

Georgian Mathematical Union
Batumi Shota Rustaveli State University
Ministry of Education and Sports of Adjara Autonomous Republic

**XV INTERNATIONAL CONFERENCE
OF THE GEORGIAN MATHEMATICAL UNION**
**Dedicated to the 90-th Anniversary of the Batumi
Shota Rustaveli State University**

PROGRAM

**Batumi, September 1-6
2025**

Organizing Committee

Chair - Meskhi Alexander, Deputy Chairs – Jangveladze Temur and Turmanidze Lela, Conference Secretary - Davitashvili Tinatin, Members - Baladze Vladimer, Beridze Anzor, Bokelavadze Tengiz, Gagoshidze Mikheil, Natelashvili Lazare, Gogishvili Guram, Kereselidze Nugzar, Makharadze Dali, Rukhaia Mikheil, Vashakidze Zurab.

Local Organizing Committee

Chair - Turmanidze Lela, Deputy Chair - Demuria Edelia, Dumbadze Pridon, Kakhidze Salome, Malakmadze Liza, Phutkaradze Mariam.

Scientific Committee

Co-Chairs - Natroshvili David, Beridze Anzor, Members - Amaglobeli Mikheil, Bakuradze Malkhaz, Baladze Vladimer, Chilachava Temur, Chkadua Otar, Davitashvili Teimuraz, Duduchava Roland, Dundua Besik, Ephremidze Lasha, Getsadze Rostom, Gogishvili Guram, Grafakos Loukas, Jaiani George, Jangveladze Temur, Kadeishvili Tornike, Kapanadze David, Kharazishvili Alexander, Khimshiashvili George, Khmaladze Emzar, Kiguradze Taniel, Kirtadze Aleks, Kvaratskhelia Vakhtang, Kvinikhidze Alexander, Massimo Lanza de Cristoforis, Meladze Hamlet, Mikhailov Sergey, Mitrea Marius, Nadaraia Elizbar, Omanadze Roland, Oniani Giorgi, Pirashvili Teimuraz, Pkhakadze Konstantine, Purtukhia Omar, Rukhaia Mikheil, Shargorodsky Eugene, Shavlakadze Nugzar, Spitkovsky Ilia, Tanieladze Vaja, Tephnadze George, Tetunashvili Shakro, Vepkhvadze Teimuraz.

Conference Thematic Sessions and Organizers

- Algebra and Number Theory (Khmaladze Emzar, Pirashvili Teimuraz, Shavgulidze Ketevan)
- Differential and Integral Equations, and Their Applications (Chkadua Otar, Duduchava Roland, Shavlakadze Nugzar)
- Geometry and Topology (Bakuradze Malkhaz, Baladze Vladimer, Khimshiashvili George)
- Logic, Language, Artificial Intelligence (Dundua Besik, Pkhakadze Konstantine, Rukhaia Mikheil)
- Mathematical Education and History of Mathematics (Gogishvili Guram, Vepkhvadze Teimuraz)
- Mathematical Logic and Discrete Mathematics (Kharazishvili Alexander, Kirtadze Aleks, Omanadze Roland)
- Mathematical Modeling and Numerical Analysis (Chilachava Temur, Jangveladze Temur, Meladze Hamlet)
- Theoretical Physics (Kvinikhidze Alexander)
- Probability Theory and Statistics, Financial Mathematics (Kvaratskhelia Vakhtang, Purtukhia Omar, Tarieladze Vaja)
- Real and Complex Analysis (Ephremidze Lasha, Oniani George, Tephnadze George)
- Mini symposia: Applied Data Science (Khachidze Manana, Tsintsadze Magda)

Editors: Gogishvili Guram, Davitashvili Tinatin

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Schedule of the Conference

August 31, Sunday (Arrival Day to Batumi)

September 1, Monday

9 ⁰⁰ : 9 ³⁰	Registration
9 ³⁰ : 10 ⁰⁰	Opening of the Conference
Plenary Room	Chairman: Meskhi Alexander
10 ⁰⁰ : 10 ⁵⁰	Duduchava Roland. Spectral Properties of Convolution Equations on the Submonoid $M = [0, 1)$
10 ⁵⁰ : 11 ⁴⁰	Haskell Deirdre. What is Model-Theoretic Algebra?
11 ⁴⁰ : 12 ²⁰	Coffee break
12 ²⁰ : 13 ¹⁰	Almeida Alexandre. Nonstandard Weights and Uniform Weighted Norm Inequalities
13 ¹⁰ : 14 ⁰⁰	Lamberti Pier Domenico. Sensitivity Analysis for Maxwell's Equations in Electromagnetic Cavities
Room 2	Chairman: Beridze Anzor
12 ²⁰ : 13 ¹⁰	Ahmed Ejaz. Simultaneous Variables Selection and Prediction: Wisdom or Folly
13 ¹⁰ : 14 ⁰⁰	Imkeller Peter. Geometric Properties of Rough Curves via Dynamical Systems: SBR Measure, Local Time, Rademacher Chaos and Number Theory
14 ⁰⁰ : 16 ⁰⁰	Lunch
16 ⁰⁰ : 17 ¹⁵	Parallel Sessions
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 19 ⁰⁰	Parallel Sessions

September 2, Tuesday

Plenary Room	Chairman: Oniani Giorgi
10 ⁰⁰ : 10 ⁵⁰	Cruz-Uribe David. Solutions to Degenerate Elliptic Equations: Existence, Boundedness, Regularity
10 ⁵⁰ : 11 ⁴⁰	Pirashvili Teimuraz. On Higher Hochschild Homology
11 ⁴⁰ : 12 ²⁰	Coffee break
12 ²⁰ : 13 ¹⁰	Grigoryan Martin. Functions, Universal with Respect to the Classical Systems
13 ¹⁰ : 14 ⁰⁰	Hafstein Sigurður Freyr. Lyapunov Functions and Contraction Metrics: Theory and Numerical Methods
14 ⁰⁰ : 16 ⁰⁰	Lunch
16 ⁰⁰ : 17 ¹⁵	Parallel Sessions
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 19 ⁰⁰	Parallel Sessions
Online	Chairman: Ephremidze Lasha
19 ⁰⁰ : 19 ⁵⁰	Xue Qingying. On the Boundedness of Calderón Commutators
20 ⁰⁰ : 20 ⁵⁰	Megrelishvili Michael. Key Subgroups in Topological Groups

