3rd International Conference on Applications of Mathematics and Informatics in Natural Sciences and Engineering

Dedicated to the 80th Birthday of Professor David Gordezhani

PROGRAM OF THE CONFERENCE

06.12 – 09.12.2017
TBILISI, GEORGIA
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- I. Javakhishvili Tbilisi State University
  - I. Vekua Institute of Applied Mathematics
  - Faculty of Exact and Natural Sciences
- Georgian Mechanical Union
  - Georgian National Committee of Theoretical and Applied Mechanics
- Tbilisi International Centre of Mathematics and Informatics

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Dedicated to the 80th Birthday of Professor David Gordeziani

Wednesday, December 6, 2017
Ilia Vekua Lecture Hall

14:00-14:25 Opening
Rector of I. Javakhishvili Tbilisi State University
George Sharvashidze

14:30-15:00 George Jaiani, Temur Jangveladze (Georgia)
Life and Activities of Professor David Gordeziani

15:05-15:35 Philippe Ciarlet (Hong Kong)
Nonlinear Estimates for Surfaces in Terms of Their Fundamental Forms, and Applications

15:40-15:55 Coffee Break
Ilia Vekua Lecture Hall

16:00-16:30 Vakhtang Kokilashvili (Georgia)
New Trends in Function Spaces Theory and Applications to the BVPs

16:35-17:05 Paolo Emilio Ricci (Italy)
Computation of Spectral Characteristics for Charged Integral Equations

17:10-17:40 Vladimir Gool’dshtein (Israel)
On the First Eigenvalue of Free Vibrating Membrane (of Neumann-Laplace Operator)

17:45-18:00 Coffee Break
Ilia Vekua Lecture Hall

18:05-18:35 Bert-Wolfgang Schulze (Germany)
Corner Calculus for Higher Singularities

18:40-19:10 Ramaz Botchorishvili (Georgia)
Modeling Symmetric Eigenvalue Problem with Time Dependent Equations

19:15-19:45 Hamlet Meladze, D. Gordeziani, T. Davitashvili (Georgia)
On Some Parallel Algorithms for Approximate Solution of Problems of Mathematical Physics
19:50-20:20  Volodymyr Makarov (Ukraine)
Exact and Approximate Solutions of the Spectral Problems for
the Differential Schrödinger Operator with a Polynomial
Potential in \( \mathbb{R}^k, k \geq 2 \)

Thursday, December 7, 2017

Ilia Vekua Lecture Hall

9:00-9:30  Paolo Podio-Guidugli (Italy)
On the Modeling of Transport Phenomena in Continuum
and Statistical Mechanics

9:35-10:05  David Natroshvili (Georgia)
Application of BDIE Method in the Theory of Acoustic
Scattering by Inhomogeneous Anisotropic Obstacles

10:10-10:40  Olga Gil-Medrano (Spain)
Geometry of the Space of Curves. Application to a
Problem in Endodontics

10:45-11:15  Philippe Destuynder (France)
Few Results Concerning Non Destructive Testing of
Structures

11:20-11:40  Coffee Break

Ilia Vekua Lecture Hall

11:45-12:15  Roland Duduchava, T. Buchukuri,
G. Tephnadze (Georgia)
Laplace-Beltrami Equation on Hypersurfaces and
\( \Gamma \) -Convergence

12:20-12:50  Temur Kutsia (Austria)
Anti-Unification in Description Logic EL

12:55-13:25  Mircea Marin (Romania)
Rule-Based Programming: The Mathematica Experience

13:30-14:30 Lunch Break

Ilia Vekua Lecture Hall

14:40-15:00  Jemal Peradze (Georgia)
A Nonlinear Equation for the Rectangular Dynamic Shell
15:05-15:25 **Nana Dikhaminjia**, J. Rogava (Georgia), M. Tsiklauri (USA)  
Parallel Type of Decomposition Scheme for Quasilinear Abstract Hyperbolic Equation

15:30-15:50 **Hanno Scharr**, K. Krajsek (Germany)  
Multi-Orientation Diffusion Schemes for Image Reconstruction

15:55-16:15 **Hendrik Elbern** (Germany)  
Optimal Observation Network Assessment for Controlling High Dimensional Advection-Diffusion-Reaction Equations

16:20-16:40 **Giorgi Arabidze** (Germany)  
Transfer of Generalized Groupoid Action Along a Morita Equivalence

16:45-17:05 **Nino Bukuri**, R. Botchorishvili (Georgia), H. Elbern (Germany)  
Adaptive Multischeme Refinement in the Spatially Two Dimensional Case

17:10-17:30 **Tamar Janelidze**, R. Botchorishvili (Georgia), H. Elbern (Germany)  
Adjoint Development for Linear Advection Schemes in ICON Model of the German Weather Service

