



Российско-Китайская конференция
**ДИФФЕРЕНЦИАЛЬНЫЕ И
РАЗНОСТНЫЕ УРАВНЕНИЯ**

**俄中会议
微分与差分方程**

Russian-Chinese Conference
**DIFFERENTIAL AND
DIFFERENCE EQUATIONS**

2-6 ноября 2023, Новосибирск, Россия
2023 年 11 月 2-6 日 新西伯利亚 俄罗斯
November 2-6, 2023, Novosibirsk, Russia

ПРОГРАММА

议程

PROGRAM

N* Novosibirsk
State
University
***THE REAL SCIENCE**



MATHEMATICAL
CENTER IN AKADEMGORODOK

RUSSIAN FEDERATION
MINISTRY OF SCIENCE AND HIGHER EDUCATION
NOVOSIBIRSK STATE UNIVERSITY

RUSSIAN ACADEMY OF SCIENCES
SIBERIAN BRANCH
SOBOLEV INSTITUTE OF MATHEMATICS

DIFFERENTIAL AND DIFFERENCE EQUATIONS

Russian-Chinese Conference
Novosibirsk, Russia, November 2–6, 2023

PROGRAM

NOVOSIBIRSK
2023

Organizers

Novosibirsk State University

Sobolev Institute of Mathematics SB RAS

The conference is supported by the Mathematical Center in Akademgorodok under agreement No. 075-15-2022-282 with the Ministry of Science and Higher Education of the Russian Federation.

Program Committee

Co-Chairmen: Demidenko G. V., Hu G.-D.

Secretary: Skvortsova M. A.

Members: Cong Y., Kozhanov A. I., Neshchadim M. V., Romenski E. I., Vaskevich V. L., Wang W.

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Chairman: Matveeva I. I.

Secretary: Shemetova V. V.

Members: Balakina E. Yu., Bondar L. N., Denisiuk V. A., Ma X., Skvortsova M. A., Yskak T.

Conference Venue

All sessions on *November 3* will be held in the Academpark (**Nikolaeva str., 12**).

All sessions on *November 4* and *November 5* will be held at Novosibirsk State University (**Pirogova str., 2**).

November 3, 2023, Friday

Academpark, Large Hall (2nd floor)

10.00 – 10.30 Opening Ceremony

Plenary Lectures

Academpark, Large Hall (2nd floor)

Chairman: Demidenko G. V.

10.30 – 11.05 *Malygina V. V.*

Stability constants for differential and difference equations with delay

11.10 – 11.45 *Hu G. -D.*

Stabilization of high-order delay systems: a frequency-domain method

11.50 – 12.10 Coffee break

Chairman: Hu G.-D.

12.10 – 12.45 *Fedorov V. E., Filin N. V.*

Quasilinear equations with distributed Gerasimov–Caputo derivatives

12.50 – 13.25 *Zhu P.*

Two phase-field models for solid-solid phase transformations driven by configurational forces

13.30 – 13.40 Collective photo

13.40 – 15.00 Lunch

Section 1. Partial Differential Equations

Academpark, Conference Hall no. 1 (2nd floor)

Chairman: Tersenov Ar. S.

15.00 – 15.20 *Pyatkov S. G.*

Point sources identification in heat and mass transfer problems

15.20 – 15.40 *Artyushin A. N.*

Cauchy problem for the wave equation with a nonsmooth right-hand side of a special form

15.40 – 16.00 *Popov S. V.*

Boundary value problems for forward-backward parabolic equations

16.00 – 16.20 *Lyubanova A. Sh., Velisevich A. V.*

The stability of the solutions to stationary inverse problems

16.20 – 16.40 *Lazarev N. P., Romanova N. A.*

Optimal control of the angle between two thin rigid inclusions in an inhomogeneous 2D body

16.40 – 17.00 Coffee break

Academpark, Conference Hall no. 1 (2nd floor)

Chairman: Pyatkov S. G.

