

SCIENTIFIC PROGRAM
OF THE 45th INTERNATIONAL CONFERENCE
APPLICATIONS OF MATHEMATICS IN ENGINEERING AND
ECONOMICS
SOZOPOL, JUNE 7-13, 2019

Registration and accommodation of the participants in the Conference

Leisure House of the Technical University of Sofia

SCIENTIFIC PROGRAM
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APPLICATIONS OF MATHEMATICS IN ENGINEERING AND
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SOZOPOL, JUNE 7-13, 2019

June 8, 2019 (Saturday)

Registration and accommodation of the participants in the Conference
Leisure House of the Technical University of Sofia

Hall 1: Plenary Talks
Chairperson: G. VENKOV

9:00-10:00 Opening

10:00-10:30 N. POPIVANOV (Sofia University, BULGARIA)
*Pohozaev Identities and Applications for Semi-Linear
Elliptic-Hyperbolic Equations and for Fractional Laplacian*

10:30-11:00 E. RADKEVICH (Moscow State University, RUSSIA)
*On hydrodynamic instabilities qua nonequilibrium (Cahn-
Hillard) phase transitions*

11:00-11:30 R. KOVACHEVA (Bulgarian Academy of Sciences, BULGARIA)
Pade' approximation - a survey

Coffee Break

12:00-12:30 M. KONSTANTINOV (University of Architecture, Civil
Engineering and Geodesy, BULGARIA)
Two-dimensional apportionment methods

12:30-13:00 V. GEORGIEV (University of Pisa, ITALY)
*The cubic Dirac equation with Hartree type non-linearity:
global existence*

Lunch Break

Hall 1: Differential Equations

Chairperson: T. POPOV

- 16:00-16:20 S. POPOV (North-Eastern Federal University, RUSSIA)
Parabolic Equations with Changing Time Direction
- 16:20-16:40 V. FEDOROV (North-Eastern Federal University, RUSSIA)
Vragov`s boundary value problem for a higher order equation of mixed-composite type
- 16:40-17:00 I. TIKHONOVA (North-Eastern Federal University, RUSSIA)
Nonlocal problems with an integral boundary condition for a mixed type equation

Coffee Break

- 17:30-17:50 V. KARACHIK (South Ural State University, RUSSIA)
On a class of Neumann type problems for polyharmonic equation
- 17:50-18:10 A. SESEKIN (Ural Federal University, RUSSIA)
On the stability of discontinuous solutions of a bilinear system with impulse action, constant and linear delays
- 18:10-18:30 D. MARKOV (Technical University of Sofia, BULGARIA)
Analysis of metabolic CO₂ concentration field in a small mechanically ventilated occupied enclosure
- 18:30-18:50 Y. BOSHEV (Sofia University, BULGARIA)
On the two-dimensional Cauchy-Goursat problem for nonlinear Gellerstedt equations in the frame of generalized solvability

Hall 2: Statistics & Probability

Chairperson: K. PRODANOVA

- 16:00-16:20 N. ENATSKAYA (Institute of Electronics and Mathematics, Higher School of Economics, RUSSIA)
Enumeration method of analysis of combinatorial schemes
- 16:20-16:40 L. RYASHKO (Ural Federal University, RUSSIA)
Stochastic sensitivity analysis of noise-induced oscillations in Adler model
- 16:40-17:00 P. JORDANOVA (Shumen University, BULGARIA)
Probabilities for p-outliers

Coffee Break

- 17:30-17:50 K. KOSTADINOVA (Shumen University, BULGARIA)
Type II Non-central Polya-Aeppli distribution
- 17:50-18:10 M. LAZAROVA (Technical University of Sofia, BULGARIA)
Bivariate Non-central Polya-Aeppli distribution

- 18:10-18:30 K. PRODANOVA (Technical University of Sofia, BULGARIA)
Prediction of lethal outcome in early postoperative period after pediatric liver transplantation
- 18:30-18:50 V. IVANOVA (Plovdiv University, BULGARIA)
Application of Fuzzy Logic in Online Test Evaluation in English as a Foreign Language at University Level
- 18:50-19:10 L. MINKOVA (Sofia University, BULGARIA)
Compound I-Binomial Process and Application

