

Georgian Mathematical Union
Batumi Shota Rustaveli State University
Ministry of Education, Culture and Sport of Adjara Autonomous
Republic
Shota Rustaveli National Science Foundation of Georgia
International Mathematical Union – Commission for Developing
Countries

XIII INTERNATIONAL CONFERENCE
OF THE GEORGIAN MATHEMATICAL UNION

PROGRAM

Batumi, September 4 - 9

2023

Organizing Committee

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

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Conference Thematic Sessions and Organizers

- **Algebra and Number Theory** (Khmaladze Emzar, Pirashvili Teimuraz)
- **Applied Mathematics, Informatics and Computing in Environmental Sciences** (Davitashvili Teimuraz, Khachidze Manana, Kvatadze Ramaz)
- **Differential Equations and Applications** (Chkadua Otar, Duduchava Roland, Shavlakadze Nugzar)
- **Geometry and Topology** (Bakuradze Malkhaz, Baladze Vladimer, Khimshiashvili Giorgi)
- **Logic, Language, Artificial Intelligence** (Dundua Besik, Pkhakadze Konstantine, Rukhaia Mikheil)
- **Mathematical Education and History** (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)
- **Mathematical Physics** (Kvinikhidze Alexander)
- **Probability Theory and Statistics, Financial Mathematics** (Kvaratskhelia Vakhtang, Purtukhia Omar, Tarieladze Vaja)
- **Real and Complex Analysis** (Ephremidze Lasha, Oniani Giorgi, Tephnadze George)

Editors: Gogishvili Guram, Davitashvili Tinatin

Contents

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Rooms

Section	Room number	Mo	Tu	We	Th	Fr	Sa
Plenary Session	Plenary Room						
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Algebra and Number Theory	1						
Applied Mathematics, Informatics and Computing in ...	2						
Differential Equations and Applications	3						
Geometry and Topology	4						
Logic, Language, Artif. Intelligence	5						
Mathematical Education and History	6						
Mathematical Logic and Discrete Mathem.	7						
Mathematical Modeling and Numerical Anal.	8						
Mathematical Physics	5						
Probability Theory and Statistics, Financial Mathem.	9						
Real and Complex Analysis	Plenary Room						

Schedule of the Conference

September 3, Sunday (Arrival Day to Batumi)

September 4, Monday

9⁰⁰ : 9³⁰ **Registration**

9³⁰ : 10⁰⁰ **Opening of the Conference**

Plenary Room Chairman: Natroshvili David

10⁰⁰ : 10⁵⁰ **Gwinner Joachim**, Frictional unilateral contact problems in continuum mechanics – analytical and numerical treatment

10⁵⁰ : 11²⁰ **Coffee break**

11²⁰ : 12¹⁰ **Kühn Thomas**, High-dimensional approximation in periodic function spaces

12¹⁰ : 13⁰⁰ **Massimo Lanza de Cristoforis**, Nonlinear composition operators in Grand Lebesgue spaces

13⁰⁰ : 15⁰⁰ **Lunch**

15⁰⁰ : 16¹⁵ Parallel Sessions (3 talks)

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 18⁰⁰ Parallel Sessions (3 talks)

September 5, Tuesday

Plenary Room Chairman: Beridze Anzor

10⁰⁰ : 10⁵⁰ **Neumann Frank**, Weil Conjectures, Moduli of Bundles and Homotopy Types

10⁵⁰ : 11²⁰ **Coffee break**

11²⁰ : 12¹⁰ **Janelidze Zurab**, The mystery of binary matrix properties of categories

12¹⁰ : 13⁰⁰ **Patchkoria Irakli**, Morava K-theory of infinite groups and Euler characteristic

13⁰⁰ : 15⁰⁰ **Lunch**
15⁰⁰ : 16¹⁵ Parallel Sessions (3 talks)
16¹⁵ : 16⁴⁵ **Coffee break**
16⁴⁵ : 18⁰⁰ Parallel Sessions (3 talks)

September 6, Wednesday

Plenary Room **Chairman: Meskhi Alexander**
10⁰⁰ : 10⁵⁰ **Ragusa Maria Alessandra**, Investigation of local and nonlocal problems
10⁵⁰ : 11²⁰ **Coffee break**
11²⁰ : 12¹⁰ **Jain Pankaj**, Duality and extrapolation in function spaces of Lebesgue type
12¹⁰ : 13⁰⁰ **Rafeiro Humberto**, Grand Lebesgue spaces: old and new

Plenary Room **The Invited Lecture**
13⁰⁰ : 13³⁰ **Shanidze Revaz**, Hadron center of Kutaisi International University

The evening **Banquet**

September 7, Thursday

Plenary Room **Chairman: Dundua Besik**
10⁰⁰ : 10⁵⁰ **Garanina Natalia, Gorlatch Sergei**, Knowledge acquisition in multi-agent systems: A formalisation of the Eleusis Card Game
10⁵⁰ : 11²⁰ **Coffee break**
11²⁰ : 12¹⁰ **Leucker Martin**, Verification of neural networks?
12¹⁰ : 13⁰⁰ **Estrada Felipe J. Llanes**, The torsion of stellar streams due to a nonspherical dark matter halo

