

# *CURRICULUM VITAE*

## *David Gordeziani*

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**DATE OF BIRTH:** December 9, 1937

**NATIONALITY:** Georgian

**PROFESSION:** Mathematician

**MARITAL STATUS:** Married, two daughters

**POSITION IN FIRM:** Director of I. Vekua Institute of Applied Mathematics, Full Professor of Tbilisi State University

**KEY QUALIFICATION:**

- Computational mathematics;
- Mathematical modelling and mathematical physics.
- Application of methods of mathematical modelling, computational mathematics and mathematical physics for solution of problems in thermoelasticity, shell-theory, hydro-gas-dynamics, meteorology and ecology.

**EDUCATION:**

1961            Graduated from Tbilisi State University, Department of Mathematics and Mechanics;

1961-1964    Post-graduate studentship, Tbilisi State University;

1971-1972    Probationer of the Laboratory of Numerical Analysis in the University Paris VI (science supervisor - acad., prof. J.-L. Lions) and Institute of Applied Mathematics of Grenobl.

## **EXPERIENCE:**

- from 2006            Full professor of Tbilisi State University
- 1985-2006            Director of I. Vekua Institute of Applied Mathematics;  
Head of Department of Computational mathematics of Tbilisi State University. Supervised the Institute scientific-research works, concerning investigation and realization of different problems of mathematical physics and mechanics of continuum media. During that period I investigated problems of the theory of elastic mixtures, nonlocal-in-time problems for some equations of mathematical physics; mathematical models for computation of thermoelastic state of some energetic plants (TOKAMAK-15) (The works were carried out together with the colleagues of I. V. Kurchatov Atomic Energy Institute, Moscow).
- 1979-1985:            Deputy Director of I. Vekua Institute of Applied Mathematics. Supervised the Institute scientific-research works in computational mathematics, magnetic hydro-dynamics, meteorology, shell-theory. During that period investigated and developed methods of decomposition for nonstationary problems of mathematical physics; the works on thermo-elastic state of some energetic plants were carried out together with I. V. Kurchatov AtomicEnergy Institute, Moscow).
- 1969-1979:            Head of the department of Numerical Methods of I. Vekua Institute of Applied Mathematics. Supervised the scientific work of the department in shell theory, meteorology, ecology, magnetic hydro-dynamics, computation and optimization of gas pipelines; took part, together with the scientists of Taganrog Radio-Technic Institute, in special works concerning modelling of computing devices for aircrafts; I participated in the investigation of computing methods for problems of plasma physics too (together with colleagues of USSR Academy Institute of Applied Mathematics and Sokhumi Physical-Technical Institute).
- 1971-1972:            Probationer of the Laboratory of Numerical Analysis in the Paris University (science supervisor - acad., prof. J.-L. Lions).
- 1968-1969:            Senior scientific worker at I. Vekua Institute of Applied Mathematics; investigation of the variation-differential schemes for problems of I. Vekua theory of shells. Investigation of the economical-differential schemes for

solution of problems of mathematical physics.

1964-1968: Junior research worker of A. Razmadze Institute of Mathematics, Georgian Academy of Sciences. Investigation of stability and convergence of finite differential schemes for some nonlinear parabolic equations; investigation of local one-dimensional schemes for parabolic equations of  $2m$ -order.

#### **PARTICIPATIONS AND OTHER ACTIVITIES:**

- Since 1963 till now read the lectures in programming and computational mathematics, mathematical modeling, functional analysis and computational mathematics, numerical methods of partial differential equations etc. at the Tbilisi State University.
- In 1966 defended Ph.D. thesis in specialty "Computational mathematics" at the Academic Council of A. Razmadze Institute of Mathematics of the Georgian Academy of Sciences (head of the Council-acad., prof. N. I. Muskhelishvili). The title of the thesis: "About Numerical solution of some Parabolic Differential Equations of the Second and Higher Order" (under supervision of acad., prof. Sh. Mikeladze).
- In 1981 defended a thesis for a Doctor of Science degree in specialty "Computational mathematics" at the Moscow State University at the Academy Council of Computational mathematics and Cybernetics (head of Council - acad., prof A. N. Tikhonov); The title of thesis "Construction Methods of Approximate Solutions for Some Classes of Multidimensional Problems of Mathematical Physics".
- Supervised preparation and defenses of 15 Masters of Sciences, 17 Candidate thesis and 7 thesis for a Doctor of Science degree.
- The first places of Student and Soross Conferences were 30 times taken by the young scientists under his supervision, and many times second and third places.
- Six young scientists had Scholarship of President.
- Four had Scholarship of Soros.
- Took part in organization and holding of several international, All-Union and Republic congresses, symposiums, conferences, schools on mathematics, computational