Hall 3: Software Innovations

Chairperson: D. IVANOVA

- 16:00-16:20 P. NIKOLOV (Technical University of Sofia, BULGARIA)
Markovian Process Simulation on a Real Quantum Computer
- 16:20-16:40 P. NIKOLOV (Technical University of Sofia, BULGARIA)
Controlled n -root of X Gate on a real quantum processor
- 16:40-17:00 Z. ZLATEV (Technical University of Sofia, BULGARIA)
A Software Engineering Concept Model for Big Mass Data Processing

Coffee Break

- 17:30-17:50 R. ILIEVA (Technical University of Sofia, BULGARIA)
Mathematical Algorithms for Artificial Intelligence
- 17:50-18:10 K. ANGUELOV (Technical University of Sofia, BULGARIA)
A mathematical model for determining the need for engineering training
- 18:10-18:30 G. POPOV (Technical University of Sofia, BULGARIA)
Model of diversity multiagent intrusion detection system
- 18:30-18:50 G. POPOV (Technical University of Sofia, BULGARIA)
Measuring identification in recognition systems
- 18:50-19:10 T. IVANOVA (Shumen University, BULGARIA)
Chaotic map based random number generator on Arduino platform

20:00

Welcome Party

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June 9, 2019 (Sunday)

Hall 1: Differential Equations
Chairperson: V. GEORGIEV

- 9:00-9:20 T. MATSUYAMA (Chuo University, JAPAN)
Low frequency resolvent estimates for Dirichlet Laplacian exterior domains
- 9:20-9:40 T. MATSUYAMA (Chuo University, JAPAN)
Global solutions to the Kirchhoff equation
- 9:40-10:00 K. TANIGUCHI (Nagoya University, JAPAN)
Gradient estimates for heat equation in an exterior domain

Coffee Break

- 10:30-10:50 K. FUJIWARA (Tohoku University, JAPAN)
Local well-posedness and blow-up for the half Ginzburg-Landau-Kuramoto equation with rough coefficients and potential
- 10:50-11:10 E. NIKOLOVA (Technical University of Sofia, BULGARIA)
On the extended Strichartz estimates for the heat equation
- 11:10-11:30 B. KOSTADINOV (Technical University, branch Plovdiv, BULGARIA)
Stability of solitary waves for the generalized Klein-Gordon-Hartree equation
- 11:30-11:50 G. GEORGIEV (Sofia University, BULGARIA)
Non-Integrability of Geodesic dynamics of Chazy-Curzon space-time

Hall 2: Operations Research
Chairperson: M. KONSTANTINOV

- 9:00-9:20 G. TIMOFEEVA (Ural State University of Railway Transport, RUSSIA)
Investigation of the Mathematical Model of Passenger Preferences

- 9:20-9:40 G. TIMOFEEVA (Ural State University of Railway Transport, RUSSIA)
Impact of Simplification Algorithms on Transport Network Graph Properties
- 9:40-10:00 D. ZAVALISHCHIN (Ural Branch of the Russian Academy of Sciences, RUSSIA)
Adaptive Management of the Loyalty Program by a Game Theory Approach

Coffee Break

- 10:30-10:50 A. MARTYENKO (Ural State University of Railway Transport, RUSSIA)
Identification of the area most sensitive to modifications of the transport network
- 10:50-11:10 A. SHORIKOV (Ural Federal University, RUSSIA)
Algorithm for Solving of Two-Level Hierarchical Minimax Adaptive Control Problem in a Nonlinear Discrete-Time Dynamical System
- 11:10-11:30 A. SHORIKOV (Ural Federal University, RUSSIA)
Dynamical Vector-Valued Optimization of Complex Adaptive Control of Retail Unit of a Commercial Bank
- 11:30-11:50 A. SERGEEV (Ural Federal University, RUSSIA)
Comparing the types of artificial neural networks to predict changes in carbon dioxide concentration
- 11:50-12:10 A. SERGEEV (Ural Federal University, RUSSIA)
A combined approach based on prediction of the residuals of the NARX neural network improves the prediction accuracy of the based model

Hall 3: Teaching Effectiveness Colloquium Chairperson: J. COCHRAN

- 9:00-10:15 N. HALL (The Ohio State University, USA)
An Exercise in Creative Problem Solving and Effective Collaboration