17.00 – 17.20 Mamontov A. E., Prokudin D. A.

Solvability of non-steady three-dimensional equations of viscous compressible heat-conductive multifluids

17.20 – 17.40 Lyul'ko N. A.

Finite time stabilization to zero and exponential stability of quasilinear hyperbolic systems

17.40 – 18.00 Tersenov Ar. S.

Viscosity solutions of equations with non-standard growth conditions

18.00 – 18.20 Ma L., Cong Y., Zhu P.

Weak solutions to an initial-boundary value problem of a consistent three-phase-field model

18.20 – 18.50 Gordienko V. M.

The works of the S.K. Godunov seminar on hyperbolic equations

19.00 – 21.00 Welcome Reception

Section 2. Functional Differential Equations

Academpark, Conference Hall no. 2 (2nd floor)

Chairman: Chudinov K.M.

15.00 – 15.20 *Finogenko I. A.*

Method of limit differential inclusions for studying the asymptotic behavior of non-autonomous systems

15.20 – 15.40 *Dyakovich M. P., Finogenko I. A.*

Modeling the dynamics of health-related quality of life

15.40 – 16.00 *Ayupova N. B., Golubyatnikov V. P., Kirillova N. E.*

Non-uniqueness of cycles in 3D molecular repressilator models

16.00 – 16.20 *Golubyatnikov V. P., Tatarinova E. A.*

Mathematical and numerical modeling of the pluripotency gene network dynamics

16.20 – 16.40 *Minushkina L. S.*

Periodic trajectories of a three-dimensional nonlinear circular gene network model

16.40 – 17.00 Coffee break

Academpark, Conference Hall no. 2 (2nd floor)

Chairman: Finogenko I. A.

17.00 – 17.20 *Kim A. V.*

Differential equations with ordinary and invariant derivatives

17.20 – 17.40 *Sabatulina T. L.*

On estimates of solutions to systems of functional differential equations

17.40 – 18.00 *Balandin A. S.*

On positiveness of the Cauchy function and the fundamental solution for a neutral differential equation

18.00 – 18.20 *Mulyukov M. V.*

Asymptotic stability of the hybrid systems

18.20 – 18.40 *Lashina E. A.*

Mathematical modeling of the dynamics of CO oxidation over Pt/MWCNB

19.00 – 21.00 Welcome Reception

November 4, 2023, Saturday

Plenary Lectures

Novosibirsk State University, Room 118a (1st floor)

Chairman: **Sergeev I. N.**

10.00 – 10.35 *Astashova I. V.*

On asymptotic behavior of solutions to higher-order quasilinear differential equations for different types of perturbations

10.40 – 11.15 *Li S. G., Lv L. J., Qu K.*

Homogenization modeling of generalized Newtonian fluid flow in porous media

11.20 – 11.40 Coffee break

Chairman: **Astashova I. V.**

11.40 – 12.15 *Sergeev I. N.*

Definition and some properties of measures of stability and instability of a differential system

12.20 – 12.55 *Kozhanov A. I.*

Hyperbolic equations with degeneracy and increasing lower terms

13.00 – 15.00 Lunch

Section 1. Partial Differential Equations

Novosibirsk State University, Room 118a (1st floor)

Chairman: Kozhanov A. I.

15.00 – 15.20 *Kushner A. G., Tao S.*

Dynamics and exact solutions of evolutionary partial differential systems

15.20 – 15.40 *Mukhina S. S., Kushner A. G.*

Symplectic and contact linearization of nonlinear hyperbolic partial differential equations

15.40 – 16.00 *Balakina E. Yu.*

Finding the discontinuity surfaces of coefficients of the transport equation

16.00 – 16.20 *Kazakov A. L., Lempert A. A.*

Diffusion-wave type solutions to a nonlinear second-order parabolic equation

16.20 – 16.40 *Nikitina T. N.*

On complex Monge–Ampère equation on positive currents of higher bidegree

16.40 – 17.00 Coffee break

Novosibirsk State University, Room 118a (1st floor)

Chairman: Kazakov A. L.

