

**XXVII Enlarged Sessions of the Seminar of
Ilia Vekua Institute of Applied Mathematics (VIAM) of
Ivane Javakhisvili Tbilisi State University (TSU)
April 22–24, 2013**

Program



**Opening - April 22, Monday, 13:00,
Ilia Vekua Lecture Hall in VIAM**

Organizing committee

N. Avazashvili (Vice-chairman)
M. Amaglobeli
J. Antidze
G. Axalaia
M. Baaz
M. Gvaramadze (Secretary)
G. Giorgadze
U. Goginava
L. Gogoladze
D. Gordeziani
T. Davitashvili
A. Danelia
T. Vashakmadze
T. Vepkhvadze
T. Tadumadze
Z. Kiguradze
R. Koplatadze
T. Meunargia

E. Nadaraia
D. Natroshvili
R. Omanadze
J. Rogava
M. Rukhaia (Scientific Secretary)
Kh. Rukhaia
M. Svanadze
A. Kipiani
O. Purtukhia
K. Shavgulidze
J. Sharikadze
N. Chinchaladze (Vice-chairwoman)
A. Kharazishvili
S. Kharibegashvili
G. Khimshiashvili
N. Khomasuridze
G. Jaiani (Chairman)
T. Jangveladze

Section of Foundations of Mathematics and Mathematical Logic

Chairs – R. Omanadze, A. Kharazishvili
Co-Chair – A. Kipiani

Tuesday, April 23

Auditory № 254 (VIAM)

- 13:00-13:20 **R. Omanadze.** On the bQ -degrees of computably enumerable sets
13:25-13:45 **R. Grigolia.** Projective monadic MV-algebras in locally finite varieties
13:50-14:10 **G. Pantsulaia, N. Rusiasvili .** On problems of Darji and Fremlin in some set-theoretical models
14:15-14:35 **A. Kipiani.** The continuum hypothesis and the rigidity of graphs
14:40-15:00 **M. Beriasvili.** The role of additional set-theoretical axioms in the process of study of descriptive structure of point-sets

Section of Applied Logics and Programming

Chair – M. Baaz (Austria)

Co-Chairs – J. Antidze, Kh. Rukhaia

Wednesday, April 24

Auditory № 224 (VIAM)

- 14:00-14:20 **J. Antidze.** Application of constraints for splitting of Georgian words in morphemes
- 14:25-14:45 **N. Gulua .** Application of Moodle system in teaching process
- 14:50-15:10 **I. Qardava .** Automatic production of Georgian word forms
- 15:15-15:35 **Kh. Rukhaia, L. Tibua.** One algorithmic process for deciding validity of some unranked theory formulas
- 15:40-16:00 **G. Chanketadze, G. Mikanadze, S. Phakadze.** An implementation of an algorithm for classification of unranked propositional logic formulas

Section of Algebra and Geometry

Chairs – M. Amaglobeli, T. Vepkhvadze, G. Khimshiashvili

Co-Chair – K. Shavgulidze

Wednesday, April 24

Auditory № 225 (XI building of TSU)

- 10:00-10:20 **M. Amaglobeli.** Tensor completion in the category of exponential groups
- 10:25-10:45 **T. Vepkhvadze.** Generalized theta-functions with characteristics and cusp forms of half-integral weight
- 10:50-11:10 **K. Shavgulidze.** On the quadratic form of type $(-2, q, 1)$ with discriminant q^2
- 11:15-11:35 **M. Bakuradze.** Computing Krichever genus on rational complex cobordism
- 11:40-12:00 **I. Tavkhelidze.** Some remarks about structures of bulk links which appear after "cutting" of the Generalized Möbius-Listing's bodies
- 12:05-12:25 **V. Iomadze.** PBH controllability test for linear dynamical systems in several variables
- 12:30–12:50 **R. Surmanidze.** About tensor algebras connections with one class of homogeneous Riemann spaces

Section of Complex Analysis and Applications

Chair – G. Giorgadze
Co-Chair – G. Akhalaia

Wednesday, April 24

Auditory № 132 (VIAM)