Coffee Break

- 10:30-11:15 J. OHLMANN (University of Iowa, USA)
A From-Scratch, Data-Driven Approach to Teaching Simulation Modeling
- 11:15-12:00 J. COCHRAN (The University of Alabama, USA)
Active Learning from the Ground Up

Lunch Break

Hall 1: Math Analysis & Applications

Chairperson: J. PANEVA-KONOVSKA

- 16:00-16:20 I. NAYDENOVA (Plovdiv University, BULGARIA)
Approximate solution of nonlinear mixed Volterra-Fredholm fuzzy integral equations using the Adomian method
- 16:20-16:40 A. ILCHEV (Plovdiv University, BULGARIA)
Coupled fixed points for Chatterjea type maps with the mixed monotone property in partially ordered metric spaces
- 16:40-17:00 T. KOSTADINOV (Technical University, branch Plovdiv, BULGARIA)
Stability of neural networks with non-instantaneous impulses and supremum

Coffee Break

- 17:30-17:50 K. IVANOVA (Plovdiv University, BULGARIA)
Stability of non-instantaneous impulsive differential equations with supremum and application to neural networks
- 17:50-18:10 A. ALIDEMA (University of Pristina, KOSOVO)
Applications of the double fuzzy Sumudu transform for solving Volterra fuzzy integral equations
- 18:10-18:30 V. TODOROV (University of Architecture, Civil Engineering and Geodesy, BULGARIA)
Measures generated by sequences
- 18:30-18:50 N. SIRAKOVA (Technical University of Sofia, BULGARIA)
Incorrect Boundary-Value Problem for Almost Linear Systems of Ordinary Differential Equations
- 18:50-19:10 M. STOENCHEV (Technical University of Sofia, BULGARIA)
Elliptic curves and diophantine equations

Hall 3: Operations Research

Chairperson: A. MARTYNENKO

- 16:00-16:20 B. NEDEV (Sofia University, BULGARIA)
Comparative Analysis of Momentum Effect on the NYSE and SSE from the Perspective of Cultural Specifics
- 16:20-16:40 Z. TZENOVA (Technical University of Sofia, BULGARIA)
Risk management strategy in industrial accidents
- 16:40-17:00 N. HALL (The Ohio State University, USA)
INFORMS, Analytics, Research and Challenges

Coffee Break

- 17:30-17:50 M. MEDVEDEV (Ural Federal University, RUSSIA)
*On the Application of Cluster Analysis for Vegetation
Pollution Assessment in the Area of Mining Enterprise*
- 17:50-18:10 M. MEDVEDEV (Ural Federal University, RUSSIA)
*Information system for analyzing the competitive
environment of industry markets*
- 18:10-18:30 V. TURYGINA (Ural Federal University, RUSSIA)
*Exploring the Effect of National Cultural Disposition on
Drone Technology Adoption and Development*
- 18:30-18:50 V. TURYGINA (Ural Federal University, RUSSIA)
*Exploring the Effect of National Cultural Disposition on
Drone Technology Adoption and Development*
- 18:50-19:10 N. DMITRIEV (Ural State University of Railway Transport,
RUSSIA)
Complex Method of Reconstruction of Contour Lines
- 18:50-19:10 M. NIKOLOV (Technical University of Sofia, BULGARIA)
*Path Analysis Style for Managerial Agility Structural
Modelling*

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June 10, 2019 (Monday)

Hall 1: Plenary Talks

Chairperson: N. POPIVANOV

- 9:30-10:00 S. DOBROKHOTOV (Ishlinsky Institute for Problems in Mechanics RAS, RUSSIA)
Langrangian manifolds, uniform asymptotics of Hermitian polynomials and applications
- 10:00-10:30 M. SADYBEKOV (Institute of Mathematics and Mathematical Modeling, KAZAKHSTAN)
Laplace operator with nonlocal Samarskii-Ionkin type boundary conditions in a disk
- 10:30-11:00 P. VELMISOV (Ulyanovsk State Technical University, RUSSIA)
Mathematical modeling in problems of dynamics and stability of aeroelastic systems

Coffee Break

- 11:30-12:00 I. EGOROV (North-Eastern Federal University, RUSSIA)
Vragov boundary-value problem with integral boundary condition for a mixed type equation
- 12:00-12:30 J. COCHRAN (The University of Alabama, USA)
How Analytics Could Have Changed the Outcome of the 2016 U.S. Presidential Election