13⁰⁰ : 15⁰⁰ **Lunch**
15⁰⁰ : 16¹⁵ Parallel Sessions (3 talks)
16¹⁵ : 16⁴⁵ **Coffee break**
16⁴⁵ : 18⁰⁰ Parallel Sessions (3 talks)

Online **Chairman: Oniani Giorgi**

19²⁰ : 20¹⁰ **Kovtunenکو Victor**, Poroelastic problem of a non-penetrating crack with cohesive contact for fluid-driven fracture
20¹⁰ : 21⁰⁰ **Stokolos Alexander**, Differentiation of integrals and multiple Fourier series

September 8, Friday

Plenary Room **Chairman: Jangveladze Temur**

10⁰⁰ : 10⁵⁰ **Ölveczky Peter Csaba**, Rewriting logic and some of its applications to distributed and real-time systems
10⁵⁰ : 11²⁰ **Coffee break**
11²⁰ : 12¹⁰ **Yafaev Andrei**, o-minimality and arithmetic geometry
12¹⁰ : 13⁰⁰ **Buchheit Andreas**, Exact continuum representation of long-range interacting systems and emerging exotic phases in unconventional superconductors
13⁰⁰ : 13¹⁰ **Closing Ceremony of the Conference**
13¹⁰ : 15⁰⁰ **Lunch**
15⁰⁰ : 16¹⁵ Parallel Sessions (3 talks)
16¹⁵ : 16⁴⁵ **Coffee break**
16⁴⁵ : 18⁰⁰ Parallel Sessions (3 talks)

September 9, Saturday

10⁰⁰ : 11¹⁵ Parallel Sessions (3 talks)
11¹⁵ : 11⁴⁵ **Coffee break**
11⁴⁵ : 13⁰⁰ Parallel Sessions (3 talks)

Thematic sessions

Section: Algebra and Number Theory

September 4, Monday

Room 1

Chairman: Pirashvili Teimuraz

15⁰⁰ : 15²⁵

Martsinkovsky Alex, Additive functors and control theory

15²⁵ : 15⁵⁰

Lomadze Vakhtang, On the topology of linear differential systems

15⁵⁰ : 16¹⁵

Neuhauser Markus, Bounds on the zeros of recursively defined polynomials

16¹⁵ : 16⁴⁵

Coffee break

16⁴⁵ : 17¹⁰

Bunina Elena, Algebraic and logical properties of Chevalley groups

17¹⁰ : 17³⁵

Nebiyev Celil, Ökten Hasan Hüseyin, A Generalization of oplus-cofinitely supplemented modules

17³⁵ : 18⁰⁰

Tsinaridze Ruslan, A non-abelian group of congruent numbers

September 5, Tuesday

Room 1

Chairman: Khmaladze Emzar

15⁰⁰ : 15²⁵

Amaglobeli Mikheil, Miasnikov Alexei, Varieties of exponential R-groups

15²⁵ : 15⁵⁰

Gvozdevsky Pavel, On countable isotypic structures

15⁵⁰ : 16¹⁵

Kemoklidze Tariel, To the problem of full transitivity of a group

- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Bokelavadze Tengiz**, Lattice isomorphisms of 2-nilpotent W-power Hall groups and Lie algebras
- 17¹⁰ : 17³⁵ **Khashan Hani**, A new generalization of (m,n)-closed ideals

September 7, Thursday

Room 1 **Chairman: Lomadze Vakhtang**

- 15⁰⁰ : 15²⁵ **Mesabliashvili Bachuki**, Hilbert's theorem 90 in monoidal categories
- 15²⁵ : 15⁵⁰ **Patchkoria Alex, Martins-Ferreira Nelson, Montoli Andrea, Sobral Manuela**, On the classification of Schreier extensions of monoids with non-abelian kernel
- 15⁵⁰ : 16¹⁵ **Khmaladze Emzar**, Cohomology and crossed extensions of algebras with bracket
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Armandnejad Ali**, The structure of upside-down linear preservers of majorization
- 17¹⁰ : 17³⁵ **Ahmed Mamoon**, The C*-dynamical system of amenable quasi-lattice ordered groups and positive element

September 8, Friday

Room 1 **Chairman: Mesablihvili Bachuki**

15⁰⁰ : 15²⁵ **Dzhumadil'daev Askar**, Weak Leibniz algebras

15²⁵ : 15⁵⁰ **Shlossberg Menachem**, The Addition theorem for two-step nilpotent torsion groups

15⁵⁰ : 16¹⁵ **Goy Taras**, On new Fibonacci identities involving multinomial coefficients

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Samsonadze Eteri**, The sufficient conditions for insolvability of some Diophantine equations of higher degrees

17¹⁰ : 17³⁵ **Rojas Rina Roxana Paucar, Schoemann Claudia**, On the kernel of the Gysin homomorphism on Chow groups