mathematics, mechanics, theory of shells, hydro-dynamics, magnetic hydrodynamics, informatics (e. g. International Congress of Mathematicians, Warsaw, 1982, report "About Existence and Uniqueness of Solution of One Class of Nonlinear Parabolic Equations"; International Congress of Mathematics, Zürich, 1994, report "On solution of Non-local Problems in Time for Some Equations of Mathematical Physics"; Athens Interdisciplinary Olimpia, 1991, report "On a Dimensional Reduction Method for Some Linear Problems of Elastic Mixtures"; IUTAM Symposium on Shell Theory, 1978, report "On Applications of the Total Approximation Method to the Solution of Some Shell Theory Problems" and so on);

- Was invited to carry lecture courses and scientific researches, participation in congresses conferences and symposiums in Germany, Italy, France, Greece, Switzerland, Poland, Denmark, Belgium and former USSR countries, Russia (Moscow), Azerbaijan, Uzbekistan, Byelorussia, Moldova.
- The author of more than 140 scientific publications, 4 inventions, two patents (USA, Sweden) and two Monographies (Publications of Tbilisi University Press).
- Such outstanding scientists as are acad. Ph.G. Ciarlet (France), acad. A.A. Samarskii (Russian), acad. V.A. Ilyin (Russian), acad. A.V. Bitsadze (Russian), prof. A.L. Skubatchevskii (Russian), prof. B.P. Paneyakh (Russia), prof. M. Bernadou (France); prof. I. Babushka (USA), prof. M.Vogelius (USA), prof. S. Iensen (USA); prof. V.L. Makarov (Ukraine), prof. V.I. Gulyaev (Ukraine), prof. V.A. Bagenov (Ukraine), prof. P.P. Lizunov (Ukraine), P.N. Vabishevich (Russian), P.P. Matus (Belarus), S. Abrachin (Belarus), V. Asmokil (Belarus), N. Ionkin (Russia), S. Lapko (Ukraine), N. Chadaev (Ukraine), M. Dauge (France) M. Lods (France), N. Long (USA), Acad. E. Moiseev (Russian), M. Sapagovas (Lithonia), prof. A. Guchin (Russian), G. Laptev (Russian) and many other Georgian and foreign scientists have made references and quoted the works in their Monographies and articles.
- Many time opponent of doctoral and candidate dissertations, among these in Moscow, Kiev, Minsk, Baku, etc. in various centers and universities.
- The member of the International Academy of Computer Sciences and Systems.
- The president of Georgian Academy of Natural Sciences (2000 till now).
- The member of the Engineering Academy of Georgia.
- The member of the council of a section on Modelling of USSR Academy of Sciences until 1991.
- The vice chairman of Council on Mathematical Modelling of the Georgian Academy of Sciences.
- Vice-chairman of the Specialized Council on Confirmation of Scientific Degrees in specialty "Theoretical aspects of mathematical modelling, numerical methods, complexes

of programmes". The Chief Editor of the journal "Applied Mathematics, Informatics and Mechanics" (Tbilisi State University Press), as well as of other three editions of I. Vekua Institute of Applied Mathematics.

- The member of editorial board of other mathematical journals.
- The Grant of International Center of Science and Technology, Project #G-47 (1998-2000).
- The Grant of Department of Science and Technology of Georgia (three grants).
- The scientific grant of Georgia (2006-2008)
- The grant of INTASS (2006-2008).
- One-time Soross grant for supervision of aspirant work received on the International Conference that was carried out under the educational program (three I places, one II place and two III places).

**LANGUAGES:** Georgian (native), Russian (excellent), French (good), English (fair)

**AWARDS** (incomplete list):

1. Diploma of Honour of the Central Committee of the Communist Party and the Council of Ministers of the USSR(1987);
2. Two first grade and one second grade diplomas of VDNKh of the Republic of Georgia and premiums (1978, 1985, 1987);
3. Diploma of Honour of the Ministry of High and Secondary Special Education of the Republic of Georgia (1980);
4. First grade premium of the Council of Ministers of the Republic of Georgia "For the introduction of the results of high efficiency works", (1984);
5. Medal of USSR "for valiant labour", (1970);
6. Honours of Valour of Georgia, (1998);
7. Medal in honour of Ivane Javakhishvili of Tbilisi State University.

