

International Workshop on the Qualitative Theory of Differential Equations

QUALITDE – 2025

Dedicated to the blessed memory of Professor Revaz Gamkrelidze

December 6 – 8, 2025, Tbilisi, Georgia

*A. Razmadze Mathematical Institute of I. Javakishvili Tbilisi State University
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Program

December 6, 2025

- 10:45 – 11:00 **Opening of the Workshop**
- 11:00 – 11:30 **T. Tadumadze** – In Memory of Professor Revaz Gamkrelidze
- 11:30 – 12:00 **T. Tadumadze, L. Alkhazishvili** – On the Coefficients of Sensitivity for a SIR Controlled Differential Model Considering Perturbations of Delays and Control Function
- 12:00 – 12:30 **M. Manjikashvili, S. Mukhigulashvili** – Some Two-Point Boundary Value Problems for Systems of Higher Order Linear Functional Differential Equations
- 12:30 – 13:00 **I. Sikharulidze** – Prestack of Spaces of Pseudoanalytic Functions
- 13:00 – 13:30 **T. Shavadze, N. Gorgodze** – Stability and Bifurcation Analysis of Delay Differential Models in Computing Systems
- 13:30 – 14:00 **Coffee Break**
- 14:00 – 16:00 **Overview of the talks of participants in absentia**
- P. Omari** – Pairs of Positive Solutions of a Quasilinear Elliptic Neumann Problem Driven by the Mean Curvature Operator
- R. I. Kadiev, A. Ponosov** – Exponential Stability of Impulsive Stochastic Systems with Delay in Terms of Positive-Inverse Matrices
- A. Lomtadze, J. Šremr** – On Some Boundary Value Problems Connected with the Whitney Problem
- R. Hakl, J. Oyarce** – Positive Periodic Solutions for Systems of Linear Functional Differential Inequalities
- S. Staněk** – Dirichlet Problem for Singular First-Order Differential and Functional Differential Equations
- V. Mikhailets, O. Atlasiuk** – On Continuity in a Parameter of Solutions to Generic Inhomogeneous Boundary-Value Problems in Sobolev Spaces
- T. Kiguradze, A. Almutairi** – On Well-Posed Initial-Boundary Value Problems in a Characteristic Rectangle for Linear Hyperbolic Systems of Second Order

Z. Kiguradze – Deep Neural Network Approximation for a Nonlinear Averaged System of Integro-Differential Equations

E. Bravyi – Sharp Conditions for the Solvability of a Nonlocal Boundary Value Problem for Linear Second Order Functional Differential Equations

December 7, 2025

11:00 – 11:30 **I. Kiguradze** – On Well-Posed Nonlocal Boundary Value Problems for Second Order Linear Singular Differential Equations

11:30 – 12:00 **S. Kharibegashvili** – Boundary Value Problem for One Class of Nonlinear Partial Differential Equations with Iterated Wave Operator in the Principal Part

12:00 – 12:30 **T. Jangveladze** – Some Nonlinear Partial Differential and Parabolic Type Integro-Differential Models

12:30 – 13:00 **O. Jokhadze, S. Kharibegashvili** – The Dirichlet Problem in a Characteristic Rectangular Domain for a Third-Order Linear Hyperbolic Equation

13:00 – 13:30 **N. Partsvania** – On Nonlocal Boundary Value Problems for First Order Singular Advanced Differential Equations

13:30 – 14:00 **Coffee Break**

14:00 – 16:00 **Overview of the talks of participants in absentia**

N. A. Izobov, A. V. Il'in – Two-Dimensional Anti-Perron Effect of Changing Different Positive Characteristic Exponents by Higher-Order Perturbations

E. A. Barabanov, V. V. Bykov, A. V. Ravcheev – On the Anti-Perron Effect in the Class of Linear Exponentially Decaying Perturbations

E. K. Makarov, D. A. Korshukov – Non-Force Approach to Lyapunov Exponents Control

V. A. Pokhachevskiy, V. V. Bykov – On the Descriptive Type of Some Oscillatory Properties of Solutions to Linear Differential Equations and Systems

A. N. Vetokhin – On Some Properties of the Topological Entropy of Dynamic Systems on the Cantor Set and the Segment

A. K. Demenchuk, E. K. Makarov – A Necessary Condition for the Solvability of a Control Problem of an Asynchronous Spectrum of Linear Periodic Systems with an Irregular Feasible Set

E. Musafirov, A. Grin, A. Pranevich – Periodic Solutions of the Admissibly Perturbed Langford System

A. Rontó, M. Rontó, N. Rontóová – Nonlinear Problems with Non-Fixed Right Boundary with Application in Economic Modelling

A. V. Lipnitskii – The Estimate of Lyapunov Exponent for Linear Discrete System

December 8, 2025

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

J. Jaroš, T. Kusano, T. Tanigawa, H. Usami – Oscillatory Behavior of Solutions to Second Order Half-Linear Differential Equations

T. Kusano, T. Tanigawa – Structure of Positive Solutions of Generalized Thomas--Fermi Type Differential Equations

O. Stanzhytskyi, R. Uteshova – On the Correspondence Between Boundary Value Problems for Integro-Differential Equations and Their Analogues on Time Scales

O. Pravdyvyi, A. Stanzhytskyi, O. Martynyuk – Approximation of stochastic functional-differential equations of neutral type by a system of equations without delay in infinite-dimensional spaces

O. Kapustian, N. Kasimova – Time-Averaging Approach to Minimax Estimation for Parabolic Problems with Nonlinear Observations

O. Kapustyan, T. Yusypiv – Robust Stability for Non-Autonomous Inclusion of Reaction-Diffusion Type

V. Sobchuk, I. Zelenska – The System of Singularly Perturbed Differential Equations with Differential Second-Order Turning Point

O. O. Chepok – The Asymptotic Representation of $P_{\xi}(Y_0, Y_1 \pm \infty)$ -solutions of Second Order Differential Equations with the Product of a Regularly and a Rapidly Varying Functions in Some Critical Case

13:00 – 13:30 **Coffee Break**

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

V. P. Maksimov – On a General Linear Boundary Value Problem for Fractional Functional Differential Equations with Aftereffect

I. V. Astashova, A. V. Filinovskiy, D. A. Lashin – On Qualitative Properties of Minimizing Function in Smooth Parabolic Control Problem

V. A. Nikishov, I. V. Astashova – On Qualitative and Asymptotic Properties of Solutions to the Riccati Equation with Stabilizing Real Roots of the Right-Hand Side

S. Ezhak, M. Telnova – On Precise Lower Estimates of the First Eigenvalue of a Sturm-Liouville Problem with Weighted Integral Conditions on the Potential

N. A. Antonov – Geometric Regularization of Fractional Differential Equations

H. Pasichnyk – On the Classical Fundamental Solution of the Cauchy Problem for a Dissipative Ultraparabolic Equation with One Group in Degenerate Variables and Differential Coefficients Independent of the Degenerate Variables

O. Perehuda, O. Kurylko – Approximation of Functional Differential Equations with and without Delay by a System of Equations without Delay

R. Lakhva, V. Mogylova, V. Kravets – Averaging in an Optimal Control Problem for a Nonlinear-in-Control Integro-Differential System on the Infinite Interval

D. Shtefan, Z. Khaletska – Mean-Square Exponential Dichotomy for Infinite-Dimensional Stochastic Systems