17.00 – 17.20 *Shcheglov A. Yu., Huang H.*

Reconstruction of a nonlinear coefficient in sorption model with gas diffusion

17.20 – 17.40 *Gubarev Yu. G., Luo J.*

Study of linear stability for cylindrically symmetrical states of dynamic equilibrium of two-component Vlasov–Poisson plasma

17.40 – 18.00 *Gubarev Yu. G., Sun S.*

Study of instability for three-dimensional dynamic equilibrium states of self-gravitating Vlasov–Poisson gas

18.00 – 18.20 *Ma X.*

On behavior of solutions to a Sobolev type equation at infinity

18.20 – 18.40 *Bondar L. N., Mingnarov S. B.*

The Cauchy problem for one pseudohyperbolic system

18.40 – 19.00 *Parfenov A. I.*

Criterion for the Sobolev well-posedness of the Dirichlet problem in Lipschitz domains

Section 2. Functional Differential Equations

Novosibirsk State University, Room 120a (1st floor)

Chairman: Neshchadim M. V.

15.00 – 15.20 *Biberdorf E. A., Wang L.*

Influence of the pseudospectrum of coefficient matrix of a linear ODE system on the local growth of solutions

15.20 – 15.40 *Lomov A. A.*

On the variational Prony problem when data contains disturbances lying on a given linear manifold

15.40 – 16.00 *Rogalev A. N.*

Dynamics of solution domains of ordinary differential equations and stability over finite time interval

16.00 – 16.20 *Danilov O. A., Mednykh A. D.*

Discrete analytic functions and Taylor series

16.20 – 16.40 *Lu X., Danilov O. A.*

Taylor decomposition and discrete analytic functions of parabolic type

16.40 – 17.00 Coffee break

Novosibirsk State University, Room 120a (1st floor)

Chairman: Lomov A. A.

17.00 – 17.20 *Neshchadim M. V., Simonov A. A.,
Chupakhin A. P.*

Representations of algebra $sl_2(\mathbb{R})$ and ordinary differential equations

17.20 – 17.40 *Demidenko G. V.*

One of systems of differential equations with periodic coefficients in linear part

17.40 – 18.00 *Matveeva I. I.*

Estimates of solutions to classes of nonautonomous time-delay systems

18.00 – 18.20 *Skvortsova M. A.*

On a model of immune response in plants described by delay differential equations

18.20 – 18.40 *Yskak T.*

Estimates of solutions to delay differential equations

18.40 – 19.00 *Khmil A. V.*

Asymptotic properties of solutions to one class of systems of delay difference equations with periodic coefficients

November 5, 2023, Sunday

Plenary Lectures

Novosibirsk State University, Room 118a (1st floor)

Chairman: Malygina V. V.

09.00 – 09.35 *Bravyi E. I.*

On the solvability of the Cauchy problem for second order linear functional differential equations with mixed restrictions on functional non-Volterra operators

09.40 – 10.15 *Romenski E. I.*

Hyperbolic unified model of Newtonian continuum mechanics

10.20 – 10.55 *Vaskevich V. L.*

Spherical polyharmonic equation and weighted cubature formulas

11.00 – 11.20 Coffee break

Chairman: Bravyi E. I.

11.20 – 11.55 *Chudinov K. M.*

Effective tests for asymptotic properties of solutions to first-order delay differential equations

12.00 – 12.35 *Shcheglov A. Yu., Li S.*

Inverse problem for a population model with nonlocal coefficients

12.40 – 14.00 Lunch

Section 1. Partial Differential Equations

Novosibirsk State University, Room 118a (1st floor)

Chairman: Vaskevich V. L.