- 11:00-11:20 **G. Giorgadze** . On the numerical invariants of Fuchsian systems
11:25-11:45 **G. Akhalaia, N. Manjavidze** . On one boundary value problem for Q- holomorphic vector
11:50-12:10 **G. Makatsaria**. On structure of the solutions of some elliptic systems
12:15-12:35 **V. Jikia** . On the existence of primitive in space of local Lebesgue integrated functions
12:40-13:00 **G. Kakulashvili**. On some formulas of spherical geometry

break

- 14:00-14:20 **V. Paatashvili**. Riemann problem with measurable coefficients in the class of Cauchy type integrals with the density from Lebesgue variable-exponential space
14:25- 14:45 **N.Makhaldiani**. Renormdynamics, coupling constant unification and universal properties of the multiparticle production
14:50-15:10 **I.Lomidze**. On structure of complete set of unitary invariants of non Hermitean operator in n -dimensional space
1515-15.35 **M.Eliashvili, G.Tsitsishvili**. Quantum group and the structure of eigenvectors on a honeycomb lattice
15:40-16:00 **L.Epremidze**. New algorithm of the spectral factorization of matrix funciton
16:05-16:25 **N.Salia**. Computar realization of the algorithm of spectral factorization of matrix funciton

Section of Ordinary Differential Equations and Optimal Control

Chairs- T. Tadumadze, R. Koplatadze

Monday , April 22

Auditory № 256 (VIAM)

- 10:45-11:05 **T. Tadumadze.** Existence theorems of an optimal initial data for neutral functional differential equations
- 11:10-11:30 **N. Gigauro.** About estimation of the solution increment for a functional differential equation with two delay parameters and with the continuous initial condition
- 11:35-11:55 **N. Maraneli.** On the oscillatory properties of solutions of functional differential equations
- 12:00-12:20 **T. Tsutsunava.** On the positive solutions of discrete equations
- 12:25-12:45 **A. Gabelaia.** Forecasting methods in economics and finance

break

- 13:40-14:00 **P. Dvalishvili.** On the well-posedness of one classes optimal problem with distributed delays
- 14:05-14:25 **M. Ashordia, G. Ekhvaia, N. Kekelia.** On the Conti-Opial type theorems on the solvability of general nonlinear boundary value problems for system of impulsive equations
- 14:30-14:50 **N. Khvedelidze.** On the existence of bounded and vanishing at infinity solutions of linear ordinary differential equations of third order
- 14:55-15:15 **B. Gvaberidze.** About one method of solution of the multi-criteria Boolean optimization problems
- 15:20-15:40 **M. Ashordia, G. Ekhvaia, N. Topuridze.** On the Conti-Opial type theorems on the solvability of general nonlinear boundary value problems for system of discrete equations
- 15:45-16:05 **R. Koplatadze.** On some two-point boundary value problems

Section of Probability Theory and Mathematical Statistics

Chair – E. Nadaraya

Co-Chair – O. Purtukhia

Monday , April 22

Auditory № 335 (XI building of TSU)

- 14:00-14:20 **E. Nadaraya, G. Sokhadze, A. Tkeshelashvili.** About integral functional for probability distribution function
- 14:25-14:45 **V. Kvaratskhelia, V. Tarieladze, N. Vakhania.** Characterization of subgaussian measures in Hilbert spaces
- 14:50-15:10 **O. Glonti, O. Purtukhia.** Clark's type formulas and applications in barrier options hadging
- 15:15-15:35 **M. Mania, R. Tevzadze.** On the properties of the dynamic value functions in the problem of optimal investing in incomplete markets;
- 15:40-16:00 **P. Babilua, B. Dochviri, O. Purtukhia, G. Sokhadze.** On the optimal stopping of partially observable processes;

break

- 16:30-16:50 **B. Mamporia.** On the Wiener processes in a Banach space
- 16:55-17:15 **T. Buadze.** About projection estimation of multivariation distribution density
- 17:20-17:40 **M. Patsatsia.** On the maximum pseudo-likelihood estimation of distribution parameters by grouped observations with censoring
- 17:45-18:05 **B. Chikvinidze.** The linear-quadratic regulator problem and relation with backward equations
- 18:10-18:30 **Z. Zerakidze, M. Mumladze.** A consistent criterion

Tuesday, April 23

Auditory № 335 (XI building of TSU)

- 13:50-14:10 **G. Sokhadze, Z. Khechinashvili.** On estimation of the correlation operator of Gaussian element in Hilbert space
- 14:15-14:35 **S. Eloshvili.** Quantum events and tensor probabilities
- 14:40-15:00 **E. Nadarya, P. Babilua, G. Sokhadze.** About nonparametric estimation of the Bernoulli regression function
- 15:05-15:25 **V. Jokhadze.** Stochastic analyses of Georgian currency exchange market
- 15:30-15:50 **V. Jokhadze, T. Shugliashvili.** Mathematical modeling of practical marketing problems
- 15:55-16:15 **T. Shugliashvili.** Econometric analyses of the results of unemployment (based on research of unemployed)

Section of Mechanics of Continua

Chairs – T. Meunargia, M. Svanadze, J. Sharikadze, N. Khomasuridze, G. Jaiani
Co-chair – N. Chinchaladze