Lunch Break

Hall 1: Fractional Calculus, Special Functions and Applications

Chairperson: V. KIRYAKOVA

- 15:50-16:20 S. MOMANI (The University of Jordan, JORDAN)
Tuning PID and fractional PID Controllers Using Particle Swarm Optimization Algorithm via El-Khazali's Approach
- 16:20-16:40 D. RAJTER-CIRIC (University of Novi Sad, SERBIA)
A note on stochastic fractional heat equation with variable coefficients

16:40-17:00 S. TERSIAN (Bulgarian Academy of Sciences, BULGARIA)
Homoclinic solutions for fractional differential equations via variational method

Coffee Break

17:20-17:50 V. KIRYAKOVA (Bulgarian Academy of Sciences, BULGARIA)
Special functions related to fractional differential operators and equations

17:50-18:10 J. PANEVA-KONOVSKA (Technical University of Sofia, BULGARIA)
Multi-index Mittag-Leffler functions: Some integral and differential relations

18:10-18:30 Y. TSANKOV (Technical University of Sofia, BULGARIA)
Exact solution of spherical symmetric heat equation

18:30-18:50 M. PETKOVA (Plovdiv University, BULGARIA)
About the Cauchy Problem for Nonlinear Fractional System with Conformable Derivatives and Variable Delays

18:50-19:10 E. BAZHLEKOVA (Bulgarian Academy of Sciences, BULGARIA)
Analyticity of solution operators to space-time fractional evolution equations

19:10-19:30 I. BAZHLEKOV (Bulgarian Academy of Sciences, BULGARIA)
Fractional derivative model of biosurfactant production and distribution in multiphase fluid systems

Hall 3: Numerical Methods

Chairperson: K. TARNEV

15:50-16:20 L. RYASHKO (Ural Federal University, RUSSIA)
Noise-induced shifts in the ecological model with delay

16:20-16:40 I. BASHKIRTSEVA (Ural Federal University, RUSSIA)
Stochastic phenomena in the dynamical tumor-immune system

16:40-17:00 I. BASHKIRTSEVA (Ural Federal University, RUSSIA)
Analysis of the effect of noise on the corporate dynamics of coupled oscillators

Coffee Break

17:20-17:50 B. GILEV (Technical University of Sofia, BULGARIA)
Perturbation Analysis of the LMI-based Continuous-time Linear Quadratic Regulator Problem for Descriptor Systems

- 17:50-18:10 Z. ZAFIROVA (Technical University of Sofia, BULGARIA)
How to use Harmonic balance technique for solving second order nonlinear differential equation
- 18:10-18:30 G. VACHEVA (Technical University of Sofia, BULGARIA)
Modelling of DC/DC Multi Quadrant Converter for Hybrid Electric Vehicles Applications
- 18:30-18:50 G. VACHEVA (Technical University of Sofia, BULGARIA)
Generalized Model for Control of Energy Flows in Electric and Hybrid Vehicles

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June 11, 2019 (Tuesday)

Hall 1: Biomedical Informatics

Chairperson: P. BOROVSKA

- 9:00-9:20 P. BOROVSKA (Technical University of Sofia, BULGARIA)
In Silico Knowledge Data Discovery for the Case Study of Breast Cancer Diagnostics
- 9:20-9:40 P. BOROVSKA (Technical University of Sofia, BULGARIA)
Code Optimization of Multiple Sequence Alignment Software on GPU-Accelerated Infrastructure
- 9:40-10:00 M. MARINOVA (Technical University of Sofia, BULGARIA)
Comparative Analysis of Workflow Platforms for Bioinformatics

Coffee Break

- 10:30-10:50 T. HRISTEVA (Technical University, branch Plovdiv, BULGARIA)
Deep Learning Model for Object Detection
- 10:50-11:10 S. VETOVA (Technical University of Sofia, BULGARIA)
Thyroid Image Classification Algorithm using DT CWT
- 11:10-11:30 S. VETOVA (Technical University of Sofia, BULGARIA)
Medical Imaging Platforms and Cloud Solutions for the Case Study of Cancer Diagnostics
- 11:30-11:50 D. IVANOVA (Technical University of Sofia, BULGARIA)
Design and Implementation of Bioinformatics KDD Workflow for Breast Cancer Risk Evaluation
- 11:50-12:10 V. GANCHEVA (Technical University of Sofia, BULGARIA)
Database for Computer Aided Breast Cancer Diagnostic System
- 12:10-12:30 I. GEORGIEV (University of Ruse, BULGARIA)
Software Architecture for Adaptive Knowledge Discovery Based on Big Genomic Data Analytics

