Keldysh Institute of Applied Mathematics RAS

(Moscow, Russia)

INTERNATIONAL CONFERENCE

«ANALYTICAL AND NUMERICAL METHODS FOR SOLVING OF HYDRODYNAMICS, MATHEMATICAL PHYSICS AND BIOLOGY PROBLEMS»,

dedicated to the 100-th anniversary of K. I. Babenko

26–29 August 2019

Pushchino, Moscow Region

SCIENTIFIC PROGRAM

Moscow – 2019

Date 26.08 (Monday) Plenary reports

Time	*Name*	*Title*
9.00-9.40	Ustinin Mikhail Nikolaevich	*Reconstruction of the functional structure of the human body according to multi-channel measurements*
9.40-10.20	Plotnikov Pavel Igorevich	*Nonlinear hydroelastic waves*
10.25-11.05	Lushnikov Pavel Mikhailovich	*Babenko's equation for Stokes wave and integrability of free surface dynamics*
Coffee-break		
11.15-11.55	Pileckas Konstantinas	*Recent years achievements in the theory of stationary Navier-Stokes equations*
12.00-12.40	Berti Massimiliano	*Long time dynamics of water waves*
12.45-13.20	Aptekarev Alexander Ivanovich	*On the scientific contribution of K.I. Babenko*
Lunch		
14.30-15.10	Makarenko Nikolay Ivanovich	*The problem on non-stationary motion of the body under free surface of ideal fluid*

Date 26.08 (Monday)
Section: Numerical Methods in Problems of Mechanics and Physics

Time	*Name*	*Title*
15.10	Starchenko Sergey Vladimirovich	Basic nonlinearity of rotating MHD dynamo
15.45	Shamolin Maxim Vladimirovich	Modeling of the spatial motion of a solid in a medium
16.15	Vshivkova Lyudmila Vitalevna Dudnikova Galina Ilinichna	Numerical simulation of the interaction of ion flows in a collisionless plasma
16.35	Zhukov Victor Timofeevich Novikova Natalia Dmitrievna Feodoritova Olga Borisovna	Numerical experiments to solve Navier-Stokes equations using local iteration scheme
17.00	Rykov Yuri Germanovich	Some facts that affect the conception of generalized solutions to systems of conservation laws
17.20	Dorodnitsyn Ludwig Vatslavovich, Aleksandrov Anatoly Vitalyevich, Duben Alexey Petrovich	Modeling of the dynamics of a three-dimensional turbulent field by a stochastic-deterministic method
17.40	Duben Alexey Petrovich, Abalakin I.V., Tsvetkova Valeria Olegovna	Effective methodology for setting boundary conditions on solid walls as applied to the simulation of high reynolds compressible turbulent flows
18.00	Balashov Nikita Mikhailovich I.V. Glazyrin, N.A. Mikhailov	Two-dimensional dynamic grid adaptation in Eulerian gas dynamics on an unstructured grid
18.20	Kraposhin Matvey Viktorovich, Melnikova Valeria Gennadievna, Epihin Andrey Sergeevich	Mathematical modeling of the process of interaction of water droplets with a high-temperature gas jet
Poster	Yakovleva Svetlana Vitalevna, Starchenko Sergey Vladimirovich	The original statistical analysis of the specific energy variations of the potential geomagnetic field from observations in the XX and XXI century
Poster	Bykovskikh Dmitry Alexandrovich	On the computational test for the adiabatic compression model of an ideal collisionless gas in a three-dimensional time-varying region
Poster	Vikhrov Evgeny Vladimirovich, Podryga Victoria Olegovna Polyakov Sergey Vladimirovich	Molecular dynamics calculation of the diffusion coefficient of technical gases
Poster	Babiak Olga Petrovna	Construction of transparent boundary conditions for an anisotropic variable along the medium boundary
Poster	Osipov Andrey Vladimirovich	Comparative analysis of analytical models for calculating the parameters of the wind turbine vortex track

Date 26.08 (Monday)
Section: Hydrodynamics and Mathematical Physics

Time	*Name*	*Title*
15.10	Levenshtam Valery Borisovich	Inverse problems and asymptotics
15.45	Morgulis Andrey Borisovich Ilyin Konstantin Ivanovich	Instability in the Couette-Taylor problem with radial flow
16.20	Vlasov Vladimir Ivanovich, Skorokhodov Sergey Leonidovich	On the asymptotics of cavitation flow around an obstacle
16.55	Imaikin Valery Marsovich	On stability of zero soliton for a charged particle at rest in the Maxwell field
17.30	Dudnikova Tatiana Vladimirovna	Non-equilibrium states and energy current for infinite lattice systems
18.00	Vedenyapin Viktor Valentinovich	Kinetic and quasilinear equations and variational principles

