International Workshop on the Qualitative Theory of Differential Equations

QUALITDE – 2019

December 7 – 9, 2019

Tbilisi, Georgia

A. Razmadze Mathematical Institute of I. Javakhishvili Tbilisi State University
6 Tamarashvili Str., Room # 612, Tbilisi 0186, Georgia

P r o g r a m

December 7, 2019

09:45 – 10:00 **Opening of the Workshop**

10:00 – 10:30 **I. Kiguradze –** Emden-Fowler type differential equations possessing Kurzweil's property

10:30 – 11:00 A. Lomtatidze**, J. Šremr –** On positive periodic solutions to parameter-dependent second-order differential equations with a sub-linear non-linearity

11:00 – 11:30 **B. Anjafaridze,** M. Ashordia **–** On the well-posedness of the Cauchy problem for high order ordinary linear differential equations

11:30 – 12:00 **M. Ashordia** – On the well-posedness of the Cauchy problem for generalized ordinary linear differential systems

12:00 – 12:30 M. Ambroladze, **G. Berikelashvili –** Finite difference approximation of modified Burgers equation in Sobolev spaces

12:30 – 13:00 **T. Jangveladze –** On investigation and approximate solution of one system of nonlinear two-dimensional partial differential equations

13:00 – 13:30 **N. Partsvania –** The Dirichlet problem for singular two-dimensional linear differential systems

13:30 – 14:00 **Coffee Break**

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

J. López-Gómez, P. Omari – Characterizing the formation of singularities in a superlinear indefinite mean curvature problem

O. Atlasiuk, V. Mikhailets – On linear boundary-value for differential systems in Sobolev spaces

E. Bravyi – On the solvability of focal boundary value problems for higher-order linear functional differential equations

S. Chuiko, Ya. Kalinichenko, N. Popov – Boundary value problems for systems of difference-algebraic equations

M. Dolnik, A. Lomtatidze – On periodic boundary value problem for a certain planar system of nonlinear ordinary differential equations

Z. Došlá, P. Liška, M. Marini – Decaying solutions of delay differential equations

R. I. Kadiev, A. Ponosov – Regularization method in stability analysis of stochastic functional differential equations

T. Kiguradze, R. Alhuzally – Dirichlet type problem in a smooth convex domain for quasilinear hyperbolic equations of fourth order

V. P. Maksimov – A class of continuous-discrete functional differential equations with the Cauchy operator constructed explicitly

M. Manjikashvili, S. Mukhigulashvili – Disconjugacy and solvability of Dirichlet BVP for the fourth order ordinary differential equations

I. Rachůnková, L. Rachůnek – Antiperiodic problem with barriers

S. Staněk – Initial value method in boundary value problems for systems of two-term fractional differential equations at resonance

December 8, 2019

11:00 – 11:30 J. Godoy, **R. Hakl,** X. Yu **–** Existence and multiplicity of periodic solutions to second-order differential equations with attractive singularities

11:30 – 12:00 **A. Rontó,** M. Rontó, I. Varga **–** Investigation of periodic solutions of autonomous system by halving the interval

12:00 – 12:30 **S. Kharibegashvili** – Solvability of the boundary value problem for one class of higher-order nonlinear partial differential equations

12:30 – 13:00 **O. Jokhadze,** S. Kharibegashvili **–** Representation of the solution of the inhomogeneous wave equation in a half-strip in the form of finite sum of addends, depending on boundary, initial values of the solution and right-hand side of the equation

13:00 – 13:30 **T. Tadumadze,** A. Nachaoui, T. Shavadze **–** The equation in variations for the controlled differential equation with delay and its application

13:30 – 14:00 **Ph. Dvalishvili,** M. Iordanishvili **–** Optimization of the delay parameter for one class of controlled dynamical system

14:00 – 14:30 **Coffee Break**

14:30 – 16:30 **Overview of the talks of participants in absentia**

N. A. Izobov, A. V. Il'in – Description by Suslin's sets of bounded families of Liapunov'sc characteristic exponents in the full Perron's effect of their value change

I. N. Sergeev – Definition and properties of Perron stability of differential systems

E. K. Makarov – On some fine properties of supercritical sigma-perturbations

A. Barabanov, V. V. Bykov – Generalization of Perron's and Vinograd's examples of Lyapunov exponents instability to linear differential systems with parametric perturbations

A. N. Vetokhin – Set of points of lower semicontinuity for the topological entropy of a family of dynamical systems continuously depending on a parameter

A. Lipnitskii – Solution of Izobov--Bogdanov problem on irregularity sets of linear differential systems with a parameter-multiplier

A. K. Demenchuk – Control problem of asynchronous spectrum of linear almost periodic systems with the trivial averaging of coefficient matrix

A. A. Grin, S. V. Rudevich – On the detection of exact number of limit cycles for autonomous systems on the cylinder

Z. Kiguradze – A Bayesian optimization approach for selecting the best parameters for weighted difference scheme corresponding to heat equation

T. Tanigawa – Asymptotic analysis of two-dimensional cyclic systems of first order nonlinear differential equations

December 9, 2019

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

M. Perestyuk, O. Kapustyan, F. Asrorov, V. Sobchuk – Existence and stability of uniform attractors for N -dimensional impulsive-perturbed parabolic system

I. V. Astashova, A. V. Filinovskiy, D. A. Lashin – On qualitative properties of minimizers for an extremal problem to parabolic equations

V. M. Evtukhov, N. V. Sharay – Asymptotic of rapid varying solutions of third-order differential equations with rapid varying nonlinearities

O. Stanzhytskyi, V. Mogyluova, T. Shovkoplyas – Application of the averaging method to optimal control problems of systems with impulse action in non-fixed moments of times

S. A. Shchogolev – On increasing the order of smallness of fast variables in linear differential systems

M. O. Bilozerova, G. A. Gerzhanovskaya – Asymptotic representations of solutions of second order differential equations with nonlinearities that are in some sense near to regularly varying functions

O. O. Chepok – Asymptotic properties of $P_{\mu}\left(Y_0, Y_1, 0\right)$-solutions of second order differential equations with rapidly and regularly varying nonlinearities

A. V. Drozhzhyna – Asymptotic representations of rapid varying solutions of differential equations asymptotically close to the equations with regularly varying nonlinearities

S. Ezhak, M. Telnova - On below estimates for the first eigenvalue of a Sturm-Liouville problem

T. Korchemkina - On the behavior of solutions with positive initial data to third order differential equations with general power-law nonlinearities

V. V. Rogachev - On existence of solutions with prescribed number of zeros to Emden-Fowler equations with variable potential

N. V. Sharay, V. N. Shinkarenko – Asymptotic behavior of solutions of third order ordinary differential equations

M. Shlyepakova – Asymptotic representations for solutions of non-linear systems of ordinary differential equations

14:00 – 18:00 **E x c u r s i o n**