRICAL CLOAKING SHELL FOR THE MAGNETOSTATICS MODEL *Institute of Applied Mathematics FEB RAS* *Far Eastern Federal University*
12:40–13:00	**Alexey Lobanov** NUMERICAL SOLUTION OF CLOAKING PROBLEM FOR 3D MODEL OF ELECTROSTATICS IN THE PRESENCE OF ANISOTROPIC LAYER *Institute of Applied Mathematics FEB RAS* *Far Eastern Federal University*
13:00–13:20	Andrei Sushchenko, **Elizaveta Liu** INVESTIGATION OF SEABED MORPHOLOGY USING OPTICAL TECHNIQUES *Far Eastern Federal University*
13:20–14:00	**Lunch**
14:00	**Social Program**
18:00	**Conference Dinner**

July 15 Friday

Location: Hilltop ("Sopka") Conference Hall, Building B, Level 7

Time	Announce
Plenary Session **Chair: Oleg Tkachenko**	
9:00–9:45	**Evgeni Nurminski** PROJECTION ALGORITHMS AND VERY LARGE-SCALE OPTIMIZATION *Far Eastern Federal University*
9:45–10:30	**Konstantin Nefedev** INFORMATION ERA *Far Eastern Federal University*
10:30–11:00	**Coffee Break**
Session # 6 **Chair: Evgeni Nurminski**	
11:00–11:20	Luybov Grishina[1], Arthur Zhigalov[1], **Irina Bolodurina**[1], Alexander Lositsky[2], Evgeny Borshchuk[3], Alexandra Voronina[2] INTELLIGENT SYSTEM FOR AUTOMATIC IMAGE DESCRIPTION OF OPTICAL COHERENCE TOMOGRAPHY [1] *Orenburg State University* [2] *Fyodorov Eye Microsurgery Federal State Institution* [3] *Orenburg State Medical University of the Ministry Health*
11:20–11:40	Elena Amosova, **Kirill Kuznetsov** MACHINE LEARNING FOR SOLVING THE INVERSE AND SUBDIFFERENTIAL BOUNDARY VALUE PROBLEM OF COMPLEX HEAT TRANSFER *Far Eastern Federal University*
11:40–12:00	Evgeni Nurminski[1], **Aleksander Zatserkovnyy**[2] PROCESSING OF PUBLIC VIDEO CAMERAS DATA FOR CITY TRAFFIC ESTIMATION [1] *Far Eastern Federal University* [2] *V.I. Il'ichev Pacific Oceanological Institute FEB RAS*
12:00–12:20	**Andrei Velichko** CLOUD SIMULATION SERVICE FOR PRODUCTION LOCATION PROBLEM *Far Eastern Federal University*
12:20–12:40	**Alexey Smagin**[1]**,** Sergey Smagin[2] SEMANTIC SEGMENTATION OF MESHED FENCING CONSTRUCTIONS AND SEARCHING BREAKS [1] *Mining Institute FEB RAS* [2] *Khabarovsk Federal Research Center FEB RAS*
12:40–13:00	Tatiana Pak, **Aleksei Akulov**, Anna Bezotosnaia THE MATHEMATICS A CLASSIFICATION SYSTEM FOR STREAMING OR RECORDED SPEECH USING ALGORITHMS OF ARTIFICIAL RECURRENT NEURAL NETWORKS OF THE LONG SHORT-TERM MEMORY ARCHITECTURE *Far Eastern Federal University*
13:00–13:20	**Ilya Manzhula,** Sergey Smagin STUDY OF THE INFLUENCE OF NANOFLUID COMPOSITION ON THE EFFICIENCY OF DIRECT ABSORPTION SOLAR COLLECTOR *Khabarovsk Federal Research Center FEB RAS*
13:20	**Discussion** **Evgeni Nurminski** FAR EASTERN CENTER FOR RESEARCH AND EDUCATION IN MATHEMATICS: CURRENT STATUS, MODERN CHALLENGES AND PROSPECTS *Far Eastern Federal University*
13:50	**Workshop closing**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