September 3, Wednesday

Plenary Room	Chairman: Beridze Anzor
10 ⁰⁰ : 10 ⁵⁰	Kąkol Jerzy. On Asplund Spaces $C(X)$ of Continuous Functions with the Compact-Open Topology

10 ⁵⁰ : 11 ⁴⁰	<u>Miasnikov Alexei</u>, Amaglobeli Mikheil. Exponentiation in Groups: General Theory and Applications
11 ⁴⁰ : 12 ²⁰	Coffee break
12 ²⁰ : 13 ¹⁰	Rupp Andreas. Hybrid Finite Element Methods for Partial Differential Equations in Networks and Hypergraphs
13 ¹⁰ : 14 ⁰⁰	Jain Pankaj. Hausdorff and Dunkl-Hausdorff Operators for Monotone Functions and Monotone Weights
14 ⁰⁰ : 16 ⁰⁰	Lunch
16 ⁰⁰ : 18 ⁰⁰	Parallel Sessions
The evening	Conference Dinner

September 4, Thursday

Plenary Room	Chairman: Natroshvili David
10 ⁰⁰ : 10 ⁵⁰	Torres Delfim Fernando Marado. The Fractional Calculus of Variations
10 ⁵⁰ : 11 ⁴⁰	Jokhadze Otar. Some Non-Correct Problems for a Partial Differential Equations
11 ⁴⁰ : 12 ²⁰	Coffee break
12 ²⁰ : 13 ¹⁰	Efendiev Messoud. Long-time Dynamics of PDEs: Nondegenerate vs Degenerate
13 ¹⁰ : 14 ⁰⁰	Hedenmalm Haakan. Gaussian Analytic Functions and Operator Symbols of Dirichlet Type
14 ⁰⁰ : 16 ⁰⁰	Lunch
16 ⁰⁰ : 17 ¹⁵	Parallel Sessions
17 ¹⁵ : 17 ⁴⁵	Coffee break

17 ⁴⁵ : 19 ⁰⁰	Parallel Sessions
Online	Chairman: Tarieladze Vaja
19 ⁰⁰ : 19 ⁵⁰	SenGupta Ashis. The Rise of AI in Statistical Machine Learning: Bliss or Blight?
20 ⁰⁰ : 20 ⁵⁰	Meyer Ralf. Isomorphism and Stable Isomorphism in "Real", "Quaternionic" and Equivariant K-Theory

September 5, Friday

Room 1	Chairman: Dundua Besik
10 ⁰⁰ : 10 ⁵⁰	Sánchez Pérez Enrique A. Geometric and Summing Properties of Operators on Banach Function Spaces: Optimal Extensions
10 ⁵⁰ : 11 ⁴⁰	Liflyand Elijah. Hyperbolic Lebesgue Constants
11 ⁴⁰ : 12 ²⁰	Coffee break
12 ²⁰ : 13 ¹⁰	Suragan Durvudkhan. Hardy-Leray Type Inequalities in Variable Lebesgue and Morrey Spaces
13 ¹⁰ : 14 ⁰⁰	Rafeiro Humberto. Convolution-Type Operators in Grand Lorentz Spaces
14 ⁰⁰ : 16 ⁰⁰	Lunch
16 ⁰⁰ : 17 ¹⁵	Parallel Sessions
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 19 ⁰⁰	Parallel Sessions

September 6, Saturday

10 ⁰⁰ : 12 ⁰⁰	Parallel Sessions
Room 1	Chairman: Meskhi Alexander/Beridze Anzor
12 ⁰⁰	Closing

Thematic Sessions

Algebra and Number Theory

September 1, Monday

Room 2	Chairman: Pirashvili Teimuraz
$16^{00} : 16^{25}$	Abdesselam Abdelmalek, Heim Bernhard, Neuhauser Markus. Bessenrodt-Ono Inequalities for l-tuples of Pairwise Commuting Permutations
$16^{25} : 16^{50}$	Lomadze Vakhtang. "Projective" Theory of Linear Ordinary Differential Equations
$16^{50} : 17^{15}$	Cojuhari Elena, Gardner Barry. On Various Aspects Related to the Generalized Monoid Rings
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Martins-Ferreira Nelson, Montoli Andrea, Patchkoria Alex, Sobral Manuela. The Third Cohomology Group of a Monoid and Admissible Abstract Kernels II
$18^{10} : 18^{35}$	Muladze Vitali, Rakviashvili Giorgi, Turmanidze Lela. On Ptojective Class Group of Crossed Products II
$18^{35} : 19^{00}$	Tsinaridze Nino, Givradze Omar, Tavdgiridze Giuli, Partenadze Guladi. Complete Semigroups of a Binary Relations Defined by Semilattices Type R

September 2, Tuesday

Room 2	Chairman: Lomadze Vakhtang
$16^{00} : 16^{25}$	Guterman Alexander. On the Length of Jordan, Lie, and Maltsev Algebras

$16^{25} : 16^{50}$	Khmaladze Emzar. Central Derivations, Centroids and Skew-Symmetric Bi-Derivations of Leibniz n-Algebras
$16^{50} : 17^{15}$	Bokelavadze Tengiz. Malcev Correspondence between Nilpotent k-Groups and Nilpotent Lie k-Algebras
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Kemoklidze Taniel. Full Transitivity of a Cotorsion Hull and the Group of Rational Points of an Elliptic Curve
$18^{10} : 18^{35}$	Zulfeqarr Fahed. F-Topology on Integers
$18^{35} : 19^{00}$	Ashale Tekalign. Local Cohomology in Autometrized Algebra