Section: Applied Mathematics, Informatics and Computing in Environmental Sciences

September 5, Tuesday

Room 2 **Chairman: Davitashvili Teimuraz**

15⁰⁰ : 15²⁵ **Kvatadze Ramaz**, e-Infrastructure and services for research and education in Eastern Partnership countries EaPConnect

15²⁵ : 15⁵⁰ **Rupp Florian**, Taking over Maritime Ecosystems: modelling Fish-Jellyfish deterministic & randomized dynamics

- 15⁵⁰ : 16¹⁵ **Kereev Victor, Shalabaeva Bakyt, Jaichibekov Nurbolat**, Mathematical and numerical model of electric field strength near a drop.
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Petrauskas Edmundas, Rupšys Petras**, Understanding relationships for multivariate data using copulas and stochastic differential equations
- 17¹⁰ : 17³⁵ **Davitashvili Teimuraz, Samkharadze Inga, Rukhaia Giorgi**, Exploring the development of hydrogen energy in Georgia in the face of climate change.

September 7, Thursday

- Room 2** **Chairman: Tsintsadze Magda**
- 15⁰⁰ : 15²⁵ **Tsintsadze Magda, Archuadze Maia**, REST and event-driven approaches in microservices architecture
- 15²⁵ : 15⁵⁰ **Chikashua Ana, Archuadze Maia, Tsintsadze Magda**. Yolov8 Platform-Based OCR tool for Georgian handwritten text recognition
- 15⁵⁰ : 16¹⁵ **Lemonjava Givi**, Three-statement financial models.
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Odishelidze Nana**, Construction of equistable holes in the case of an axisymmetric problem
- 17¹⁰ : 17³⁵ **Khachidze Manana, Shvelidze Ana**, The Task of summarization in Georgian language documents

September 8, Friday

Room 2

Chairman: Kvatadze Ramaz

15⁰⁰ : 15²⁵

Lemonjava Givi, Pkhovelishvili Merab, Archvadze Natela, Using parallel data in forecasting the currency exchange rate

15²⁵ : 15⁵⁰

Shalamberidze Merab, Sokhadze Zaza, Designing of orthopedic insoles for children with cerebral palsy

15⁵⁰ : 16¹⁵

Asabashvili Elisabed, Demetradze David, Challenges of media digitization in Georgia

16¹⁵ : 16⁴⁵

Coffee break

16⁴⁵ : 17¹⁰

Georgi Mikuchadze, Elizbarashvili Mariam, Various schemes of cumulus convection in RegCM for the mountainous Caucasus region

17¹⁰ : 17³⁵

Akhobadze Merab, Kurtskhalia Elguja, Applying percolation and Q-analysis methods to design sustainable urban systems

Section: Differential Equations and Applications

Dedicated to the 120th Anniversary of Academician Viktor Kupradze

September 4, Monday

Room 3

Chairman: Duduchava Roland

15⁰⁰ : 15²⁵

Mikhailov Sergey, About Maximum Principles for weak solutions of some parabolic systems

15²⁵ : 15⁵⁰

Natroshvili David, An alternative potential method for mixed steady state elastic oscillation problems

15⁵⁰ : 16¹⁵

Gol'dshtein Vladimir, Remarks about isospectrality

- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Filipkovska Maria**, Qualitative analysis of nonregular differential-algebraic equations and applications in the gas dynamics
- 17¹⁰ : 17³⁵ **Adams Daniel**, Boundedness Results for Solutions of Certain Second Order Non-Autonomous Ordinary Differential Equations

September 5, Tuesday

- Room 3** **Chairman: Natroshvili David**
- 15⁰⁰ : 15²⁵ **Shavlakadze Nugzar, Pachulia Bachuki, Jamaspishvili Tsiala**, The boundary-contact problem of the dynamical viscoelasticity
- 15²⁵ : 15⁵⁰ **Jokhadze Otar, Kharibegashvili Sergo**, On a periodic problem in an infinite strip for second-order hyperbolic equations
- 15⁵⁰ : 16¹⁵ **Verma Shikha, Jha Navnit**, Multiquadric RBFs combined with compact discretization for non-linear elliptic PDEs
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Kabdrakhova Symbat, Kadirbayeva Zhazira**, Solution of a family of boundary value problems for nonlinear loaded hyperbolic equations
- 17¹⁰ : 17³⁵ **Kheiri Hossein, Haghghatdoost Gorbanali**, A new mathematical model for HIV infectious

September 7, Thursday

- Room 3** **Chairman: Buchheit Andreas**
- 15⁰⁰ : 15²⁵ **Duduchava Roland**, Generic Bessel potential spaces on Lie groups and their applications
- 15²⁵ : 15⁵⁰ **Lyandres Vladimir**, Stochastic differential equations. Synthesis and applications
- 15⁵⁰ : 16¹⁵ **Gachechiladze Avtandil, Gachechiladze Roland**, Boundary-contact problems with regard to friction of couple-stress viscoelasticity for inhomogeneous anisotropic bodies (quasi-static cases)
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Duduchava Roland, Tsaava Medea, Tutberidze Margarita**, Dirichlet and Neumann boundary value problems for the Helmholtz equation in a double angle
- 17¹⁰ : 17³⁵ **Kritika, Jha Navnit**, A hybrid fuzzy component technique with exponential basis for convection-diffusion equation