Monday, April 22

Auditory № 115 (VIAM)

- 14:00-14:20 **L. Bitsadze.** On some solutions of the system of equations of steady vibration in the plane thermoelasticity theory with microtemperatures
- 14:25-14:45 **R. Bantsuri, G. Kapanadze.** Problems of the plane theory of elasticity for doubly-connected domains bounded by polygonal lines
- 14:50-15:10 **B. Gulua.** On a boundary value problem for non-linear non-shallow spherical shells
- 15:15-15:35 **D. Ivanidze.** Neumann type interior boundary value problem of thermoelastostatics for hemitropic solids
- 15:40-16:00 **M. Ivanidze.** Investigation of the interior Neumann type boundary value problems of thermoelastostatics for anisotropic bodies

Wednesday, April 24

Auditory № 115 (VIAM)

- 13:00-13:20 **T. Meunargia.** The method of a small parameter for non-shallow and nonlinear shells
- 13:25-13:45 **K. Svanadze.** On the problem of statics of the theory of elastic mixtures on finding uniformly stable holes in a square
- 13:50-14:10 **Maia Svanadze.** Steady vibration problems in the linear theory of viscoelasticity for Kelvin-Voigt materials
- 14:15-14:35 **J. Sharikadze.** On some boundary value problems of magnetohydrodynamics
- 14:40-15:00 **N. Chinchaladze.** Hierarchical models for biofilms occupying thin prismatic domains
- 15:05-15:25 **G. Jaiani.** Mixed hierarchical models of elastic prismatic shells

Section of Mathematical Modeling and Numerical Analysis

Chairs – D. Gordeziani, T. Vashakmadze , J. Rogava

Co-chair – T. Davitashvili

Monday, April 22

Auditory №132 (VIAM)

- 10:00-10:20 **G. Gvinchidze, N. Eremadze.** To the universal kernel of a creeping for visco-elastic beams without prehistorical memory
- 10:25-10:45 **L. Japharidze.** Numerical and analytical methods in the problems of geomechanics
- 10:50-11:10 **G. Gabrichidze.** The order and disorder in nature-the rings of increases spiral of civilization or the permanent dangerous and summons of regression in the chaos
- 11:15-11:35 **A.K., Tvalchrelidze, K.R.Tskhakaia.** The new mathematical model of electric machines
- 11:40-12:00 **A. Gvelesiani.** The turbulence characteristics in the ionosphere sporadic layer
- 12:05-12:25 **J.Sanikidze**-To the convergence of some quadrature processes for Cauchy type integrals
- 12:30-12:50 **T.Vashakmadze.** To analytical and numerical methods in the continuum meqanics

break

- 14:00-14:20 **D. Gulua.** On the stability of the Crank-Nicholson scheme in a Banach space
- 14:25-14:45 **N. Vasilieva-Vashakmadze, R. Gakhokidze, K. Archvadze , I.Khachatrian, P. Toidze .** The computing model for some biological hypothesis
- 14:50-15:10 **T. Kaladze,L. Tsamalashvili.** To numerical realizations of solution Corteweg-de Frees and Kadomtsev-Petviashvili type equations
- 15:15-15:35 **G. Geladze.** Numerical model of secondary pollution of atmosphere
- 15:40-16:00 **D. Arabidze.** To numerical realization of BVP for ODEs
- 16:05-16:25 **R. Chikashua.** To the computation and applications of classical orthogonal polynomials
- 16:30-16:50 **N. Khatiashvili.** On some mathematical models connected with nanocrystals growth
- 16:55-17:15 **N. Dikhaminjia, J. Rogava, M. Tsiklauri.** On numerical solution of one biological model using operator-splitting method
- 17:20-17:40 **T. Makharashvili, K. Shashiashvili.** On the numerical solution of one-dimensional degenerate hyperbolic equations

Tuesday, April 23

Auditory № 132 (VIAM)

- 11:25–11:45 **G. Avalishvili, M. Avalishvili.** Investigation of the Chandrasekharaiah-Tzou nonclassical model for thermoelastic bodies
- 11:50–12:10 **A. Papukashvili, D. Gordeziani, T. Davitashvili, M. Sharikadze.** On finite-difference method for approximate solution of antiplane problems of elasticity theory for composite bodies weakened by cracks
- 12:15–12:35 **G. Manelidze.** To the application of alternating to the perturbation technique method in the eigenvalue problem for matrices
- 12:40–13:00 **V. Kapanadze, A. Tciticagi, A. Fatcatcia, L. Fantckhava.** Approximate solution of one class of singular integral equations