14.00 – 14.20 *Belykh V. N.*

The estimates of the Alexandrov's n -width of a compact set of C^∞ -smooth functions on a finite segment

14.20 – 14.40 *Bogdanov V. V., Volkov Yu. S.*

A modified quadratic interpolation method for root finding

14.40 – 15.00 *Maltseva S. V., Derevtsov E. Yu.*

On a construction of Riemannian metrics in models of inhomogeneous media

15.00 – 15.20 *Kravchenko O. V., Li S., Reshetova E. V., Qu K.*

Numerical solution of the spin wave transport equation using compact difference scheme

15.20 – 15.40 *Demidenko G. V., Bondar L. N.,
Nurmakhmatov V. S.*

On solvability of a boundary value problem for pseudo-hyperbolic equation with variable coefficients

15.40 – 16.00 *Shemetova V. V.*

An initial-boundary value problem for a pseudohyperbolic equation

16.00 – 16.20 Coffee break

Novosibirsk State University, Room 118a (1st floor)

Chairman: Matveeva I. I.

16.20 – 16.40 *Badardinov D. T.*

On properties of the Noethericity of polyharmonic operators in weighted Sobolev spaces

16.40 – 17.00 *Barotov B. Kh.*

Boundary value problems for degenerate integro-differential equations

17.00 – 17.20 *Tsyrempilova I. A.*

Ultraparabolic equations with degeneracy

17.20 – 17.40 *Chen J.*

Stability of transonic shocks past 3-D wedges

17.40 – 18.00 *Liao H.*

A space-time spectral method for a one-dimensional parabolic inverse problem

18.00 – 18.20 *Skoromnik O. V., Papkovich M. V.*

Multi-dimensional integral transforms with H -function in the kernel in the weighted spaces of summable functions

18.20 – 18.40 *Wang ZongShun*

Solvability of Lyapunov-type matrix equations

18.40 – 19.00 *Godova A. D., Fedorov V. E.*

Degenerate integro-differential equations with bounded operators in Banach spaces and their applications

Section 2. Functional Differential Equations

Novosibirsk State University, Room 119a (1st floor)

Chairman: Yskak T.

- 14.00 – 14.20** *Dong W. Q., Zhao Y. B., Cong Y. H.*
Reduced-order observer-based controller design for quasi-one-sided Lipschitz nonlinear systems with time-delay
- 14.20 – 14.40** *Wang Zheng*
Output feedback stabilization of linear systems with multiple delays using model reduction methods
- 14.40 – 15.00** *Su X., Ogorodnikov V. A.*
Stochastic modeling of conditional processes of special type
- 15.00 – 15.20** *Burukhaev A. E.*
Nonlocal problems with integral conditions for linear differential equations of the third order
- 15.20 – 15.40** *Denisiuk V. A.*
Properties of solutions to one class of systems of nonlinear differential equations
- 15.40 – 16.00** *Ilinykh I. D.*
Asymptotic behavior of solutions to one linear delay differential equation
- 16.00 – 16.20** Coffee break

Novosibirsk State University, Room 119a (1st floor)

Chairman: Skvortsova M. A.

16.20 – 16.40 Demidenko G. V., Myagkikh K. S.

On the robust stability of stationary solutions to a class of Mathieu-type equations

16.40 – 17.00 Xin L.

Estimates of solutions to one inhomogeneous system of functional difference equations

17.00 – 17.20 Prokhorov V. S.

Solution of one generalized Lyapunov matrix equation

17.20 – 17.40 Bao K., Cong Y.

A numerical method for consensus control of linear delay multi-agent systems

17.40 – 18.00 Wang Z., Cong Y.

Delay-dependent stability of Runge–Kutta methods with time-accurate and highly-stable explicit operators for neutral delay differential equations

18.00 – 18.20 Hu R., Mei J., Ma G.

A numerical method for \mathcal{H}_2 model reduction of linear delay systems

18.20 – 18.40 Xu Z.

On properties of solutions to one inhomogeneous system of functional difference equations