September 4, Thursday

Room 2	Chairman: Khmaladze Emzar
$16^{00} : 16^{25}$	<u>Gajdzica Krystian</u>, Zakarczemny Maciej. Rectangle Partitions Generalizing Integer Partitions
$16^{25} : 16^{50}$	Chiaselotti Giampiero. A New Categorical Framework to Study Set Relations and Set Operators (Online)
$16^{50} : 17^{15}$	Goy Taras. On Toeplitz-Hessenberg Determinants with Lichtenberg Number Entries (Online)
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	<u>Kotchlamazashvili Bakur</u>, Topuridze Nino. Cotriple Cohomologies of Lie super p-Algebras and Abstract Kernels (Online)
$18^{10} : 18^{35}$	Alsager Kholood. Rough Intuitionistic Fuzzy Filters in BE-Algebras (Online)
$18^{35} : 19^{00}$	Mokhtari AmirHossein. Some Linear Maps on Nest Algebras (Online)

Differential and Integral Equations and their Applications

The session is dedicated to the 120th anniversary of **Boris Khvedelidze** and the 80th anniversaries of **Roland Duduchava** and **George Jaiani**, in honor of their outstanding contributions and achievements in the fields of Differential and Integral Equations, and their applications.

September 1, Monday

Room 3	Chairman: Duduchava Roland
16 ⁰⁰ : 16 ²⁵	<u>Natroshvili David</u>, Mrevlishvili Maia. Iteration Method for the Dirichlet and Neumann Type Boundary Value Problems of the Elasticity Theory
16 ²⁵ : 16 ⁵⁰	<u>Mrevlishvili Maia</u>, Natroshvili David. An Alternative Potential Method for Pseudo-Oscillation Equations of Elasticity
16 ⁵⁰ : 17 ¹⁵	<u>Gotchoshvili Giorgi</u>, Mrevlishvili Maia, Natroshvili David. Iteration Method for the Neumann Boundary Value Problem for the Laplace Equation
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Jahanshahi Mohammad</u>, Eyvazi Ali. Solving Boundary Value Problem Including Non-Homogeneous and Non-Linear Differential Equations by using Multiplicative Differential Equations and Method of Green's Function
18 ¹⁰ : 18 ³⁵	<u>Juraev Davron</u>, Gulsum Aghayeva. Regularization of the Cauchy Problem for Elliptic Systems in Unbounded Domain

September 2, Tuesday

Room 3	Chairman: Natroshvili David
16 ⁰⁰ : 16 ²⁵	<u>Gol'dshtein Vladimir</u>, Prashanta Garain, Ukhlov Alexander. On the Weighted Steklov Eigenvalue Problems in Outward Cuspidal Domains
16 ²⁵ : 16 ⁵⁰	<u>Esfahani Amin</u>, Van Duong Dinh. Dynamics of Solutions of Inhomogeneous NLS System with a $\chi(2)$ Nonlinearity
16 ⁵⁰ : 17 ¹⁵	Partsvania Nino. On one Nonlocal Problem for Differential Equations with a Deviating Argument
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Kuzmina Tatiana</u>, Duduchava Roland, Oleinikov Alexander. Limit State Zone at the Crack Tip in Composite Laminates
18 ¹⁰ : 18 ³⁵	<u>Karataş Hilal Başak</u>, Faruk Uçar. A Study on Generalized Laplace Transform: Iteration and Parseval-Type Identities
18 ³⁵ : 19 ⁰⁰	<u>Aliyev Yagub</u>, Aliyeva Narmin. Sturm-Liouville Problems with an Eigenparameter in the Boundary Condition

September 3, Wednesday (Online)

Room 3	Chairman: Shavlakadze Nugzar
16 ⁰⁰ : 16 ²⁰	Kovtunenکو Victor A. Semi-Smooth Newton Method for Contact and Dynamic Problems
16 ²⁰ : 16 ⁴⁰	Mohanty Saujanya. Successive Bilinear Hardy Inequalities for Mixed-Type Operators
16 ⁴⁰ : 17 ⁰⁰	Aditi. On Sawyer Duality Principle for Various Operators on Orlicz Spaces

17 ⁰⁰ : 17 ²⁰	Debalkie Belete. A Study of Fractional Integral Inequalities and its Applications
17 ²⁰ : 17 ⁴⁰	Hadiri Soukaina. Some Results on the Generalized Brownian Bridge
17 ⁴⁰ : 18 ⁰⁰	<u>Monijore Shumatir Yohannis</u>, Tsegaye G. Ayele and Mulugeta A. Dagnaw. _Analysis of Boundary-Domain Integral Equations for Variable-Coefficient Helmholtz Equation with Interiom BVP on n-Dimensional Lipschitzd

September 4, Thursday

Room 3	Chairman: Gol'dshtein Vladimir
16 ⁰⁰ : 16 ²⁵	Shavlakadze Nugzar. Dynamic Contact Problem for Volterra Viscoelastic Model
16 ²⁵ : 16 ⁵⁰	<u>Sokhadze Zaza</u>, Nanava Irakli. Kneser Type Theorems on a Structure of Sets of Solutions of the Weighted Cauchy Problem for Nonlinear Singular Delayed Differential Equations
16 ⁵⁰ : 17 ¹⁵	<u>Gorgodze Nika</u>, Tadumadze Tamaz. The Global Representation Formulas of Solutions for the Nonlinear Controlled Functional-Differential Equations with Several Delays and Continuous Initial Condition
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Sultan Andrei</u>, Cheban David. Global attractors of non-autonomous lattice dynamical systems
18 ¹⁰ : 18 ³⁵	<u>Zraiqat Amjed</u>, Yazan Alhrout, Mamon Abu Hammad. Fractional Bessel Differential Equation via Fractional Laplacet

