

Mathematics in Georgia

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Razmadze Mathematical Institute of

Tbilisi State University

Mathematical research in Georgia began after the founding of Tbilisi State University (**TSU**) in 1918.

Razmadze Mathematical Institute (**RMI**), the leading research institution in Georgia, was founded by **N. Muskhelishvili** in 1933 first as a research institute in TSU. In 1935 it was transformed into a mathematical research institute of newly founded **Georgian Academy of Sciences** (**GAS**).

2006 - 2010 - research institute under MES, 2011 - research institute in TSU

Most Outstanding Georgian Mathematicians

Nikoloz Muskhelishvili (1891-1976)

- Founder and first President of the GAS.
- Member of the Bureau of the International Union of Theoretical and Applied Mechanics.
- Prize "Modesto Panetti", Italy.
- Jan Jessenius Gold Medal, Slovak Academy of Sciences.
- Lomonosov Gold Medal of RAN.

Works in singular integral equations, mathematical physics, elasticity theory, etc.

Most Outstanding Georgian Mathematicians

Ilia Vekua (1907 - 1977)

- Deputy-director of the Steklov Institute of Mathematics.
- Founder and first rector of Novosibirsk State University.
- Rector of TSU.
- President of the GAS.

Works in PDF, singular integral equations, generalized analytic functions, theory of elastic shells.

Departments

Geometry and Topology, Algebra, Mathematical Logics,
Theoretical Physics, Probability Theory and Mathematical
Statistics,

Mathematical Analysis, Differential Equations, Mathemati-
cal Physics, Elasticity Theory.

Journals

Since 1937 - "**Proceedings of A. Razmadze Mathematical Institute**". Among its authors were **P. Erdes, J. Hadamard, M. Keldysh, E. Landau, M. Lavrentjev, L. Tonelli, etc.**

Since 1994 - "**Memoirs on Differential Equations and Mathematical Physics**".

Since 1994 - "**Georgian Mathematical Journal**", published by **DE GRUYTER**. The first Georgian Scientific Journal with official **impact factor** from ISI.

Facts and Statistics

RMI researchers are **editorial board members** of **14** international scientific journals

6 Humboldt fellowships

5 ICTP associates

2 DFG Mercator Professors

Facts and Statistics

Bolzano Honorary Medal of the Academy of Sciences of the Czech Republic (I. Kiguradze)

Humboldt Prize (T. Pirashvili)

Kharizmi First Prize of Science and Technology, Iran (H. Inassaridze)

Facts and Statistics

RMI members hold positions in various universities:

S. Gubeladze - San Francisco State University

T. Pirashvili - University of Leicester

G. Janelidze - University of Cape Town

E. Khmaladze - Victoria University of Wellington

A. Chigogidze - University of North Carolina

E. Shargorodski - King's College London

In 2006-2010 about 400 papers, half of them in impact factor journals.

More than **130 monographs** are published in North-Holland, Pitman, P. Noordhoff-Groninger-Holland, Longman, Birkhauser, Kluwer, World Scientific, Cambridge University Press, etc.

2007, 2008, 2009, 2010 - RMI was recognized by Georgian Academy of Sciences as the **best research institution in Mathematics and Physics in Georgia**

Grants

Over **70 grants** from international scientific foundations: INTAS, CRDF, ISF, DFG, The Royal Society, NATO Science Fellowships Programm, Eurazia Foundation, Australian Research Council, SCOPE, Swiss National Science Foundation, Volkswagen Foundation, Heisenberg-Landau Programme, Grant of the Government of Italy for Young Scientists, etc)

After founding of GNSF in 2006 RMI obtained **23 grants** of this foundation

Organizing Conferences

In 1996-2006 under the program of **UNESCO Venice Office**
41 conferences were hosted

Conferences in 2011:

Continuus Mechanics and Related Problems of Analysis;
Modern Algebra and Its Applications;
Recent Advances in Quantum Field and String Theory;
Qualitative Theory of Differential Equations;
Homotopy and Non-Commutative Geometry;
Ordered Groups and Lattices in Algebraic Logics
II International Conference of GMU

Topology

- Homology theory of fibrations: high order obstructions, applications in homotopy problems
- $A(\infty)$, $L(\infty)$ other homotopy algebras: minimality theorems which have applications in string theory and quantization problems
- Lie groups and algebras: classification of certain Lie algebras, which has applications in the theory of elementary particles, statistical and quantum mechanics, theory integrable systems.

Topology

Colaboration: Lille University, Grenoble University, Heidelberg University, Sevilla University, North Carolina State University, Millersville University, MIT, Hasselt University, Trento University, Chicago University, MGU

Ilia University - Singularity theory, Signature formulas, Configuration spaces

Batumi State University, Georgian Technical University - Homology and Shape theories

Algebra

- K-theory, smooth K-theory, bivariant K-theory
- Homological and homotopical algebra
- Hochschild and cyclic homologies
- Non-commutative geometry
- Category theory, particularly investigation of symmetric monoidal categories with applications to K-theory.

Batumi University, Georgian Technical University - theory of lattices

Theoretical Physics

Mathematical problems of quantum field theory with applications to elementary particles and condensed matter physics

Strings and integrable models, conformal field theory, problems of quantization, noncommutative geometry, quantum groups, non-perturbative methods in quantum chromodynamics, quantum computing, gauge theories and gravity, classical solutions of field equations

Probability and Statistics

- Empirical processes and non-parametric methods of statistics;
- Parameter estimation methods in semimartingale models;
- Martingale methods in stochastic control and optimal stopping;
- Utility maximization and hedging under partial information

Institute of Computational Mathematics (GTU) - Probability distributions on Banach spaces