Hall 2: Numerical Methods

Chairperson: M. KOLEVA

- 9:00-9:20 P. SALAČ (Technical University of Liberec, CZECH REPUBLIC)
Optimization of the plunger cooling by the core with high thermal conductivity
- 9:20-9:40 J. HOZMAN (Technical University of Liberec, CZECH REPUBLIC)
Option Pricing under the Kou Jump-Diffusion Model: a DG Approach
- 9:40-10:00 D. ZAVALISHCHIN (Ural Branch of the Russian Academy of Sciences, RUSSIA)
Optimization of Body Movement with Variable Structure in a Viscous Medium with Non-constant Density

Coffee Break

- 10:30-10:50 V. GUSHCHIN (Institute for Computer Aided Design RAS, RUSSIA)
On One Approach for Mathematical Modeling of the Mixed Zones Dynamics in a Stratified Fluid
- 10:50-11:10 V. GUSHCHIN (Institute for Computer Aided Design RAS, RUSSIA)
Determination of the Optimal Value of the Weight Parameter in the Scheme with Weights for the Diffusion-Convection Equation
- 11:10-11:30 Y. STOYNOV (Technical University of Sofia, BULGARIA)
2D problems in magneto-electro-elastic materials with a nano-crack
- 11:30-11:50 S. POPOV (Technical University of Sofia, BULGARIA)
Stochastic Approach to Control of Storage Stocks in Commercial Warehouses

Hall 3: E-Learning

Chairperson: R. PEYTCHEVA-FORSYTH

- 9:00-9:20 D. BIMOVA (Technical University of Liberec, CZECH REPUBLIC)
Stereometric Warm-ups for Developing Spatial Imagination
- 9:20-9:40 P. PIRKLOVA (Technical University of Liberec, CZECH REPUBLIC)
GeoGebra book containing worksheets for Monge projection
- 9:40-10:00 R. PETKOV (Technical University of Sofia, BULGARIA)
Methods and Instruments for validation of self-acquired learning in computer animation and web design

Coffee Break

- 10:30-10:50 R. PEYTCHEVA-FORSYTH (Sofia University, BULGARIA)
Factors determining university lecturers' attitudes towards e-resources in the training of students with special educational needs
- 10:50-11:10 S. SAEV (Sofia Univeristy, BULGARIA)
Pedagogical model for utilizing Second Life in blended course for future social workers

Lunch Break

Hall 1: Numerical Methods & Other
Chairperson: A. SESEKIN

- 16:00-16:20 Y. SHAROVA (Keldysh Institute of Applied Mathematics, RUSSIA)
The Fracture Of Materials Under Intensive
- 16:20-16:40 Y. SHAROVA (Keldysh Institute of Applied Mathematics, RUSSIA)
Integrally-Consistent Techniques Of Calculating
- 16:40-17:00 T. ZHELIAZOV (Technical University of Sofia, BULGARIA)
Effects of Microcracking on the Nonlinear Behavior of Brittle Materials

Coffee Break

- 17:30-17:50 M. FILIMONOV (Ural Federal University, RUSSIA)
Optimization of the location of injection wells in an open geothermal system
- 17:50-18:10 V. VALOV (Nipissing University, CANADA)
Cohomological and homological structure of homogeneous finite-dimensional ANRs
- 18:10-18:30 R. KOBILAROV (Technical University of Sofia, BULGARIA)
Original Approach to Determining the Electric Field by Use the Gauss's Theorem
- 18:30-18:50 M. CHRISTOVA (Technical University of Sofia, BULGARIA)
Stark broadening of B I lines belonging to low energetic transitions

Hall 2: Financial Mathematics

Chairperson: A. MARCHEV

- 16:00-16:20 A. MARCHEV (University of National and World Economy, BULGARIA)
Neural network for predicting BTC prices based on market depth data
- 16:20-16:40 A. MARCHEV (University of National and World Economy, BULGARIA)
Simulation of multi-dimensional experimental data for bank services
- 16:40-17:00 B. PELOVA (Sofia University, BULGARIA)
Prediction of the Air Pollution by Geo-locations in Sofia