September 5, Friday

Room 3	Chairman: Chkadua Otari
16 ⁰⁰ : 16 ²⁵	<u>Almusawa Musawa</u> , <u>Almusawa Hassan</u> . Fractional Analysis of Nonlinear Dynamics in Korteweg-de Vries-Burgers' and Modified Korteweg-de Vries Equations
16 ²⁵ : 16 ⁵⁰	Assanova Anar T. Differential-Boundary Value Problems for Second-Order System of Hyperbolic Equations
16 ⁵⁰ : 17 ¹⁵	Buryachenko Kateryna. Regularity Problems for Evolution Anisotropic Equations

Geometry and Topology

September 1, Monday

Room 4	Chairman: Bakuradze Malkhaz
16 ⁰⁰ : 16 ⁵⁰	Patchkoria Irakli. On the Farrell-Tate K -theory of $Out(F_n)$
16 ⁵⁰ : 17 ¹⁵	Pirashvili Ilia. Homotopy in the Geometry of Monoids
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ³⁵	Le Hong Van. Unital C_∞ -algebras and the Real Homotopy Type of $(r - 1)$ -connected Compact Manifolds of Dimension $\leq l(r - 1) + 2$.
18 ³⁵ : 19 ⁰⁰	Diakvnishvili Ana, <u>Bibileishvili Gulnara</u>. Invariants and Areas of Steiner 4-chains
19 ⁰⁰ : 19 ²⁵	Peng Dekui, <u>Shlossberg Menachem</u>. Minimality of the Inner Automorphism Group (Online)

September 2, Tuesday

Room 4	Chairman: Beridze Anzor
16 ⁰⁰ : 16 ⁵⁰	Meyer Ralf, <u>Nadareishvili George</u>. Classification of C^* -dynamical Systems in the Bootstrap Class for Actions of a Finite Commutative Square-Free Groups
16 ⁵⁰ : 17 ¹⁵	Chakhvashvili Gaga. Relationship between the Beck –Chevalley and Kan Conditions in Simplicial Sets
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ³⁵	Broomhead Nathan, <u>Pirashvili Mariam</u>. An Isometry Theorem for Persistent Homology of Circle-Valued Functions
18 ³⁵ : 19 ⁰⁰	Aliashvili Teimuraz, <u>Tsertsvadze Beka</u>. Random Polynomials from a Topological Viewpoint

September 4, Thursday

Room 4	Chairman: Patchkoria Irakli
16 ⁰⁰ : 16 ⁵⁰	Beridze Anzor. The Braid Group, Garside Structure and Burau Representation
16 ⁵⁰ : 17 ¹⁵	Perea Sinuhe. GRACYASK: Graphs, Cycles, and Skyrmions
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ³⁵	Bakuradze Malkhaz. Embeddings of Trivial G -Bundles into G -Bundles over G -CW Complexes
18 ³⁵ : 19 ²⁰	Baladze Vladimer, <u>Dumbadze Fridon</u>. Functional (Co)Homological Groups and Their Applications

Logic, Language and Artificial Intelligence

September 2, Tuesday

Room 5	Chairman: Pkhakadze Konstantine
16 ⁰⁰ : 16 ²⁵	<u>Pkhakadze Konstantine</u>, Maskharashvili Aleksandre. The Main Aim of Research Institute for Cultural Protection and Technological Development of Georgian State Languages at the Georgian Technical University and the Georgian-Abkhazian “smart” Internet Network Technologically Completely Supported with Georgian and Abkhazian
16 ²⁵ : 16 ⁵⁰	<u>Pkhakadze Konstantine</u>, Maskharashvili Aleksandre, Pkhakadze Luka. For the Trial-Applied Version of the Hybrid Syntactic-Logical Generator and Analyzer of the Core part of the Georgian
16 ⁵⁰ : 17 ¹⁵	<u>Pkhakadze Luka</u>, Pkhakadze Konstantine, Maskharashvili Aleksandre. For the Georgian-Abkhazian Semi Self-Developing Terminology Portal
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Abuladze Inga. New Challenge in the Educational Institutions Post-Pandemic period
18 ¹⁰ : 18 ³⁵	Magrakvelidze Dali. Classical vs. Fuzzy Logic in Artificial Intelligence: Foundations and Applications

September 5, Friday

Room 5	Chairman: Dundua Besik
16 ⁰⁰ : 16 ²⁵	<u>Garanina Natalia</u>, Anureev Igor, Kondratyev Dmitry, Gorlatch Sergei. Safe Mutations of Communicating Automata

16 ²⁵ : 16 ⁵⁰	<u>Jintcharadze Elza</u>, Sarajishvili Tsitsino. Performance Evaluation and Comparative Study of ECC, RSA and Kyber Cryptosystems in the Post-Quantum Era
16 ⁵⁰ : 17 ¹⁵	<u>Imnadze Elza</u>, Kereselidze Nugzar. About Using Internet Technologies in Education
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Tabagari Zaza</u>, Sanikidze Zaza, Giorgobiani George. Application of Poisson's Equation in Image Processing Problems
18 ¹⁰ : 18 ³⁵	Pogossian Edward. On the Way to Adequate Theory of Cognizing (Online)
18 ³⁵ : 19 ⁰⁰	<u>Karapetyan Boris</u>, Pogossian Edward. Modeling and Handwriting Examination of Sensorimotor Intelligence

September 6, Saturday

Room 5	Chairman: Rukhaia Mikheil
10 ⁰⁰ : 10 ²⁵	Bishara Merihan Hazem Anwar Labib. Enhancing Inductive Logic Programming with Neurosymbolic Inference and Probabilistic Reasoning for Relational Pattern Discovery
10 ²⁵ : 10 ⁵⁰	Bishara Merium Hazem Anwar Labib. Understanding Ambiguity using Unranked Probabilistic Logic
10 ⁵⁰ : 11 ¹⁵	Kurtanidze Lia. Completeness and Decidability in Infinitary Probability Logics
11 ¹⁵ : 11 ⁴⁰	Tibua Lali. A Probabilistic Extension of τ SR Logic: Reasoning with Uncertainty and Tau Terms
12 ⁰⁰	Closing