September 8, Friday

- Room 3** **Chairman: Shavlakadze Nugzar**
- 15⁰⁰ : 15²⁵ **David Kapanadze, Zurab Vashakidze**, Propagation of Waves in a Triangular Grid with Discrete Sources Positioned Along Line Segments
- 15²⁵ : 15⁵⁰ **Boumasmoud Soufiane, Ezzinbi Khalil**, Optimal control of bilinear equations with delay
- 15⁵⁰ : 16¹⁵ **Bekbauova Altyntshash, Kurmangaliyev Yergali**, Periodic on part of variables solution of a system of equations in the broad sense
- 16¹⁵ : 16⁴⁵ **Coffee break**

September 9, Saturday (Online Session)

Room 3 Chairman: Chkadua Otar

12⁰⁰ : 12²⁵ **Sergeev Armen**, On mathematical aspects of the theory of topological insulators

12²⁵ : 12⁵⁰ **David Kapanadze, Pesetskaya Ekaterina**, Wave diffraction by a crack in triangular and hexagonal lattices

12⁵⁰ : 13¹⁵ **Ayele Tsegaye, Demissie Bizuneh, Mikhailov Sergey**, Boundary-domain integral equations for Dirichlet BVP for variable-coefficient Helmholtz equation in 2D

13¹⁵ : 13⁴⁰ **Ayele Tsegaye, Demissie Bizuneh, Mikhailov Sergey**, Boundary-domain integral equations to the mixed BVP for variable-coefficient Helmholtz Equation in 2D

13⁴⁰ : 13⁵⁵ **Break**

13⁵⁵ : 14²⁰ **Beghersa Nor-El-Houda, Benabdallah Mehdi**, A note on controlled degenerate systems in Hilbert spaces

14²⁰ : 14⁴⁵ **Rakviashvili Giorgi, Muladze Vitali**, Lyapunov dimension formula of n-generalized Henon map

14⁴⁵ : 15¹⁰ **Siddiqui Sami Muhammad**, Approximation methods for the Euler's elastica ring model and its stability analysis

15¹⁰ : 15³⁵ **Chkadua Otar, Toloraia Anika**, Mixed type dynamical transmission problems with interior cracks of the thermo-piezo-electricity theory without energy dissipation

Section: Geometry and Topology

September 4, Monday

- Room 4** **Chairman: Bakuradze Malkhaz**
- 15⁰⁰ : 15⁵⁰ **Aliashvili Teimuraz, Kapanadze Gvantsa**, Counting complex points of two-dimensional surfaces
- 15⁵⁰ : 16¹⁵ **Kuznetsov Evgeny**, Esakia duality for Étale Heyting algebras
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Sazandrishvili Natia**, Isochrones Method and Feynman's Lifeguard Problem
- 17¹⁰ : 17³⁵ **Ahmad Al-omari**, Primal Closure function Spaces
- 17³⁵ : 18⁰⁰ **Aybala Sevde Özkapu, Özlem Acar**, Some results for fixed point theory on ultrametric space
- 18⁰⁰ : 18²⁵ **Gurbanova Narmina, Salimov Arif**, Lifting of endomorphism fields

September 5, Tuesday

- Room 4** **Chairman: Aliashvili Teimuraz**
- 15⁰⁰ : 15⁵⁰ **Pirashvili Teimuraz**, Cohomology with coefficients in stacks
- 15⁵⁰ : 16¹⁵ **Diakvnishvili Ana**, On bicentric configurations of pentagon linkage
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17³⁵ **Bakuradze Malkhaz**, Complex cobordism modulo c_1 -spherical cobordism and related genera
- 17³⁵-18²⁵ **Beridze Anzor**, On axiomatic homology theory of general topological spaces

Section: Logic, Language, Artificial Intelligence

September 4, Monday

- Room 5** **Chairman: Rukhaia Mikheil**
- 15⁰⁰ : 15²⁵ **Kurtanidze Lia**, Logical interpretation of probability
- 15²⁵ : 15⁵⁰ **Hazem Anwar Labib Bishara Merihan**, Different approaches in inductive logic programming
- 15⁵⁰ : 16¹⁵ **Hazem Anwar Labib Bishara Merium**, Probability quantifiers in σ -additive frameworks
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Tibua Lali**, Sequent calculus for unranked probabilistic logic
- 17¹⁰ : 17³⁵ **Jintcharadze Elza, Kartsivadze Tornike**, Realization of hybrid cryptosystem based on AES and Vigenere encryption algorithms
- 17³⁵ : 18⁰⁰ **Abuladze Inga, Vachnadze Saba, Maglakelidze Nana**, The role of the electronic library in the post-pandemic period

