International Workshop on the Qualitative Theory of Differential Equations

QUALITDE – 2024

December 21 – 23, 2024, Tbilisi, Georgia

A. Razmadze Mathematical Institute of I. Javakhishvili Tbilisi State University
2, Merab Aleksidze II Lane, Tbilisi 0193, Georgia

Program

December 21, 2024

10:45 – 11:00 Opening of the Workshop

11:00 – 11:30 **I. Kiguradze** – On Two-Point Boundary Value Problems for Higher Order Singular Advanced Differential Equations

11:30 – 12:00 **T. Jangveladze** – On One Diffusion System of Nonlinear Partial Differential Equations

12:00 – 12:30 **N. Partsvania** – Initial Value Problem on an Infinite Interval for First Order Advanced Differential Equations

12:30 – 13:00 Coffee Break

13:00 – 15:00 Overview of the talks of participants in absentia

P. Omari – Positive Solutions of Superlinear Mean Curvature Problems in Planar Domains: Topological Versus Variational Approach

R. I. Kadiev, A. Ponosov – Nonlinear Functional Integral Itô Equations: Existence and Uniqueness

A. Lomtatidze – On Bounded and Periodic Solutions of Planar Systems of ODE

R. Hakl, P. J. Torres – The Inverse Problem for Periodic Travelling Waves of the Linear 1D Shallow-Water Equations

J. Šremr – On Lyapunov and Krasovskii Stability/Instability of Pendulum Equation with Non-Constant Coefficients

Z. Došlá, M. Marini, S. Matucci – Boundary Value Problems on the Half-Line Involving Generalized Curvature Operators

S. Staněk – Dirichlet Problem for Singular Fractional Differential Equations with Given Maximal Value for Positive Solutions

V. Mikhailets, O. Atlasiuk – ODE-Systems with Boundary Inhomogeneous Conditions Containing Higher-Order Derivatives

T. Kiguradze, A. Almutairi – Ill-Posed Initial-Boundary Value Problems for Linear Hyperbolic Systems of Second Order

Z. Kiguradze – Deep Neural Network for Approximate Solution of One System of Nonlinear Integro-differential Equations

E. Bravyi – On the Solvability of Linear Functional Differential Equations of the First and Second Orders

A. Rontó, M. Rontó, N. Rontóová, I. Varga – On Investigation of Non-Linear Differential Systems with Mixed Boundary Conditions

December 22, 2024

11:00 – 11:30 **S. Kharibegashvili** – Antiperiodic in Time Boundary Value Problem for One Class of Nonlinear High-Order Partial Differential Equation

11:30 – 12:00 **T. Tadumadze, T. Shavadze** – On the Optimization Problem for the Quasi-Linear Neutral Functional-Differential Equation with the Discontinuous Initial Condition

12:00 – 12:30 **O. Jokhadze, S. Kharibegashvili** – On the Dirichlet Type Problem for the Inhomogeneous Equation of String Oscillation

12:30 – 13:00 **M. Manjikashvili, S. Mukhigulashvili** – Two Point Boundary Value Problems for the Fourth Order Ordinary Differential Equations

13:00 – 13:30 Coffee Break

13:30 – 15:30 Overview of the talks of participants in absentia

N. A. Izobov, A. V. Il'in – Anti-Perron Effect of Changing Characteristic Exponents in Differential Systems

A. A. Bondarev, I. N. Sergeev – Radial Properties of Stability and Instability of a Differential System

E. K. Makarov – Some Sufficient Conditions for Almost Reducibility of Millionshchikov Systems

V. A. Pokhachevskiy, V. V. Bykov – On the Baire Classification of the Weak Oscillation Exponents of Roots and Hypermultiple Roots

A. V. Lipnitskii – On Instability of Linear Differential Systems with Smooth Dependence on a Parameter

A. N. Vetokhin – On Non-Belonging to the Second Baire Class of the Topological Entropy of One Family of Non-Autonomous Dynamical Systems on an Interval Continuously Depending on a Real Parameter

A. K. Demenchuk – The Structure of Strongly Irregular Solutions of the Quasiperiodic Linear Algebraic System

M. M. Vaskouski, A. A. Levakov – Stability of Solutions of One-Dimensional Stochastic Differential Equations Controlled by Rough Paths

E. Musafirov, A. Grin, A. Pranevich – On Admissible Perturbations of 3D Quadratic ODE System with an Infinite Number of Limit Cycles