Mathematical Logic and Discrete Mathematics

September 1, Monday

Room 7	Chairman: Kuznetsov Evgeny
$16^{00} : 16^{25}$	<u>Akimbekova Gulnaz</u>, Kulpeshov Beibut. Algebras of Binary Formulas and the Number of Countable Models.
$16^{25} : 16^{50}$	<u>Kuznetsov Evgeny</u>, Jibladze Mamuka. An Algebraic Approach to the Kuznetsov-Muravitsky Theorem.
$16^{50} : 17^{15}$	Kutkhashvili Ketevan. The Problem of Covering a Curved Area with Circles.
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Chkonia Zurab, <u>Zarnadze David</u>. Classification - Trichotomy of a Set of Text Fragments Borrowed from One Work to Another.
$18^{10} : 18^{35}$	<u>Grigolia Revaz</u>, Di Nola Antonio, Lenzi Giocimo, Liparteliani Ramaz. Multi-Modal Epistemic Lukasiewicz Logics and Multi-Agent Systems.

September 2, Tuesday

Room 7	Chairman: Kirtadze Aleks
$16^{00} : 16^{25}$	Beriashvili Shalva. On Some Problems about Isosceles Polyhedral.
$16^{25} : 16^{50}$	Beraia Lika. Some Notes on Mazurkiewicz Type Sets.
$16^{50} : 17^{15}$	Beriashvili Mariam, <u>Khachidze Marika</u>. On Certain Properties of the Sierpiński–Zygmund Function with Respect to Various Point Sets
$17^{15} : 17^{45}$	Coffee break

17 ⁴⁵ : 18 ¹⁰	Kirtadze Aleks. Almost disjoint family of sets and their applications.
18 ¹⁰ : 18 ³⁵	Kasrashvili Tamar. On Some Combinatorial Properties of Discrete Point-Sets in Euclidean Spaces

Mathematical Education and History of Mathematics

September 1, Monday

Room 6	Chairman: Gogishvili Guram
16 ⁰⁰ : 16 ²⁵	<u>Gogishvili Guram</u> , Gogishvili Paata. On Creative Collaboration with Artificial Intelligence in Mathematics Teaching and Learning.
16 ²⁵ : 16 ⁵⁰	Abzianidze Nikoloz, Baghaturia Giorgi, <u>Ghlonti Giorgi</u>. Self-explanation as a Methodology of Teaching Mathematics in Secondary and High Schools.
16 ⁵⁰ : 17 ¹⁵	<u>Manukyan Vardan</u> , Nikoghosyan Gagik. Applications of Mechanical Equilibrium Principles in Mathematics.
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Jaoshvili Temuri. Notes on perfect numbers.
18 ¹⁰ : 18 ³⁵	Tsotniashvili Soso, <u>Kelekhsaevi Andria</u>. Handling Standard and Non-Standard Mathematical Problems: A Comparative.
18 ³⁵ : 19 ⁰⁰	Khvoles Aben. Peculiarities of Higher Education During War.
19 ⁰⁰ : 19 ²⁵	Meskhia Rusudan. On Teaching Problems of Extremume (Online)

September 2, Tuesday

Room 6	Chairman: Vepkhvadze Teimuraz
16 ⁰⁰ : 16 ²⁵	Vepkhvadze Teimuraz. On the Different Definitions of Some Mathematical Notions.
16 ²⁵ : 16 ⁵⁰	<u>Tsamalashvili Davit</u>, <u>Kurchishvili Lamara</u>. Analysis of Selected Problems Used in the Georgian National Exams.
16 ⁵⁰ : 17 ¹⁵	<u>Deisadze Manana</u>, <u>Kirtadze Shalva</u>. The Role of Technology in the Process of Teaching Mathematics at the Primary Level.
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Adeishvili Vladimer</u>, <u>Gokadze Ivane</u>. Selection of an Extreme Element in Problem Solving.
18 ¹⁰ : 18 ³⁵	<u>Butchukhishvili Mamuli</u>, <u>Giorgadze Teimuraz</u>. On Entropy and its Measure.
18 ³⁵ : 19 ⁰⁰	<u>Kavlashvili Vitali</u>. Exploration of the Solar Activity Indices Data with the Near Periodicities of its Synodical Rotation Period.
19 ⁰⁰ : 19 ²⁵	<u>Ginturi Irma</u>. Linguistic Diversity as a Resource for Teaching Numerical Notation and Number Names at the Elementary Level.

September 4, Thursday

Room 6	Chairman: Gogishvili Guram
16 ⁰⁰ : 16 ²⁵	<u>Bukusheva Aliya</u>. Mental constructions in linear algebra
16 ²⁵ : 16 ⁵⁰	<u>Rezkalla Ibrahim</u>. History of Pharaonic mathematics
16 ⁵⁰ : 17 ¹⁵	<u>Zivzivadze Manana</u>. Describing Real-Life Situations Through Mathematical Models at the Primary Level

Mathematical Modeling and Numerical Analysis

September 1, Monday

Room 8	Chairman: Meladze Hamlet
$16^{00} : 16^{25}$	<u>Tsiramua Sergo</u>, Meladze Hamlet, Davitashvili Tinatin, Tsiramua George. Machine Learning Methods for Adaptive Reconfigurable Systems Based on Multifunctional Elements
$16^{25} : 16^{50}$	<u>Aslanyan Levon</u>, Sahakyan Hasmik. Complexity of the resolving set of KK-MBF functions
$16^{50} : 17^{15}$	Tsiramua Sergo, Meladze Hamlet, Davitashvili Tinatin, <u>Bitmalkishev Davit</u>, Elbakidze Tatia. Question-Answering System Based on AI and NLP Models
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	<u>Zakradze Mamuli</u>, Tabagari Zaza, Koblishvili Nana, Meladze Hamlet, Davitashvili Tinatin. The Method of Probabilistic Solution for 3D Dirichlet Generalized and Classical Harmonic Problems in some Finite Bodies with Cavities
$18^{10} : 18^{35}$	Baghaturia Giorgi, <u>Menteshashvili Marine</u>. An Algorithm for Constructing an Approximate Solution to one Nonlinear Characteristic Problem
$18^{35} : 19^{00}$	<u>Beridze Vakhtang</u>, Abashidze Marina, Phartenadze Guladi. Solution of Bitsadze-Samarskii Boundary Value Problem for Elliptic Equations using Octo-Sweep Iterative Method