**19:00 Conference Dinner**

**Friday, December 8, 2017**  
Excursion Day

**Saturday, December 9, 2017**  
*Ilia Vekua Lecture Hall*

11:00-11:30 **Alemdar Hasanov** (Turkey)  
Lipschitz Continuity of the Fréchet Gradient in an Inverse Coefficient Problem for a Parabolic Equation with Dirichlet Measured Output
11:35-12:05 Tamaz Vashakmadze (Georgia)  
On Investigation of Two Problems

12:10-12:40 Tengiz Meunargia (Georgia)  
On I. Vekua's Method of the Consistent Theory of Elastic Shells

12:45-13:00 Coffee Break

Ilia Vekua Lecture Hall

13:05-13:25 Roland Etienne (Germany)  
The One-Dimensional Modified Weyl-Berry Conjecture: an Elementary Approach

13:30-13:50 Piotr Skrzypacz, D. Wei (Kazakhstan)  
On Nonlinear MEMS Statics and Dynamics

13:55-14:15 Revaz Kakubava, N. Svanidze (Georgia)  
An Alternative Transient Analysis for Closed Semi-Markov Queuing Systems

14:20-14:40 Nana Odishelidze (Georgia)  
On a Cyclically Symmetric Problem of Plate Bending with Partially Unknown Boundary

14:45-15:45 Lunch Break

Ilia Vekua Lecture Hall

15:50-16:10 Temur Chilachava (Georgia)  
Investigation of a Nonlinear Dynamical System Describing the Process of Linguistic Globalization

16:15-16:35 Kakhaber Odisharia, V. Odisharia, P. Tsereteli, N. Janikashvili (Georgia)  
On the Mathematical Model of Drug Treatment of Rheumatoid Arthritis

16:40-17:00 Archil Papukashvili, T. Davitashvili (Georgia)  
On Approximate Solution of Anti-Plane Problem of Composite Bodies Weakened by Crack

17:05-17:25 Zurab Kiguradze, T. Jangveladze (Georgia)  
Asymptotic Properties of Solution and Difference Scheme for One Nonlinear Integro-Differential Model
17:30-17:50 Konstantine Pkhakadze, M. Chikvinidze, G. Chichua, D. Kurtskhalia, Sh. Malidze (Georgia)
The Trial Version of the Georgian Universal Smart Corpus, the Aims of Defence of Georgian and Abkhazian Languages from the Danger of Digital Extinction, and the Law of Georgia “On Official Language”

17:55-18:15 Gela Kipiani, S. Bliadze (Georgia)
Calculation of Plates and Shells with Ribs Rigidity by the Finite Element Method

18:20-18:40 Abdul Hakim Khan (India)
A Study of Algebraic Structure Involving Banach Space through $q$-Analogue

Poster Presentations:

Ali Bakhshian, Nima Mirzaei (Turkey)
Facility Location for new Stone Crusher in Sarcheshmeh Copper Mine with AHP and TOPSIS methods

Gela Kipiani, Seit Bliadze (Georgia)
Calculation of Plates and Shells with Ribs Rigidity by the Finite Element Method
Satellite Workshop on Practical and Theoretical Aspects of Cryptography and Information Security

Friday, December 8, 2017

Ilia Vekua Lecture Hall

10:00-10:25 **Meryem Soysaldi**, S. Akleylek (Turkey)
On the Generalization of Linear-In-One-Argument Form of Multivariate Polynomials for Post-Quantum Cryptography

10:30-10:55 **Sedat Akleylek**, E. Engin (Turkey)
Reducing Key Sizes in Rainbow: Partially Hadamard-Rainbow

11:00-11:25 **Oğuz Yayla**, S. Kurt (Turkey)
Nearly perfect sequences and cryptographic functions

11:30-12:00 **Coffee Break**

12:00-12:25 **Zulfukar Saygi**, E. Tilenbaev, Ç. Ürtiş (Turkey)
On the number of $k$ normal elements

12:30-12:55 **Baris Bulent Kırlar**, S. Akleylek (Turkey)
Computing Square Roots in Prime Fields via Singular Elliptic Curves

13:00-14:00 **Lunch**

14:00-14:25 **Nani Arabuli**, Z. Tsiramua, L. Adamia (Georgia)
Modern Methods of Cryptanalysis

14:30-14:55 **Besik Dundua**, M. Rukhaia, Kh. Rukhaia (Georgia)
Towards Protocol Analysis in Prholog

15:00-15:25 **Lela Mirtskhulava**, G. Gugunashvili (Georgia),
S. Al-Majeed (Oman), S. Beruashvili (Germany)
Analysis of Trust Models in Wireless Networks

15:30-15:55 **Lela Mirtskhulava** (Georgia),
S. Al-Majeed, A. Sharafi (Oman)
Human-Internet of Things (IoT) Communication: Security issues