

# International Workshop on the Qualitative Theory of Differential Equations

## QUALITDE – 2020

December 19 – 21, 2020

Tbilisi, Georgia

---

---

*A. Razmadze Mathematical Institute of I. Javakhishvili Tbilisi State University  
6 Tamarashvili Str., Tbilisi 0186, Georgia*

## Program

December 19, 2020

- 11:45 – 12:00** **Opening of the Workshop**
- 12:00 – 12:30** **I. Kiguradze** – Dirichlet and Neumann Type Boundary Value Problems for Second Order Linear Differential Equations
- 12:30 – 13:00** **M. Ashordia** – On the Well-Posed Criterion of General Linear Boundary Value Problems for Systems of Linear Impulsive Differential Equations with Infinity Points of Impulse Actions
- 13:00 – 13:30** **M. Ashordia, N. Kekelia** – On Well-Possedness of General Linear Boundary Value Problems for High Order Ordinary Linear Differential Equations
- 13:30 – 14:00** **I. Kiguradze, N. Partsvania** – On a Number of Zeros of Nontrivial Solutions to Second Order Singular Linear Differential Equations
- 14:00 – 14:30** **Break**
- 14:30 – 17:00** **Overview of the talks of participants in absentia**
- F. Obersnel, P. Omari** – The Ambrosetti-Prodi Problem for First Order Periodic ODEs with Sign-Indefinite Nonlinearities
- J. Jaroš, T. Kusano, T. Tanigawa** – Structure of Nonoscillatory Solutions of Second Order Half-Linear Differential Equations
- C. Wang, R. P. Agarwal, D. O'Regan** – Coupled-Jumping Timescale Theory and Applications
- A. Lomtadze, J. Šremr** – On Positive Periodic Solutions to Parameter-Dependent Second-Order Differential Equations with a Singularity
- O. Atlasiuk, V. Mikhailets** – On Generic Inhomogeneous Boundary-Value Problems for Differential Systems in Sobolev spaces
- E. Bravyi, S. Mukhigulashvili** – On Solvability of Two-Point Boundary Value Problems with Separating Boundary Conditions for Linear Ordinary Differential Equations and Totally Positive Kernels
- Z. Došlá, M. Marini** – Asymptotic Properties of Solutions to Half-Linear Differential Equation with Negative Potential
- A. Rontó, M. Rontó, I. Varga** – On a Hybrid Non-Linear Jump Control Problem for Functional Differential Equations with State-Dependent Impulses
- L. Idels, R. I. Kadiev, A. Ponosov** – Novel Stochastic McKendrick-von Foerster Models with Applications
- T. Kiguradze, R. Alhuzally** – On a Dirichlet Type Boundary Value Problem for a Class

of Linear Partial Differential Equation

**V. P. Maksimov** – An Approach to Two-Sided Pointwise Estimating Solutions of Linear Boundary Value Problems with an Uncertainty

**M. Manjikashvili, S. Mukhigulashvili** – Disconjugacy for the Fourth Order Ordinary Differential Equations

**A. T. Assanova** – A Multi-Point Problem for Second Order Differential Equation with Piecewise-Constant Argument of Generalized Type

**S. Stan k** – Boundary Value Problems for Multi-Term Fractional Differential Equations with  $w$ -Laplacian at Resonance

## December 20, 2020

**12:00 – 12:30** **S. Kharibegashvili** – Asgeirsson Principle and Exact Boundary Controllability Problems for One Class of Hyperbolic Systems

**12:30 – 13:00** **G. Berikelashvili, M. Mirianashvili, B. Midodashvili** – On Solvability of Poisson's Equation with Mixed Dirichlet and Nonlocal Integral Type Conditions

**13:00 – 13:30** **T. Jangveladze** – On One Nonlinear Degenerate Integro-Differential Equation of Parabolic Type

**13:30 – 14:00** **O. Jokhadze** – On Exact Solutions of Karman's Equation in Nonlinear Theory of Gas Dynamics

**14:00 – 14:30** **B r e a k**

**14:30 – 17:00** **Overview of the talks of participants in absentia**

**N. A. Izobov, A. V. Il'in** – Perron's Effect of Value Change of Characteristic Exponents with a Countable Number of Uniformly Bounded Suslin's Sets