September 2, Tuesday

Room 8	Chairman: Jangveladze Temur
16 ⁰⁰ : 16 ²⁵	<u>Chilachava Temur</u>, Kvashilava Gia, Pochkhua George. Research of a Nonlinear Dynamic System Describing the Process of Interaction between Georgian, Laz, Mingrelian and Svan Populations
16 ²⁵ : 16 ⁵⁰	<u>Rogava Jemal</u>, Vashakidze Zurab. On the Design, Investigation, and Numerical Implementation of a Semi-Discrete Scheme for a Kirchhoff-Type Equation with Time-Dependent Coefficients
16 ⁵⁰ : 17 ¹⁵	<u>Chkhikvadze Teimuraz</u>, <u>Gagoshidze Mikheil</u>, <u>Jangveladze Temur</u>. Numerical Solution of Two Nonlinear Parabolic Type Integro-Differential Equations Using Machine Learning
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Kereselidze Nugzar. Modified Model for Effective Fight Against Disinformation
18 ¹⁰ : 18 ³⁵	<u>Zarnadze David</u>, Tsotniashvili Soso. On Replacing the Hilbert Space with a Strict Frechet–Hilbert Space in the Mathematical Model of Quantum Mechanics
18 ³⁵ : 19 ⁰⁰	<u>Elbakidze Khatuna</u>, Kharshiladze Oleg, Tatishvili Marika. Analysis of Effect of the Solar Magnetic Activity on the Climate Change Using AI Techniques

September 3, Wednesday

Room X	Chairman: Chilachava Temur
10 ²⁵ : 10 ⁵⁰	Pal Samares. Effects of Macroalgal Toxicity and Elevated Sea Surface Temperature on Coral Reef Dynamics
10 ⁵⁰ : 11 ¹⁵	<u>Rupp Florian</u>, Tamarashvili Anano. The Ladybug Chronicles: Predation, Defense Coalitions & Cannibalism
11 ¹⁵ : 11 ⁴⁰	Alberdi Elisabete. Comparing Trivariate Copula with Machine Learning in Copper Recovery
11 ⁴⁰ : 12 ¹⁰	Coffee break
12 ¹⁰ : 12 ³⁵	Demetrian Michal. Aggregate Model of Liquidity-Profit Dynamics
12 ³⁵ : 13 ⁰⁰	Lyapin Alexander. Discrete Boundary Value Problem on the Integer Lattice for a Linear Difference Equation

September 4, Thursday

Room 8	Chairman: Tsiramua Sergo
16 ⁰⁰ : 16 ²⁵	<u>Khokerashvili Zaza</u>, Ratiani Nino. Analysis of Different Intensity Fire Development in a Road Tunnel using Numerical Modeling
16 ²⁵ : 16 ⁵⁰	Lanchava Omar. Integrated Modeling of Fire Safety in Road Tunnels with Longitudinal Ventilation
16 ⁵⁰ : 17 ¹⁵	Kurtskhalia Elguja, <u>Akhobadze Merab</u>. Multivariate Membership Function for Analysis and Control of Hierarchical System
17 ¹⁵ : 17 ⁴⁵	Coffee break

17 ⁴⁵ : 18 ¹⁰	Akhobadze Merab, <u>Kurtskhalia Elguja</u>. Minimization of Investment Risks by the Randomization Method
18 ¹⁰ : 18 ³⁵	Chumburidze Manana, <u>Mnatsakaniani Miranda</u>. PDE-Based Tumor Growth Modeling Via Artificial Neural Networks
18 ³⁵ : 19 ⁰⁰	<u>Khatiashvili Nino</u>, Kaladze David, Khatiashvili Irene. The Mathematical Model of Bones Growth and Pathologies

September 5, Friday

Room 8	Chairman: Davitashvili Tinatin
16 ⁰⁰ : 16 ²⁵	Bulut Sadullah, <u>Yiğider Muhammed</u>. A Fractional-Order MPC Framework for EEG-Based Seizure Prevention
16 ²⁵ : 16 ⁵⁰	<u>Bulut Sadullah</u>, Yiğider Muhammed. Fractional-Order Model Predictive Control for Real-Time EEG-Based Epileptic Seizure Suppression
16 ⁵⁰ : 17 ¹⁵	Jafarzadeh Yousef. Some Properties of the Gradient Approach for Testing the Equality of Several Coefficients of Variation
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Jafarzadeh Yousef. Results from Combining Taylor Series and Block Pulse Functions
18 ¹⁰ : 18 ³⁵	<u>Charles Mfano</u>, Delfim F.M. Torres, G.A. Lyakurwa, Sayoki G. Mfinanga, Verdiana G. Masanja. A Mathematical and Optimal Control Model for Rabies Transmission Dynamics among Humans and Dogs with Environmental Effects
18 ³⁵ : 19 ⁰⁰	Tsiklauri Zviad. A Method of Solution of an Initial and Time Dependent Boundary Values Problem for a Dynamic Beam Kirchhoff Type Nonlinear Differential Equation