Date 26.08 (Monday) Section: Mathematical Methods of Biology

Time	*Name*	*Title*
15.10	Grebennikov Dmitry Sergeevich Bocharov Gennady Alekseevich	Mathematical modeling of viral infections
15.50	Nechepurenko Yuri Mikhailovich, Khristichenko M.Yu., Sklyarova E.V, Grebennikov D.S., Bocharov G.A.	Optimal perturbations of stationary states of viral infection models
16.20	Khristichenko Mikhail Yuryevich, Nechepurenko Yu.M., Sklyarova E.V, Grebennikov D.S., Bocharov G.A.	Calculation of stationary states of viral infection models
16.50	Tikhonov Dmitry Anatolyevich, Medvinsky Alexander Berelevich	Shannon's cross-correlation entropy as a measure of the conjugacy of ecological processes
17.20	Pankratov Anton Nikolaevich Pankratova Natalia Mikhailovna	Spectral and analytical method of repeats recognition in signals
17.40	Likhachev Ilya Vyacheslavovich Lakhno V.D., Babalayev N.K.	Program for modeling molecular dynamics in a heterogeneous computing environment and its application to various biomolecular systems
18.00	Krivorotko Olga Igorevna, Kabanikhin Sergey Igorevich	Identification of mathematical models of biology
Poster	Chernyaev Alexander Petrovich	Exact solutions of the mathematical model of a single-chamber heart, based on the equations of forced oscillations
Poster	Skladchikov Sergey Andreevich, V.S. Laponin, C.V. Anpilov, N.P. Savenkova	The study of the dynamics of the distribution of drugs within the eye, depending on the location of the injection
Poster	Stepovich Mikhail Adolfovich, Sibirev Alexander Leonidovich, Shipko Mikhail Nikolaevich	On some problems associated with the formulation of problems for the channeling of kilovolt electrons in aqueous media and the prospects for using this phenomenon in biology and medicine
Poster	Danilkovich Alexey Viktorovich Tikhonov Dmitry Anatolyevich Mikhailova Irina Vladimirovna	Biogeli. Conformational features of peptide complexes (RADA)4
Poster	Rudnev Vladimir Removich, Tikhonov Dmitry Anatolyevich, Kulikova Lyudmila Ivanovna, Efimov Alexander Vasilyevich, Gubin Maxim Yuryevich	Algorithm for predicting structural motifs of the type alpha-alpha-corner with a short constriction of a certain type according to the amino acid sequence

Date 27.08 (Tuesday) Plenary reports

Time	*Name*	*Title*
9.15-9.55	Fursikov Andrey Vladimirovich	*On nonlocal stabilization problem for some hydrodynamic type systems*
10.00-10.40	Afendikov Andrey Leonidovich	*Bifurcations without parameters in problems of hydrodynamics*
10.45-11.25	Pukhnachev Vladislav Vasilyevich	*Exact and asymptotic solutions in the motion models of aqueous polymer solutions*
Coffee-break		
11.40-12.20	Tyrtyshnikov Evgeny Evgenievich	*Low-rank approximations of matrices and tensors and their applications*
12.25-12.55	Afendikova Nadezhda Gennadievna	*Konstantin Ivanovich Babenko. Biographical sketch*

13.00-14.30 Lunch

14.30-17.00 Trip to the Reserve

19.00 Banquet

Date 28.08 (Wednesday) Plenary reports

Time	*Name*	*Title*
9.30-10.10	Bezrodnykh Sergey Igorevich	*Analytical continuation of Horn's hypergeometric functions and some applications*
10.15-10.55	Stylianopoulos Nikos	*Error Analysis and Application of the Bergman Kernel Method in Numerical Conformal Mapping*
Coffee-break		
11.05-11.45	Radkevich Evgeny Vladimirovich	*On hydrodynamic instabilities as non-equilibrium phase transitions (in the Cahn-Hillard form)*
11.50-12.30	Belykh Vladimir Nikitich	*Superconvergent algorithms for the numerical solution of elliptic boundary value problems (on the K.I. Babenko problem)*
12.35-13.10	Bogatyrev Andrey Borisovich	*Dimensional reduction in rational approximation problems*
Lunch		
14.30-15.00	Dyachenko Alexander Viktorovich	*On Hurwitz polynomial matrices*