Coffee Break

- 17:30-17:50 M. MILEV (University of Food Technology, BULGARIA)
Matemathical Modeling by System Matematica of Bulgarian Wines by Using Parameters of Applied Photonic
- 17:50-18:10 M. MILEV (University of Food Technology, BULGARIA)
Efficient Risk Hedging with Weather Derivatives
- 18:10-18:30 S. KABAIVANOV (Plovdiv University, BULGARIA)
Application of machine learning for real estate market analysis
- 18:30-18:50 B. BOGDANOVA (Sofia University, BULGARIA)
Volatility Breakdown of the Momentum Effect observed at the New York Stock Exchange
- 18:50-19:10 W. KEMPA (Silesian University of Technology, POLAND)
Transient study of a discrete-time queueing model with feedback mechanism

Hall 3: Math Analysis & Algebra

Chairperson: G. GEORGIEV

- 16:00-16:20 G. GEORGIEV (Shumen University, BULGARIA)
Generalized offset surfaces to a pseudosphere
- 16:20-16:40 V. GUTEV (University of Malta, MALTA)
Usco Sections and Choquet-Completeness
- 16:40-17:00 M. HAMAMDJIEV (Sofia University, BULGARIA)
Multidirectional mean value inequalities without compactness restrictions

Coffee Break

- 17:30-17:50 I. TRENDAFILOV (Technical University of Sofia, BULGARIA)
Subsemirings of simplices with the same vertices
- 17:50-18:10 I. TRENDAFILOV (Technical University of Sofia, BULGARIA)
Nilpotent and idempotent elements of subsemirings of the endomorphism semiring of an infinite chain
- 18:10-18:30 M. RACHEV (Technical University of Sofia, BULGARIA)
Endomorphism Semirings - Overview
- 18:30-18:50 T. ZAPRYANOVA (Varna University of Economics, BULGARIA)
Characterization of Best Algebraic Approximation by a Generalized Modulus of Smoothness

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June 12, 2019 (Wednesday)

Hall 1: Numerical Methods

Chairperson: L. VULKOV

- 9:00-9:20 N. DIMITROV (University of Ruse, BULGARIA)
Existence results for a class of fourth order difference equation with sign-changing nonlinearity
- 9:20-9:40 N. DIMITROV (University of Ruse, BULGARIA)
Multiple solutions of fractional difference equation with nonlocal conditions
- 9:40-10:00 M. KOLEVA (University of Ruse, BULGARIA)
A New Removing Mixed Derivative Term Numerical Method for European-style Options in Heston Model

Coffee Break

- 10:30-10:50 L. VULKOV (University of Ruse, BULGARIA)
Computation of Time-Dependent Implied Volatility for European Options of Jump-Diffusion Models
- 10:50-11:10 L. VULKOV (University of Ruse, BULGARIA)
Numerical Treatment of Nonlinear Thermoelastic Waves Propagation in Fluid Saturated Porous Media With Memory
- 11:10-11:30 S. GEORGIEV (University of Ruse, BULGARIA)
Numerical and Analytical Computation of the Implied Volatility from Option Price Measurements under Regime-Switching
- 11:30-11:50 Y. KANDILAROV (University of Ruse, BULGARIA)
A Transformation Method for Numerical Identification of the Time-Dependent Diffusion Coefficient in Parabolic Equations

Hall 2: Differential Equations

Chairperson: P. VELMISOV

- 9:00-9:20 P. VELMISOV (Ulyanovsk State Technical University, RUSSIA)
Mathematical modeling of mechanical system "pipeline - pressure sensor"

- 9:20-9:40 A. DAVYDOV (National University of Science and Technology MISiS, RUSSIA)
Structural stability of dynamic inequalities on sphere and mixed type PDE's
- 9:40-10:00 M. FILIMONOV (Ural Federal University, RUSSIA)
Investigation of global stability of the equilibrium position of a system of differential autonomous equations with the help of admissible functions