September 6, Saturday

Room 8	Chairman: Chilachava Temur
$10^{00} : 10^{20}$	Vashakmadze Tamaz. On the Construction of a Refined Theory for Nonlinear Models of Solid Mechanics in the Case of Thin-Walled Structures (Online)
$10^{20} : 10^{40}$	Geladze Giorgi, <u>Papukashvili Archil</u>, Sharikadze Meri, Tevdoradze Manana. Mathematical Modeling of Some Thermohydrodynamic and Viscoelastic Processes (Online)
$10^{40} : 11^{00}$	<u>Katchakhidze Nikoloz</u>, Peradze Jemal. Numerical Method for Solving the System of Timoshenko Equations (Online)
$11^{00} : 11^{20}$	Slabospitsky Alexander. Parameter Estimate by the Method of Least Squares of Relative Errors under Non-Classical Assumptions and its Recurrent Form of Representation (Online)
$11^{20} : 11^{40}$	<u>Arzumanyan Karen</u>, Gazazyan Emil, Astsatryan Hrachya. Derivative-Free Optimization of an ODE system (Online)
12^{00}	Closing

Probability Theory and Statistics, Financial Mathematics

The session is dedicated to the 90th anniversary of **Elizbar Nadaraia** in honor of his outstanding contribution and achievements in the fields of Probability Theory and Mathematical Statistics

September 1, Monday

Room 9	Chairman: Kachiashvili Kartlos
16 ⁰⁰ : 16 ²⁵	<u>Kachiashvili Kartlos</u>, Mukhopadhyay Nitis, Kachiashvili Ioseb. Constrained Bayesian Method for Testing Composite Hypotheses Concerning Normal Distribution with Equal Parameters
16 ²⁵ : 16 ⁵⁰	Kumar C. Satheesh. On Some Generalised Classes of Yule Distribution
16 ⁵⁰ : 17 ¹⁵	Kumar C. Satheesh, <u>Chandra S. Nikhil</u>. On Some Properties and Mixtures of BGHFM Distribution
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Giorgobiani George, Kvaratskhelia Vakhtang, <u>Tarieladze Vaja</u>. Sub-Gaussian Random Elements in Banach spaces
18 ¹⁰ : 18 ³⁵	Skalski Adam, <u>Viselter Ami</u>. Lévy Processes on Quantum Groups
18 ³⁵ : 19 ⁰⁰	<u>Gideon Amir</u>, Fedor Nazarov, Yuval Peres. Convergence Rate of l_p -energy Minimization on Graphs

September 2, Tuesday (Online)

Room 9	Chairman: Kumar C. Satheesh
16 ⁰⁰ : 16 ²⁵	<u>Babilua Petre</u>, Nadaraya Elizbar. Bernstein Polynomial-Based Estimation and Hypothesis Testing for Bernoulli Regression Models

$16^{25} : 16^{50}$	<u>Namgalauri Ekaterine, Purtukhia Omar.</u> Constructive Martingale Representation of Non-Smooth Brownian Functionals
$16^{50} : 17^{15}$	<u>Kvatadze Zurab, Pharjiani Beqnu, Kvatadze Tsiala.</u> Estimation of a Regression Curve using Observations with Chain Dependence
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	<u>Zerakidze Zurab, Aleksidze Lela, Eliauri Laura.</u> Consistent Estimators and Consistent Criteria for Parameters of Linear Regression Models

Real and Complex Analysis

September 1, Monday

Room 1	Chairman: Ephremidze Lasha
$16^{00} : 16^{25}$	Meskhi Alexander. Weighted Multilinear Rellich and Hardy Inequalities
$16^{25} : 16^{50}$	Tephnadze George. Sharp Strong Convergence Result of the Two-Dimensional Walsh-Fourier series in Martingale Hardy Spaces
$16^{50} : 17^{15}$	Shalukhina Alina. The Maximal Operator on Variable $L_p(\cdot)$ Spaces over Spaces of Homogeneous Type
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Sharma Sumit Kumar. G-Riesz Basis and Q-Dual of G-frames in Quaternionic Hilbert Spaces
$18^{10} : 18^{35}$	Khanna Nikhil. Generalized-Phase Boas Transforms: Extensions and Applications in Wavelets
$18^{35} : 19^{00}$	Skopina Maria. Wavelets on the Generalized Vilenkin Group

September 2, Tuesday

Room 1	Chairman: Tephnadze George
$16^{00} : 16^{25}$	Ibrahimov Elman J. On Gegenbauer Transformation on the Half-Line
$16^{25} : 16^{50}$	<u>Bandaliyev Rovshan</u>, Omarova Konul, Akhundova Sevda. On Complex Interpolation Theorem in Variable Lebesgue Spaces with Mixed Norm
$16^{50} : 17^{15}$	<u>Bakuridze Mzevinar</u>, <u>Tarieladze Vaja</u>. On Khavin's Points of the Unit Circle
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Oniani Giorgi. Maximal Operators and Differentiation with Respect to Collections of Shifted Convex Bodies
$18^{10} : 18^{35}$	Vatsadze Sandro. On the Differentiation of Integrals by a Product of Density Bases
$18^{35} : 19^{00}$	<u>Imerlishvili Giorgi</u>, Meskhi Alexander. One-Sided Integral Operators in Variable Exponent Morrey Spaces

September 3, Wednesday

Room 1	Chairman: Meskhi Alexander
$16^{00} : 16^{25}$	<u>Tutberidze Giorgi</u>, Tsagareishvili Vakhtang. Bounded Linear Functionals on Banach Spaces
$16^{25} : 16^{50}$	<u>Tetvadze Giorgi</u>, Tetvadze Lili, Tvalodze Iuri, Tsibadze Lamara. On Absolute Convergence of Blaschke -Djrbashyan Canonical Product on the Boundary of the Unit Disk
$16^{50} : 17^{15}$	Gunia Nikoloz. An Axiomatic Theory of Infinitesimals and the Concept of Limit