September 5, Tuesday

- Room 5** **Chairman: Kurtanidze Lia**
- 15⁰⁰ : 15²⁵ **Kutsia Temur, Marin Mircea, Rukhaia Mikheil**, Similarity-based Set Matching
- 15²⁵ : 15⁵⁰ **Dundua Besik**, CLP(MS): Programming Using Multiple Similarity Constraints
- 15⁵⁰ : 16¹⁵ **Kutsia Temur**, Variants of Fuzzy Anti-Unification and Generalization

- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Chutkerashvili Anna, Lortkipanidze Liana, Javashvili Nino, Verb markers for Georgian-English automatic dictionary**
- 17¹⁰ : 17³⁵ **Amirezashvili Nino, Lortkipanidze Liana, Samsonadze Liana, Generating matches between Georgian and English nouns and adjectives in a grammatical dictionary software application**
- 17³⁵ : 18⁰⁰ **Pkhakadze Konstantine, The Aims of Constructing Technological Alphabets of Georgian and Abkhazian Languages and the Action Plan to Establish Studying Program "Digital Humanities and Computational Linguistics" at the Georgian Technical University**

Section: Mathematical Education and History

September 4, Monday

Room 6 Chairman: Gogishvili Guram

- 15⁰⁰ : 15²⁵ **Gogishvili Guram**, On one notable method of developmental teaching in mathematics
- 15²⁵ : 15⁵⁰ **Khvoles Aben**, Some problems of teaching financial mathematics
- 15⁵⁰ : 16¹⁵ **Descalço Luís**, Calculus with Bayesian user model and GeoGebra in assessment
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Manukyan Vardan, Nikoghosyan Gagik**, On popularization of some questions of continuum mechanics
- 17¹⁰ : 17³⁵ **Martínez-Aroza José**, A mathematician visits The Alhambra -- A universal dialogue

September 5, Tuesday

Room 6 **Chairman: Vepkhvadze Teimuraz**

15⁰⁰ : 15²⁵ **Vepkhvadze Teimuraz**, Logic in school mathematical education

15²⁵ : 15⁵⁰ **Kirtadze Shalva, Deisadze Manana**, The role of developmental evaluation in mathematics classes on the entrance level

15⁵⁰ : 16¹⁵ **Deisadze Manana, Kirtadze Shalva**, Development of critical thinking in mathematics classes

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Adeishvili Vladimer, Gokadze Ivane**, Jensen's inequality in mathematics Olympiad problems

17¹⁰ : 17³⁵ **Giorgadze Teimuraz, Butchukhishvili Mamuli**, On the histogram of relative frequencies

17³⁵ : 18⁰⁰ **Berdzulishvili Giorgi**, On teaching the solution of a non-standard functional equation of one type in the secondary school

18⁰⁰ : 18²⁵ **Bakuradze Bakur, Bregadze Giorgi**, Solving various types of functional equations

September 7, Thursday

Room 6 **Chairman: Gogishvili Guram**

15⁰⁰ : 15²⁵ **Sulakvelidze Levan**, On the teaching of Taylor's formula in higher education

15²⁵ : 15⁵⁰ **Nakaidze Roin**, Mathematical experiments in the process of studying probability and statistics

15⁵⁰ : 16¹⁵ **Tavartkiladze Lasha**, Representation of the sides of a right triangle in terms of the radius of the circle inscribed in the triangle

- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Meskhia Rusudan**, On teaching problems of constructing the graph of the function
- 17¹⁰ : 17³⁵ **Samsonadze Guram**, On the joint course of linear algebra and analytic geometry
- 17³⁵ : 18⁰⁰ **Zivzivadze Manana**, The teaching-learning process based on the principles of constructivism in mathematics class

Section: Mathematical Logic and Discrete Mathematics

September 5, Tuesday

- Room 7** **Chairman: Beriashvili Mariam**
- 15⁰⁰ : 15²⁵ **Grigolia Revaz, Liparteliani Ramaz**, Perfect generalized 3-valued Post algebras.
- 15²⁵ : 15⁵⁰ **Yeshkeyev Aibat, Tungushbayeva Indira**, Small models of a Jonsson spectrum (Online)
- 15⁵⁰ : 16¹⁵ **Basheyeva Ainur, Lutsak Svetlana**, On the bases of quasivarieties generated by certain finite lattices
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Kulpeshov Beibut, Akimbekova Gulnaz**, The countable spectrum of weakly o-minimal theories
- 17¹⁰ : 17³⁵ **Kutkhashvili Ketevan**, On a mathematical model of a single dynamic problem of discrete optimization

September 7, Thursday

Room 7 **Chairman: Grigolia Revaz**

15⁰⁰ : 15²⁵ **Kirtadze Aleks**, Independent family of sets and their applications

15²⁵ : 15⁵⁰ **Beriashvili Mariam, Kubis Wieslaw**, On absolutely negligible uniform sets