**SELECTED PUBLICATIONS FOR LAST TEN YEARS:**

1. D. Gordeziani, N. Gordeziani, G. Avalishvili, On one class of nonlocal problems for partial differential equations, Rep. of Enlarged Sessions of the Seminar of I. Vekua Inst. Appl. Math., vol. 10, № 3, 1995, 20-22;

2. D. Gordeziani, N. Gordeziani, On the solution of dynamical problems in the linear theory of elastic mixtures, *Appl. Math. Inform.*, vol. 1 № 1, 1996, 70-77;
3. D. Gordeziani, G. Avalishvili, Investigation of the nonlocal initial boundary value problems for the string oscillation and telegraph equations, *AMI*, vol. 2, 1997, 65-79;
4. Gordeziani D., Gordeziani N., Avalishvili G. Nonlocal boundary value problems in mathematical physics. Abstracts, *Differential Equations and Mathematical Physics*, International Symposium dedicated to the 90-th Birthday Anniversary of Academician I. Vekua, Tbilisi, 1997, pp. 127-128.
5. D. Gordeziani, N. Gordeziani, G. Avalishvili, On the investigation and resolution of nonlocal boundary and initial boundary value problems, *Rep. of Enlarged Sessions of the Seminar of I. Vekua Inst. Appl. Math.*, vol. 12, № 3, 1997, 18-20;
6. D. Gordeziani, N. Gordeziani, G. Avalishvili, Nonlocal boundary value problems for some partial differential equations, *Bull. Georgian Acad. Sci.*, vol. 157, № 3, 1998, 365-368;
7. G. Avalishvili, D. Gordeziani, Nonlocal problems for a vibrating string, *Bull. TICMI*, vol. 2, 1998, 22-24;
8. Гордзезиани Д. О жестких смещениях в теории призматических оболочек Ию Нью Векуа. Маждународный симпозиум «Механика твердого дефармируемого тела». Тбилиси 1998, тезисы докладов 4-6, 11, 1998, ст. 58.
9. D. Gordeziani, On rigid motions in Vekua theory of prismatic shells, *Rep. Semin. I. Vekua Inst. Appl. Math.*, vol. 24, 1998, 3-9;
10. Гордзезиани Д.Г., Качиашвили К.И., Меликджаниян Д.Ю., Хучуа В.И. Пакеты программ автоматизации мониторинга окружающей среды и обработки экспериментальных данных . Респ. науч.-технолог. конф.-выставка, «Прикладные програмные технологии», Sof TEC-99, Тбилиси, с. 273-278;
11. D. Gordeziani, T. Davitashvili. Non-local boundary conditions in the problem of the atmosphere pollution. *Reports of Enlarged Session of the Seminars of I. Vekua Inst.*, vol. 14, №1, 1999.
12. D. Gordexiani, T. Davitashvili, Z. Khvedelidze. Mathematical model of the atmosphere pollution for the mountain region. *Reports of Enlarged Session of the Semonars of I. Vekua Inst.*, vol. 14, № 1, 1999.
13. G. Avalishvili, D. Gordeziani, Nonclassical problems for the second order hyperbolic equations, *Bull. TICMI*, vol. 3, 1999, 18-21;
14. G. Avalishvili, D. Gordeziani, On the investigation of plurievolution equations in abstract spaces, *Rep. of Enlarged Sessions of the Seminar of I. Vekua Inst. Appl. Math.*, vol. 14, № 3, 1999, 12-16;
15. Gordeziani D., Gordeziani E., Kachiashvili K. On some mathematical models of diffusion of varius mixtures in water streams. *Problems of Ecology and Exploitation of Objects*, Thesis of Reports, Sevastopol, 21-25 Jun, 1999, Kiev, pp. 53-57.
16. D. Gordeziani, E. Gordeziani, On investigation of difference schemes for some pluriparabolic equation, *Rep. Enlarged Sess. Semin. I. Vekua Appl. Math.*, vol. 14, № 3, 1999, 53-57;