Coffee Break

- 10:30-10:50 A. POLOSIN (Moscow State University, RUSSIA)
On an inclined derivative problem for the mixed type equation with the spectral parameter
- 10:50-11:10 B. TURMETOV (Ahmet Yesevi University, KAZAKHSTAN)
On fractional analogs of Dirichlet and Neumann problems for a non-local Laplace equation
- 11:10-11:30 T. POPOV (North-Eastern Federal University, RUSSIA)
Parabolic Equations with Changing Time Direction
- 11:30-11:50 T. HRISTOV (Sofia University, BULGARIA)
Estimates for the singular solutions of Protter problems for the wave equation
- 11:50-12:10 M. JENALIYEV (Institute of Mathematics and Mathematical Modeling, KAZAKHSTAN)
On a boundary problem of heat conduction and a degenerating integral equation of Abel type of the second kind related to it

Hall 3: Software Innovations

Chairperson: P. BOROVSKA

- 9:00-9:20 D. IVANOVA (Plovdiv University, BULGARIA)
User Centered Approach for Interactive Presentation of Bulgarian Cultural and Historical Heritage into a Cross-Functional Web-based Platform
- 9:20-9:40 A. PETKOV (Technical University of Sofia, BULGARIA)
Architecture of a Module for Geolocation of Objects from the Cultural and Historical Heritage
- 9:40-10:00 D. CHOTROV (Technical University of Sofia, BULGARIA)
Conceptual Model of the VR Module for "Virtual Plaza for Interactive Presentation of Bulgarian Cultural Heritage"

Coffee Break

- 10:30-10:50 P. BOROVSKA (Technical University of Sofia, BULGARIA)
Conceptual Model and Scenario for Virtual Plaza of Bulgarian Cultural and Historical Heritage

- 10:50-11:10 Y. SVEZHENOV (Technical University of Sofia, BULGARIA)
Modelling in Dynamic User Experience Design of Educational Toys Packages
- 11:10-11:30 S. ZHELEV (Technical University of Sofia, BULGARIA)
Using Microservices and Event Driven Architecture for Big Data Stream Processing
- 11:30-11:50 P.TSANKOV (Technical University of Sofia, BULGARIA)
Analysis of similarities between equity and cryptocurrency series by using graphs and spanning trees
- 11:50-12:10 J. GENOFF (Technical University, branch Plovdiv, BULGARIA)
On Some Sources of Inaccuracy in the Computer Simulations of Molecular Interactions

Lunch Break

Hall 1: Numerical Methods

Chairperson: M. FILIMONOV

- 15:50-16:20 M. KONSTANTINOV (University of Architecture, Civil Engineering and Geodesy, BULGARIA)
Large Error Computations
- 16:20-16:40 A. SESEKIN (Ural Federal University, RUSSIA)
Sequential optimal control of the nuclear fuel reload mechanism
- 16:40-17:00 K. TARNEV (Technical University of Sofia, BULGARIA)
Numerical modeling of plasma sources with a periodic structure

Coffee Break

- 17:20-17:50 S. BAEVA (Technical University of Sofia, BULGARIA)
Risk Assessment and Route Optimization for Life and Health Self-Keeping During e-Cycling
- 17:50-18:10 S. BAEVA (Technical University of Sofia, BULGARIA)
Route Optimization for Long Durability Battery Life During e-Bike Cycling
- 18:10-18:30 S. TSVETANOV (Technical University of Sofia, BULGARIA)
Application of K Shortest Paths Algorithm in Vision Recognition

Hall 3: E-Learning

Chairperson: E. HALOVA

- 15:50-16:20 E. HALOVA (Technical University of Sofia, BULGARIA)
Authentication with Tesla System Instruments Supporting eAssessment Models in Engineering Courses
- 16:20-16:40 N. KOJUHAROVA (Technical University of Sofia, BULGARIA)
Innovations in Teaching and Assessment of Engineering Courses, Supported by Authentication and Authorship Analysis System
- 16:40-17:00 Z. PETROVA (Technical University of Sofia, BULGARIA)
On the simultaneous teaching of mathematics and new programming language in master degree

Coffee Break

- 17:20-17:50 S. HADZHIKOLEVA (Plovdiv University, BULGARIA)
Generalized Net Model of a System for Quality Assurance in Education
- 17:50-18:10 S. HADZHIKOLEVA (Plovdiv University, BULGARIA)
Formal Model of a Pedagogical Pattern Language
- 18:10-18:30 Z. PETROVA (Technical University of Sofia, BULGARIA)
Mathematical Modeling of the Equation of Duffing with Applications for Master Degree Students: Part II

20:00

Official Dinner