September 4, Thursday

Room 1	Chairman: Oniani Giorgi
$16^{00} : 16^{25}$	Assal Miloud. Hardy-Type Inequality Associated with a Class of Generalized Hypergroup in n-Dimensional Spaces $n \geq 1$
$16^{25} : 16^{50}$	Mouayn Zouhair. Reproducing Kernels for Eigenspaces Attached to Fock-Darwin Levels on C^n
$16^{50} : 17^{15}$	Meskhi Alexander, Natelashvili Lazare. Criteria for Multilinear Sobolev Inequality with Non-Doubling Measure in Lorentz Spaces
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Erdoğan Ezgi. A New Class of Lipschitz-Type Maps Defined on Banach Function Spaces
$18^{10} : 18^{35}$	Bal Öykü, Erdoğan Ezgi. A Study on Zero Product Preserving Operators Defined on Banach Function Spaces
$18^{35} : 19^{00}$	<u>Makharadze Dali</u>, Meskhi Alexander, Tsanova Tsira. Multilinear Extrapolation in Grand Lebesgue Spaces

September 5, Friday

Room 1	Chairman: Tarieladze Vaja
$16^{00} : 16^{25}$	<u>Aliyev Yagub</u>, Aliyeva Narmin. Extremal Values of the Ratio of Differences of Power Mean, Arithmetic Mean, and Harmonic Mean
$16^{25} : 16^{50}$	Isgandarli Fidan M. On the Representability by Sums of Generalized Ridge Functions

September 6, Saturday (Online)

Room 1	Chairman: Ephremidze Lasha
$10^{00} : 10^{25}$	Dutkay Dorin. The Fuglede Conjecture and Unitary Groups of Translations
$10^{25} : 10^{50}$	Favorov Sergei. Crystalline Measures, Fourier Quasicrystals, their Generalizations and Some Applications
$10^{50} : 11^{15}$	Uster Ruya. Restriction of Fourier Multipliers on Orlicz Spaces
$11^{15} : 11^{40}$	Oztop Serap, Uysal Badik Hüseyin. Geometric Aspects of Orlicz Sequence Spaces with the s-Norm
12^{00}	Closing

Theoretical Physics

September 4, Thursday

Room 7	Chairman: Kereselidze Tamaz
$16^{00} : 16^{25}$	Jorjadze George, Razmadze Lado, Theisen Stefan. Recursive Relations for the S-matrix of Liouville Theory
$16^{25} : 16^{50}$	Kereselidze Tamaz. Some Current Issues in Quantum Mechanics
$16^{50} : 17^{15}$	Kvinikidze Alexander. Perturbation Theory for High Precision Studies of the Bound State Characteristics
$17^{15} : 17^{45}$	Coffee break
$17^{45} : 18^{10}$	Mikeladze Oleg. AB theory

September 5, Friday

Room 7	Chairman: Tchelidze Tamar
16 ⁰⁰ : 16 ²⁵	Kherkeladze Zakaria, Tchelidze Tamar. Electron-Electron Interaction in Semiconductor Quantum Nanostructures
16 ²⁵ : 16 ⁵⁰	<u>Tsutskiridze Badri</u>, Tsutskiridze Mari. Magneto-hydrodynamic Flow of Fluid in a Circular Pipe with Account the Volume Sources and Sink Mass
16 ⁵⁰ : 17 ¹⁵	Magradze Badri. A Non-Perturbative Causal Model for an Effective Charge in QCD
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	Kezerashvili Roman. Some Issues in Nuclear Physics
18 ¹⁰ : 18 ³⁵	Tediashvili Zurab. Uniqueness in Some Inverse Problems on Potential Theory
18 ³⁵ : 19 ⁰⁰	Sergeev Armen. Quantization of the Theory of Topological Insulators

Mini-Symposium: Applied Data Science

September 1, Monday

Room 5	Chairman: Tsintsadze Magda
16 ⁰⁰ : 16 ²⁵	Lomsadze Alexandre, <u>Borodovsky Mark</u>. Bayesian Approach to Identification of Function and Taxonomy of DNA Sequences
16 ²⁵ : 16 ⁵⁰	<u>Gyulgyulyan Eliza</u>, Astsatryan Hrachya. Adaptive Bias-Aware Query Optimization System
16 ⁵⁰ : 17 ¹⁵	<u>Asabashvili Elisabed</u>. Detect Cyber Threats and Assess Vulnerabilities by Creating and Using Scripts
17 ¹⁵ : 17 ⁴⁵	Coffee break
17 ⁴⁵ : 18 ¹⁰	<u>Elizbarashvili Archil</u>, Gross-Amblard David, <u>Tsintsadze Magda</u>, Ducassé Mireille, Khachidze Manana. Crowdsourcing for the Validation of Lexical Data on Georgian Verbs
18 ¹⁰ : 18 ³⁵	<u>Gogorikidze Levan</u>, <u>Svanadze Giorgi</u>, <u>Tsintsadze Magda</u>. Shade-aware Routing

September 4, Thursday

Room 5	Chairman: Tsintsadze Magda
16 ⁰⁰ : 16 ²⁵	Gagloshvili Julieta. A Comparative Perspective: Strategic Decision-Making with AHP, TOPSIS, and ELECTRE
16 ²⁵ : 16 ⁵⁰	<u>Khutsishvili Irina</u>, Archvadze Natela. Investment Projects Selection in a Picture Fuzzy Environment
16 ⁵⁰ : 17 ¹⁵	<u>Pkhovelishvili Merab</u>, Gogichaishvili Kakha. Proof in Terms of Divisibility by n
17 ¹⁵ : 17 ⁴⁵	Coffee break

$17^{45} : 18^{10}$	<u>Khorava Levan</u>, Kvateladze Dimitri, Bezhashvili Saba. Random Number Generator
$18^{10} : 18^{35}$	<u>Archvadze Natela</u>, Khutsishvili Irina, <u>Pkhovelishvili Merab</u>, Shetsiruli Lia. Algorithms for Building Multi-Level Forecasts (Online)
$18^{35} : 19^{00}$	<u>Archvadze Maia</u>, Khachidze Manana, Iakobashvili Nika, Luarsabishvili Mariam, Kasabishvili Nino, Tsiskadze Nikoloz. A Rule-Based Text-to-Speech (TTS) System Adapted for the Georgian Language (Online)

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