Date 28.08 (Wednesday)

Section: Numerical Methods in Problems of Mechanics and Physics

Time	*Name*	*Title*
15.10	Gavrikov Mikhail Borisovich	On non-saturation methods in computational mathematics
15.45	Semisalov Boris Vladimirovich, Blokhin Alexander Mikhailovich, Kruglova Ekaterina Alekseevna	Numerical analysis of stationary flows of a polymer liquid based on an algorithm without saturation
16.20	Petrov Alexander Georgievich	Saturationless numerical schemes for polyharmonic equation
16.55	Nikitin Ilya Stepanovich	Mathematical models of layered and block media with nonlinear contact conditions
17.30	Algazin Sergey Dmitrievich	h - matrix, new mathematical apparatus for discretization of multidimensional equations
17.50	Zaitsev Nikolay Albertovich Kritsky Boris Viktorovich	Modeling of two-phase flows based on the Navier-Stokes-Korteweg equations
18.10	Kolesnikov Ilya Yuryevich	Expansions into finite series on complete systems of spectral non-algebraic shape functions and applications
18.30	Strakhovskaya Lyudmila Glebovna	Formation of spiral-vortex structures in a gravitating protoplanetary disk
18.50	Zhdanova Natalya Sergeevna I.V. Abalakin, A.P. Duben, T.K. Kozubskaya	Application of the method of immersed boundaries for the numerical simulation of elements of wing mechanization
Poster	Baikov Nikita Dmitrievich, Petrov Alexander Georgievich	Numerical schemes for calculating the formation of cumulative jets
Poster	Tayursky Alexey Alexandrovich	Investigation of nonlinear absorption of an Alfven wave by a dissipative plasma
Poster	Laponin Vladislav Sergeevich, S.A. Skladchikov, S.V. Anpilov, N.P. Savenkova	Numerical study of the formation of vortex structures during the formation of wind waves
Poster	Anpilov Sergey Valerievich, N.P. Savenkova, V.S. Laponin, S.A. Skladchikov	Modeling the dynamics of the dispersed gas phase in the anode region of an aluminum electrolyzer
Poster	Zmievskaya Galina Ivanovna, M.S. Zhmyleva	Stochastic models of phase transitions in solids: the formation of porosity and polarization of a ferroelectric
Poster	Rykovanov Vasily Sergeevich Sapozhnikov Filipp Anatolevich	The choice of the method of solving the heat equation in the method of smoothed particles SPH
Poster	Sapozhnikov Filipp Anatolevich	The influence of the initial arrangement of particles on the sphericity of a shock-loaded boundary of substances in the simulation of Richtmyer – Meshkov instability by the SPH method

Date 28.08 (Wednesday)

Section: Hydrodynamics and Mathematical Physics

Time	*Name*	*Title*
15.10	Chizhonkov Evgeny Vladimirovich Frolov A.A	Influence of electron-ion collisions on the overturning of plasma oscillations
15.45	Rozanova Olga Sergeevna	Stationary states of compressible fluid and their stability
16.15	Prosviryakov Evgeny Yuryevich	Exact solutions of the Navier-Stokes equation with a nonlinear dependence of the velocity field on a part of the coordinates
16.45	Shevelev Yuri Dmitrievich, Maksimov Fedor Aleksandrovich	Current near the rotating disk
17.05	Bykov Nikita Valerievich	Critical conditions in the event of a hydrodynamic effect in ballistic installations
17.25	Zasko Grigory Vladimirovich, Glazunov Andrey Vasilyevich, Mortikov Evgeny Valerievich Nechepurenko Yuri Mikhailovich	On optimal perturbations of a stably stratified turbulent Couette flow
17.45	Klyushnev Nikita Viktorovich	Limiting and divergence cleaning for fluid finite element discretion of the MHD equations
18.05	Demyanko Kirill Vyacheslavovich	On the stability of fluid flow in an elliptical tube with a compliant wall
18.25	Severin Alexander Vladimirovich Menchov Igor Stanislavovich	Solving airflow problems of bodies with porous inserts
18.45	Seregina Elena Vladimirovna Stepovich Mikhail Adolfovich	On the projection method for solving the heat equation with a concentrated heat capacity in a semi-infinite region
Poster	Kalmanovich Veronika Valerievna Kartanov Artem Alekseevich	On the possibility of numerical solution of the heat and mass transfer problem in a multilayer medium by the matrix method