F. Konopka – Median and p-Median

N. Kasimova, O. Kapustyan – Approximate Solution of the Optimal Control Problem for a Parabolic Differential Inclusion with Fast-Oscillating Coefficients on Infinite Interval

O. Stanzhytskyi, D. Shtefan, R. Uteshova – Asymptotic Equivalence of Infinite-Dimensional Linear Stochastic Systems

O. Pravdyvyi, A. Stanzhytskyi, O. Martynyuk – Limiting Behavior of Invariant Measures of Stochastic Functional-Differential Neutral Equations in Hilbert Space

December 23, 2024

11:00 – 13:00 Overview of the talks of participants in absentia

J. Jaroš, T. Kusano – Oscillation Theory of Nonlinear Differential Equations of Emden--Fowler Type with Variable Exponents

J. Jaroš, T. Kusano, T. Tanigawa – Properties of Oscillatory Solutions of Second Order Half-Linear Differential Equations

I. V. Astashova – Once More on Typicality and Atypicality of Power-Law Asymptotic Behavior of Solutions to Emden--Fowler Type Differential Equations

I. V. Astashova, A. V. Filinovskiy, D. A. Lashin – On Smooth Controllability in Parabolic Control Problem with a Pointwise Observation

V. Bashurov – On Oscillation of Solutions to One Neutral Type Differential Equation

S. Ezhak, M. Telnova – On Attainability on the Potential from the Space $W_2^{-1}[0,1]$ of the Lower Bound of the First Eigenvalue of a Sturm-Liouville Problem

D. A. Gabidullin – On the Stability Conditions of a Nonlinear Biological Epidemic Model

E. Korobko – Application of the Retract Principle to Find Solutions of Discrete Nonlinear Equations

P. Benner, S. Chuiko, O. Nesmelova – Autonomous Seminonlinear Boundary Value Problems with Switchings at Non-Fixed Times

S. Chuiko, A. Chuiko, N. Popov – Adomian Decomposition Method in Theory of Nonlinear Periodic Boundary Value Problems

13:00 – 13:30 Coffee Break

13:30 – 16:00 Overview of the talks of participants in absentia

V. P. Maksimov – On Control Problems for Systems with Fractional Derivative and Aftereffect

V. M. Evtukhov, O. O. Maksymov – Asymptotic Representation for Solutions of Systems of Differential Equations with Rapidly Varying Nonlinearities

M. A. Bilozerova, O. O. Chepok – Regularly Varying Solutions of Differential Equations of the Second Order with Nonlinearities of Exponential Types

M. A. Bilozerova, N. V. Sharai – Asymptotic Representations of Solutions to Differential Equations of the Fourth Order with Nonlinearities, Close to Regularly Varying

S. V. Golubev – Asymptotic Behaviour of Rapidly Changing Solutions of Fourth-Order Differential Equation with Rapidly Changing Nonlinearity

A. Vorobiova – Regularly Varying Solutions of Differential Equations of the Second Order with Nonlinearities of Exponential Types

M. Horodnii – Bounded Solutions of a Linear Differential Equation with Piecewise Constant Operator Coefficients

Zh. Kadirbayeva – An Efficient Numerical Method for Solving Problem for Impulsive Differential Equations with Loadings Subject to Multipoint Conditions

O. Kurylko, O. Perehuda, O. Boryseiko – Finding of Periodic Points of Stokes Flow with a Complex Distribution of Motion Velocities of Rectangular Cavity Walls

Yu. Loveikin, A. Sukretna – Approximate Averaged Bounded Feedback Control with Two Switching Points for a Parabolic Process

S. Temesheva, P. Abdimanapova – On the Solvability of a Family of Nonlinear Two-Point Boundary Value Problems for Systems of Integro-Differential Equations and its Application

R. Taranets, M. Chugunova – On a Control-Volume Model for Fiber Coating

F. A. Asrorov, O. V. Perehuda, V. V. Zubenko – Invariant Toroidal Manifolds of One Class of Discontinuous Dynamical Systems

R. Lakhva, V. Mogylova, V. Kravets – The Averaging Method for Optimal Control Problems of Systems of Integro-Differential Equations

G. Petryna, A. Murzabaeva, Z. Khaletska – Approximation of Stochastic Systems with Integral-Type Delay by Stochastic Systems without Delay