15⁵⁰ : 16¹⁵ **Plotkin Eugene**, Elementary equivalence of Kac-Moody and Chevalley groups

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Oboudi Mohammad Reza**, Energy of matrices associated to graphs

17¹⁰ : 17³⁵ **Khachidze Marika**, On an existence of an almost non-invariant set

September 8, Friday

Room 7 **Chairman: Kirtadze Aleks**

15⁰⁰ : 15²⁵ **Beriashvili Shalva**, On some definitions of isosceles simplexes

15²⁵ : 15⁵⁰ **Beraia Lika**, On some paradoxical point sets in the Euclidean plane

15⁵⁰ : 16¹⁵ **Kasrashvili Tamar**, On one example of the existence of a non-measurable set on the real line \mathbb{R}

16¹⁵ : 16⁴⁵ **Coffee break**

Section: Mathematical Modeling and Numerical Analysis

Dedicated to the 90th Anniversary of Professor Jemal Sanikidze

September 4, Monday

Room 8

Chairman: Meladze Hamlet

15⁰⁰ : 15²⁵

Meladze Hamlet, Davitashvili Tinatin, Tsiramua Sergo, Difference schemes of increased order of accuracy for systems of elliptic and parabolic equations with constant coefficients

15²⁵ : 15⁵⁰

Tsiramua Sergo, Meladze Hamlet, Davitashvili Tinatin, Reconfigurable systems based on multifunctional elements

15⁵⁰ : 16¹⁵

Jemal Rogava, Zurab Vashakidze, Convergence and numerical experiments of a three-layer semi-discretization approach for the nonlinear Kirchhoff-type dynamic string equation with time-varying coefficients

16¹⁵ : 16⁴⁵

Coffee break

16⁴⁵ : 17¹⁰

Akhobadze Merab, Kurtskhalia Elguja, Mathematical model and algorithm for technical diagnostics and rehabilitation of building structures

September 5, Tuesday

Room 8

Chairman: Chilachava Temur

15⁰⁰ : 15²⁵

Chilachava Temur, Kvashilava Gia, Pochkhua George, Mathematical model describing the transformation of the Proto-Kartvelian population

15²⁵ : 15⁵⁰

Kereselidze Nugzar, The Issue of manageability of the task of optimal fight against disinformation

- 15⁵⁰ : 16¹⁵ **Baghaturia Giorgi, Menteshashvili Marina**, On an Algorithm for numerical solution of non-linear Goursat problem
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Zakradze Mamuli, Tabagari Zaza, Mirianashvili Manana, Koblishvili Nana, Davitashvili Tinatin**, The Method of probabilistic solution for the Dirichlet generalized harmonic problem in irregular pyramidal domains
- 17¹⁰ : 17³⁵ **Ugulava Duglas, Zarnadze David**, Strongly best approximation and Moore-Penrose generalized solution
- 17³⁵ : 18⁰⁰ **Kublashvili Murman, Kublashvili Mirian**, On numerical solutions of crack problems
- 18⁰⁰ : 18²⁵ **Mnatsakaniani Miranda**, Optimal control in the models similar to neural networks

September 7, Thursday

- Room 8** **Chairman: Jangveladze Temur**
- 15⁰⁰ : 15²⁵ **Gagoshidze Mikheil, Jangveladze Temur, Kiguradze Zurab**, Some properties and numerical solution of initial-boundary value problem for one system of nonlinear partial differential equations
- 15²⁵ : 15⁵⁰ **Gagoshidze Mikheil, Jangveladze Temur, Kiguradze Zurab, Tabatadze Besiki**, Numerical solution of one two-dimensional system of nonlinear partial differential equations
- 15⁵⁰ : 16¹⁵ **Chkhikvadze Teimuraz, Gagoshidze Mikheil, Jangveladze Temur, Kiguradze Zurab**, On one nonlinear parabolic integro-differential model

- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Vashakmadze Tamaz**, The development of complex analysis method for essentially non-linear systems of DE and about its numerical analogies (online)
- 17¹⁰ : 17³⁵ **Nino Khatiashvili**, On the stokes flows (online)
- 17³⁵ : 18⁰⁰ **Papukashvili Archil, Papukashvili Giorgi, Peradze Jemal, Sharikadze Meri**, On the approximation of the solution for a Kirchoff's-type equation describing the dynamic behavior of a string (online)
- 18⁰⁰ : 18²⁵ **Peradze Jemal**, The total error of a numerical algorithm for a Timoshenko plate system (online)
- 18²⁵ : 18⁵⁰ **Kachakhidze Nikoloz**, On the use of one numerical method for solving the nonlinear beam equation (online)
- 18⁵⁰ : 19¹⁵ **Tsiklauri Zviad**, About Solution of a nonlinear integro-differential Timoshenko dynamic beam equation (online)