17. D. Gordeziani, T. Davitashvili, Mathematical model of the atmosphere pollution with non-classic boundary conditions, Appl. Math. Inform., vol. 4, № 1, 1999, 75-92;
18. Гордезиани Д.Г., Авалишвили Г.А., Решение нелокальных задач для одномерных колебаний среды, Математическое моделирование, том №1, 2000, ст. 94-103;
19. D. Gordeziani, G. Avalishvili, On the investigation of nonlocal problems in time for hyperbolic equations, Bull. Georgian Acad. Sci., vol. 162, № 2, 2000, 229-232;
20. G. Avalishvili, D. Gordeziani, On one class of spatial nonlocal problems for some hyperbolic equations, Georgian Math. J., vol. 7, № 3, 2000, 417-425;
21. D. Gordeziani, A. Shapatava, On regularized difference schema for one quasilinear parabolic equation, Appl. Math. Inform., vol. 5, № 2, 2000, 70-77;
22. Gordeziani D.G., Melikddzianian D.I., Kachiashvili K.I. Software packages for automation of invironmental monitoring and Experimental data processing of hydrometeorology and climatology, Technical Conference on WMO Information Systems and Services, Geneva, Switzerland, 27-28 November, 2000(abstracts);
23. D. Gordeziani, E. Gordeziani, Difference schemes for pluriparabolic equations, Bull. TICMI, vol. 4, 2000, 41-46;
24. D. Gordeziani, T. Davitashvili, Mathematical models with non-local boundary conditions for the atmosphere pollution, Bull. Georgian Acad. Sci., vol. 161, № 3, 2000, 35-37;
25. D. Gordeziani, T. Davitashvili, Z. Khvedelidze, On one mathematical model of the Georgian transport corridor contamination, Bull. Georgian Acad. Sci., vol. 162, № 1, 2000, 73-76;
26. Gordeziani D.G., Kachiashvili K.J., Melikddzianian D.Y., Khuchua V.I., Stepanishvili V.A. Software packages for automation of environmental monitoring and experimental data processing. Proceedings of the Third International Conference on Advances of Computer Methods in Geotechnical and Geoinvernonmental Engineering, Moscow, 1-4 February, A.A. Balkema/Rotterdam/B.Rookfield, 2000, pp. 273-278.
27. გორდეზიანი დ., ავალიშვილი მ. დრეკადი ნარევეების დინამიური ორგანზომილებიანი მოდელების გამოკვლევის შესახებ. საქართველოს მათემატიკოსთა III ყრილობის მოხსენებათა თეზისები, თბილისი, 2001, გვ. 5.
28. Gordeziani D.G., Kachiashvili K.I., Melikddzianian D.I. Mathematical Models of Dissemination of Pollutants with Allowance for of Many Sources of Effects . Proceedings of Urban Drainage Modeling Simposium, May 20-24, 2001, Orlando, Florida, p. 10;
29. D. Gordeziani, G. Avalishvili, On the investigation of the boundary value problem for nonlinear model in the theory of elastic mixtures, Bull. Georgian Acad. Sci., vol. 163, № 1, 2001, 31-34;
30. D. Gordeziani, G. Avalishvili, Investigation of the nonlocal initial boundary value problems for some hyperbolic equations, Hirosh. Math. J., vol. 31, № 3, 2001, 345-366;
31. D. Gordeziani, M. Avalishvili, G. Avalishvili, On one method of constructing of mathematical models of multistructures, Bull. Georgian Acad. Sci., vol. 166, № 3, 2002, 466-469;
32. Gordeziani D.G., Kachiashvili K.I., Melikddzianian D.I. Operative Identification Sources. Abstracts, 9-th International Conference on Urban Drainage, Portland, Oregon, USA, September 8-13, 2002;