Date 28.08 (Wednesday) Section: Mathematical Methods of Biology

Time	*Name*	*Title*
15.10	Lunin Vladimir Yur'yevich, Petrova Tatiana Evgenievna, Lunina Natalia Leonidovna	X-ray lasers and computational problems of biological crystallography
15.45	Morgulis Andrey Borisovich Ilyin Konstantin Ivanovich	Keller-Segel type system with a short-wave external signal
16.15	Chetverikov Alexander Petrovich, Lakhno Viktor Dmitrievich	Mathematical modeling of the processes of the interaction of electrons with mobile localized waves in a DNA molecule
16.45	Fialko Nadezhda Sergeevna Lakhno Victor Dmitrievich	Dynamics of polaron Holstein at low temperature thermostat
17.05	Korshunova Alevtina Nikolaevna, Lakhno Viktor Dmitrievich	Two types of oscillations of a Holstein polaron moving uniformly along a chain in a constant electric field
17.25	Shigaev Alexey Sergeevich	Investigation of the quantum-classical model of rhodopsin photoisomerization with an adapted coupling constant
17.45	Tikhonov Dmitry Anatolyevich, Kulikova Lyudmila Ivanovna, A.V. Efimov	Dependence of torsion angles between the axes of α-spirals on their length in the structural motifs of protein molecules
18.05	Krivov Maxim Andreevich Zaitsev Anatoly Vladimirovich Ivanov Pavel Sergeevich	Numerical study of the influence of the geometric shape of the protein structures of the cell on the number of merotel microtube links during mitosis
18.25	Rykunov Stanislav Dmitrievich	Application of the method of virtual electrodes to the analysis of magnetic ecephalography data

Date 29.08 (Thursday) Plenary reports

Time	*Name*	*Title*
9.30-10.10	Tikhomirov Vladimir Mikhailovich	*K.I. Babenko and approximation theory*
10.15-10.55	Lakhno Victor Dmitrievich	*Theoretical foundations of nanobioelectronics*
Coffee-break		
11.05-11.45	Maklakov Dmitry Vladimirovich	*Almost extreme configurations of surface and internal gravity waves*
11.50-12.30	Mahortykh Sergey Aleksandrovich	*The model of liquid soil in the calculations of the field of elastic waves*
Lunch		

Date 29.08 (Thursday)

Section: Hydrodynamics and Mathematical Physics

Time	*Name*	*Title*
14.00	Surnachev Mikhail Dmitrievich	Notes on the Lavrentiev phenomenon
14.30	Sushkevich Tamara Alekseevna	Generalized solutions of boundary value problems of radiation transfer theory and their applications
15.00	Konstantinovskaya Tatyana Vitalevna	Impact of acoustic disturbances on a tip vortex in a supersonic flow
15.20	Smirnov Alexander Yurevich, Starchenko Sergey Vladimirovich	Modern geodipole and internal currents of the Earth
15.40	Vergeles S., Ogorodnikov Leon Leontyevich	Calculation of three-dimensional coherent vortexes dynamics in liquid

Date 29.08 (Thursday)

Section: Numerical Methods in Problems of Mechanics and Physics

Time	*Name*	*Title*
14.00	Voitishek Anton Vatslavovich Bulgakova T.E.	Randomized numerical algorithms for approximating the solution of the Fredholm integral equation of the second kind
14.35	Menshov Igor Stanislavovich Pavlukhin Pavel Viktorovich	Numerical modeling of viscous flows on uncoordinated Cartesian grids
15.05	Lutsky Alexander Evgenievich Khanhasaeva Yana Vladislavovna	Numerical simulation on adaptive grids of dynamic processes when energy is invested in a supersonic flow
15.30	Varin Viktor Petrovich	High precision computations in mathphysics
15.50	Alekseev Alexey Kirillovich	A posteriori estimate of the error in calculating the flow on an ensemble of numerical solutions using the theory of concentration measures
16.10	Bochev Mikhail Alexandrovich Knizhnerman Leonid Aronovich	Non-visually-temporary restart of the Krylov subspace methods to calculate the actions of the matrix exponent
16.30	Levchenko Vadim Dmitrievich	Efficiency of modeling using locally-recursive non-local-asynchronous algorithms
16.50	Galanin Mikhail Pavlovich Konev Stanislav Andreevich	B-series for (m, k) -methods for solving hard systems

Chairman of Program Committee  Aptekarev A.I.