September 8, Friday

- Room 8** **Chairman: Davitashvili Tinatin**
- 15⁰⁰ : 15²⁵ **Jagdish Chand Bansal**, Revisiting Population based Optimization Algorithms
- 15²⁵ : 15⁵⁰ **Jafarzadeh Yousef**, Hat basis functions for solving systems of linear and nonlinear Fredholm integral equations
- 15⁵⁰ : 16¹⁵ **Saroj Kumar Sahani**, A Delayed model for lysogenic and lytic cycle of bacteria-bacteriophage interaction
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Emmanuel O. Adeyefa** Development of a block

method for solving multiple order odes

17¹⁰ : 17³⁵ **Benitho A. Ngwu, Godwin C.E. Mbah, Isienyi Sunday U**, Geometric singular perturbation approach to glass networks

Section: Mathematical Physics

September 7, Thursday

Room 5 **Chairman: Kvinikhidze Alexander**

15⁰⁰ : 15²⁵ **Tsutskiridze Badri, Tsutskiridze Mariam**, Developed MHD flows in channels at existence of pointed geometry external magnetic field

15²⁵ : 15⁵⁰ **Zarnadze David, Ugulava Duglas**, Orbitization of quantum mechanics and interpretation of its notions

15⁵⁰ : 16¹⁵ **Ghorbanali Haghghatdoost, Rezvaneh Ayoubi, Hossein Kheiri**, Some structures on Lie groupoids

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Kvinikhidze Alexander**, Analog of perturbation theory j_n quantum mechanics for the general case of the homogeneous equations

17¹⁰ : 17³⁵ **Młynik Tomasz, Osaka Hiroyuki and Marciniak Marcin**, Indecomposable k-positive maps on operator algebras (online)

17³⁵ : 18⁰⁰ **Ojbag Jafar**, Integrability analysis of the natural Hamiltonian system on Helicoidal surfaces (online)

Section: Probability Theory and Statistics, Financial Mathematics

September 4, Monday

- Room 9** **Chairman: Purtukhia Omar**
- 15⁰⁰ : 15²⁵ **Kachiashvili Kartlos, Kachiashvili Joseph, Kalandadze Raphael, Kvaratskhelia Vakhtang**, Automatic diagnosis of lung disease on the basis of an X-ray images of a patient with given reliability.
- 15²⁵ : 15⁵⁰ **Hâncu Boris**, Approaches for solving informational extended games.
- 15⁵⁰ : 16¹⁵ **Mmaduakor Chika**, Development of almost unbiased modified ratio estimators for population mean using unknown population parameter(s).
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Zerakidze Zurab, Aleksidze Lela, Eliauri Laura**, Consistent criteria for hypothesis testing for Haar's statistical structures.

September 5, Tuesday

- Room 9** **Chairman: Kvaratskhelia Vakhtang**
- 15⁰⁰ : 15²⁵ **Mushunje Leonard**, High dimensional functional data analysis via algebraic geometry.
- 15²⁵ : 15⁵⁰ **Burić Tomislav, Mihoković Lenka**, Expectations of large data power means.
- 15⁵⁰ : 16¹⁵ **Tarieladze Vaja**, On Shangua's SLLN.
- 16¹⁵ : 16⁴⁵ **Coffee break**

September 7, Thursday

Room 9 **Chairman: Tarieladze Vaja**

15⁰⁰ : 15²⁵ **Namgalauri Ekaterine, Purtukhia Omar, Jokhadze Valeriane**, On martingale representations of non-smooth Brownian functionals.

15²⁵ : 15⁵⁰ **Giorgobiani George, Kvaratskhelia Vakhtang, Tarieladze Vaja**, Subgaussian random elements in infinite dimensional spaces.

15⁵⁰ : 16¹⁵ **Kvatadze Zurab, Parjiani Beqnu, Kvatadze Tsiala**, Weather forecast model using Markov chain.

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Babilua Petre, Nadaraia Elizbar**, About hypothesis testing of equality of two Bernoulli regression functions. (Online session)

17¹⁰ : 17³⁵ **Mnatsakanov Robert**, Estimation of discrete distribution and discontinuous function via moments. (Online session)

17³⁵ : 18⁰⁰ **Giorgadze Vazha, Kakubava Revaz, Buadze Tristan**, Nuclear evaluation type statistical challenges of probability distribution. (Online session)

Section: Real and Complex Analysis

Dedicated to the 85th Anniversary of Academician Vakhtang Kokilashvili

September 4, Monday

Plenary Room Ephremidze Lasha

15⁰⁰ : 15²⁵ **Bakuridze Mzevinar, Chobanyan Sergei, Tarieladze Vaja**, On a problem of Kolmogorov (Dedicated to the 120th anniversary of Kolmogorov),

15²⁵ : 15⁵⁰ **Ephremidze Lasha, Mishuris Gennady, Spitkovsky Ilya**, New algorithm for spectral factorization of rational matrix functions with applications to paraunitary filter banks

15⁵⁰ : 16¹⁵ **Turgay Metin**, Recent results on approximation by fractional integral type sampling series