33. Gordeziani D.G., Kachiashili K.I., Melikddzianian D.I. Mathematical Modeling Quantity and Quality River Water in Urban Areas. Abstracts, "Managing Water Resourc Extrems: Are we for Floods and Drougts of the 21-th Century", Water Resources Planning and Management Council Environmental and Water Resources Institutes of ASCE, Roanoke, Virginia, May 19-22, 2002;
34. D. Gordeziani, G. Avalishvili, Investigation of nonlinear models in the theory of elastic mixtures, AMI, vol. 7, № 2, 2002, 41-65;
35. D. Gordeziani, M. Avalishvili, G. Avalishvili, On the investigation of one nonclassical problem for Navier-Stokes equations, AMI, vol. 7, № 2, 2002, 66-77;
36. Gordeziani D., Kachiashvili K., Melikddzianian, Stephanishvili V. Pachages of the applied programs for the solution of problems of ecology and processing of the experimental data. Reports of Enlarged Session of the Seminars of I. Vekua Inst. of Appl. Math., vol. 17, № 3, 2002, pp. 97-100.
37. D. Gordeziani, M. Avalishvili, Investigation of hierarchic model of prismatic shell, Bull. Georgian Acad. Sci., vol. 165, № 3, 2002, 485-488;
38. D. Gordeziani, M. Avalishvili, Investigation of dynamical two-dimensional model of prismatic shell, Bull. Georgian Acad. Sci., vol. 166, № 1, 2002, 16-19;
39. D. Gordeziani, G. Avalishvili, On the investigation of static hierarchic model for elastic rods, Appl. Math. Inform. and Mech., vol. 8, № 1, 2003, 34-46;
40. D. Gordeziani, G. Avalishvili, On the investigation of dynamical hierarchical model of multilayer elastic prismatic shell, Bull. Georgian Acad. Sci., vol. 168, № 1, 2003, 11-13;
41. D. Gordeziani, M. Avalishvili, G. Avalishvili, Investigation of stactical two-dimensional model of elastic plate, Proc. of Georgian Technical Univ., vol. 447, № 1, 2003, 9-17;
42. D. Gordeziani, H. Meladze, G. Avalishvili, On one class of nonlocal in time problems for first-order evolution equations, J. Comp. and Appl. Math., vol. 88, № 1, 2003, 66-78;
43. D. Gordeziani, G. Avalishvili, On stactical two-dimensional model of multilayer elastic prismatic shell, Bull. Georgian Acad. Sci., vol. 168, № 3, 2003, 455-457;
44. D. Gordeziani, G. Avalishvili, M. Avalishvili, On the investigation of a dimensional reduction method for elliptic problems, Rep. of the Sem. of I. Vekua Inst. Appl. Math., № 29, 2003, 15-25;
45. M. Avalishvili, D. Gordeziani, Investigation of two-dimensional models of elastic prismatic shell, Georgian Math. J., vol. 10, № 1, 2003, 17-36;
46. D. Gordeziani, E. Gordeziani, G. Avalishvili, On mathematical models of impurity spread in rivers, Proc. of ISPM Workshop & School "Mathematical Modeling and Monitoring of Environmental Pollution and Its Effects", 2003, 17-21;
47. D. Gordeziani, G. Avalishvili, On approximation of a dynamical problem for elastic mixtures by two-dimensional problems, Bull. Georgian Acad. Sci., vol. 170, № 1, 2004, 41-44;
48. D. Gordeziani, G. Avalishvili. On a dynamical hierarchical model for prismatic shells in the theory of elastic mixtures. Math. Meth. in Appl. Sciences, 2005, 28, 737-356;



49. Д.Г. Гордезиани, Г.А. Авалишвили, Нелокальные по времени задачи для уравнений типа Шредингера, I часть: Задачи в абстрактных пространствах, Дифф. Уравнения, 2005, том 41, №5, ст. 670-677;
50. Д.Г. Гордезиани, Г.А. Авалишвили, Нелокальные по времени задачи для уравнений типа Шредингера, II. Результаты для конкретных задач, Дифф. Уравнения 2005, том 41, №6, ст. 813-819.
51. Gordeziani, D.; Avalishvili, G.; Avalishvili, M. Hierarchical models of elastic shells in curvilinear coordinates. *Comput. Math. Appl.* 51 (2006), no. 12, 1789-1808.
52. Gordeziani, D. G.; Avalishvili, G. A. Time-nonlocal problems for Schrödinger-type equations. II. Results for specific problems. (Russian) *Differ. Uravn.* 41 (2005), no. 6, 813-819, 863; *translation in Differ. Equ.* 41 (2005), no. 6, 852-859.
53. Gordeziani, D. G.; Avalishvili, G. A. Time-nonlocal problems for Schrödinger-type equations. I. Problems in abstract spaces. (Russian) *Differ. Uravn.* 41 (2005), no. 5, 670 -677, 718; *translation in Differ. Equ.* 41 (2005), no. 5, 703-711