**I. N. Sergeev** – Some Properties of the Lyapunov, Perron, and Upper-Limit Stabilities of Differential Systems

**E. K. Makarov, S. N. Popova** – How to Assign Lyapunov Spectra for Completely Controllable Systems

**E. A. Barabanov, V. V. Bykov** – Description of the Linear Perron Effect Under Parametric Perturbations Exponentially Decaying at Infinity

**A. Ravcheev** – Baire and Local Baire Classes of Functionals on the Space of Linear Differential Systems

**A. N. Vetokhin** – Topological Entropy of a Diagonalizable Linear System of Differential Equations

**N. V. Gorban, O. V. Kapustyan, T. Y. Zhuk** – Approximate Optimal Control on Semi-Axis for the Reaction-Diffusion Process with Fast-Oscillating Coefficients

**A. K. Demenchuk** – A Condition for the Solvability of the Control Problem of Asynchronous Spectrum of Linear Almost Periodic Systems with the Diagonal Averaging of Coefficient Matrix

**A. S. Vaidzelevich** – Autonomous Linear Differential Equations with the Hukuhara Derivative that Preserve Polytopes

**A. A. Grin, K. R. Schneider** – Dulac-Cherkas Functions for Van Der Pol Equivalent Systems

**Z. Kiguradze** – On One-Dimensional Nonlinear Integro-Differential System with Source Terms

### December 21, 2020

#### 11:00 – 13:30 **Overview of the talks of participants in absentia**

**M. Perestyuk, O. Kapustyan, F. Asrorov, O. Pereguda** – Qualitative Behavior of Solutions of Impulsive Weakly Nonlinear Hyperbolic Equation

**I. V. Astashova** – Existence and Uniqueness Theorems to Generalized Emden-Fowler Type Equations

**O. A. Boichuk, V. A. Feruk** – Boundary-Value Problems for Weakly Singular Integral Equations

**V. M. Evtukhov, N. V. Sharay** – On Asymptotics of Rapidly Varying Solutions of Non-Autonomous Differential Equations of Third-Order

**A. Stanzhytskiy** – Asymptotic Behavior of Stochastic Functional Differential Equations in Hilbert Spaces

**O. Stanzhytskiy, R. Uteshova, M. Mukash** – Application of the Averaging Method to Solving Boundary Value Problems for Systems with Impulse Action at Non-Fixed Moments of Time

**T. Koval'chuk, V. Mogyluova, T. Shovkoplyas** – Optimal Control Problems for Systems of Differential Equations with Impulse Action

**S. Chuiko, E. Chuiko, V. Kuzmina** – Boundary Value Problems for Systems of Nonsingular Integral-Differential Equations of Fredholm Type with Degenerate Kernel

**S. A. Shchogolev, V. V. Karapetrov** – On One Class of Solutions of Linear Matrix Equations

**M. O. Bilozero, G. A. Gerzhanovskaya** – Asymptotic Properties of Special Classes of Solutions of Second-Order Differential Equations with Nonlinearities Near to Regularly Varying

**O. O. Chepok** – Asymptotic Properties of  $P_{\xi}(Y_0, Y_1, \pm\infty)$ -Solutions of Second Order Differential Equations with the Product of Different Classes of Nonlinearities

**S. Ezhak, M. Telnova** – On an Upper Estimate for the First Eigenvalue of a Sturm-Liouville Problem

**A. V. Filinovskiy** – On Some Bounds for Coefficients of the Asymptotics to Robin Eigenvalue

**T. Korchemkina** – On Some Positive Solutions to Differential Equations with General Power-Law Nonlinearities

**V. V. Rogachev** – On Sturm-Type Theorems for Nonlinear Equations

**D. E. Limanska, G. E. Samkova** – On the Existence of Some Solutions of Systems of Ordinary Differential Equations that are Partially Resolved Relatively to the Derivatives with Square Matrix

**L. I. Kusik** – On Asymptotic Representations of One Class of Solutions of Second-Order Differential Equations