16¹⁵ : 16⁴⁵ **Coffee break**

16⁴⁵ : 17¹⁰ **Acar Tuncer**, Approximation by generalized sampling type series: recent results,

17¹⁰ : 17³⁵ **Acar Ozlem**, Some recent results on orthogonal metric space

17³⁵ : 18⁰⁰ **Özsarç Fırat**, On the Mellin-Gauss-Weierstrass operators in the weighted Lebesgue spaces

September 5, Tuesday

Plenary Room Meskhi Alexander

15⁰⁰ : 15²⁵ **Meskhi Alexander, Natelashvili Lazare**, Two-weight criteria for multiple fractional integrals in mixed-normed Lebesgue spaces

- 15²⁵ : 15⁵⁰ **Makharadze Dali, Meskhi Alexander**, Embeddings and regularity of potentials in Grand Variable exponent function space
- 15⁵⁰ : 16¹⁵ **Imerlishvili Giorgi, Meskhi Alexander**, One-sided potentials in weighted central Morrey spaces
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Gonçalves Helena**, Embeddings of smoothness Morrey spaces on domains
- 17¹⁰ : 17³⁵ **Krnic Mario, Moradi Hamid Reza, Sababheh Mohammad**, Logarithmically superquadratic functions
- 17³⁵ : 18⁰⁰ **Kursun Sadettin**, Different forms of exponential sampling Kantorovich series and their approximation results

September 7, Thursday

Plenary Room **Oniani Giorgi**

- 15⁰⁰ : 15²⁵ **Oniani Giorgi**, Almost everywhere convergence of nets of operators and weak type maximal inequalities
- 15²⁵ : 15⁵⁰ **Mihoković Lenka**, Asymptotic expansions of stable, stabilizable and stabilized means
- 15⁵⁰ : 16¹⁵ **Bandaliev Rovshan, Aliyeva Dunya**, On characterization of two-weight norm inequalities for multi-dimensional Hausdorff operators on Lebesgue space
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Chubinidze Kakha, Oniani Giorgi**, On the differentiation of random measures with respect to homothety invariant convex bases

- 17¹⁰ : 17³⁵ **Japaridze Irakli, Oniani Giorgi**, On the integrability of multi-dimensional rare maximal functions
- 17³⁵ : 18⁰⁰ **Bakherad Mojtaba**, Recent operator norm inequalities involving sectorial matrices

September 8, Friday

Plenary Room **Tepnadze George**

- 15⁰⁰ : 15²⁵ **Persson Lars-Erik, Samko Natasha, Tepnadze George**, Sharpness of some Hardy-type inequalities
- 15²⁵ : 15⁵⁰ **Areshidze Nika, Tepnadze George**, Approximation by Nörlund means with respect to Walsh system in Lebesgue spaces
- 15⁵⁰ : 16¹⁵ **Baramidze Lasha, Goginava Ushangi**, Summability of Tkebuchava's means of one and two-dimensional trigonometric Fourier series
- 16¹⁵ : 16⁴⁵ **Coffee break**
- 16⁴⁵ : 17¹⁰ **Tutberidze Giorgi, Tsagareishvili Vakhtang**, Some properties of the sequence of linear functionals on the space V
- 17¹⁰ : 17³⁵ **Baramidze Davit, Persson Lars-Erik, Tepnadze George**, Maximal operators of partial sums of Walsh-Fourier series in the martingale Hardy spaces
- 17³⁵ : 18⁰⁰ **Sharma Aakriti**, Linear sum of weighted composition differentiation operator

September 9, Saturday (Online Session)

Plenary Room **Ephremidze Lasha**

$10^{00} : 10^{25}$ **Xue Qingying**, The composition of rough singular integral operators on function spaces

$10^{25} : 10^{50}$ **Israfilov Daniyal**, Maximal Simultaneous Approximation by Faber Series

$10^{50} : 11^{15}$ **Katz David**, Riemann boundary value problem on spirals and generalized Cauchy-type integral

$11^{15} : 11^{45}$ **Break**

$11^{45} : 12^{10}$ **Jafarzadeh Yousef**, Some results regarding to new triple Laplace transform

$12^{10} : 12^{35}$ **Jafarzadeh Yousef**, Convex functions of Hermite-Hadamard

$12^{35} : 13^{00}$ **Curbera Guillermo, Ricker Werner J., Okada Susumu**, The finite Hilbert transform on $(-1, 1)$

$13^{00} : 13^{25}$ **Aplakovi Aleksandre**, On the absolute convergence of the multiple series of Fourier-Haar coefficients

$13^{25} : 18^{30}$ **Break**

$18^{30} : 18^{55}$ **Dutkay Dorin**, Orthonormal bases and Parseval frames generated by Cuntz algebras and row co-isometries

$18^{55} : 19^{20}$ **Jafari Farhad**, Convexity, moments and applications to tomography

$19^{20} : 19^{45}$ **Fonseca Oscar**, Sobolev meets Riesz: an alternative characterization of weighted Sobolev spaces via weighted Riesz bounded variation spaces

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