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CURRICULUM VITAE

Date of birth: April 12, 1940.

Home address: Russia, 113208, Moscow, Sumskoy proezd 2, bldg 4, apt.70.
Phone: (+7495)519 0306, (+7916) 607 75 22(s).

Marital status: Married, two children.

EDUCATION AND DEGREES

1988: Doctor of Science. Institute of Mathematics and Mechanics Russian Academy of Science.
The title of doctor thesis: ”The problems of control for PDE of the elliptic type”.

1970: Ph.D. Department of Mechanics and Mathematics, Moscow State University. The title of Ph.D. thesis: “The apriority L_2 estimates for PDE with parameter” (advisor Mark I.Vyshick).

1966-1969: Post-graduate course. Chair of Differential Equation, Department of Mechanics and Mathematics, Moscow State University.

1961-1966: Student. Department of Mechanics and Mathematics, Moscow State University.

POSITIONS HELD

From 2010: Head of the International Centre of Mathematical Modeling and Parallel Computation (MIIT).

From 1993: Professor of System Analysis Department Moscow State University, Computational Mathematics and Cybernetics Department

1993-1996: Science secretaries for mathematics at the International Science Foundation (Soros Foundation)

From 1998: Chief of Applied Mathematics Department, Moscow State University of Railway Engineering (MIIT)

1976-1998: Professor of Applied Mathematics Department, Moscow State University of Railway Engineering (MIIT)

1969-1976: Research Scientist. Institute for Problems in Mechanics. USSR Academy of Science.

AREAS OF INTEREST

- Ordinary and Partial Differential Equations
- Optimal Control and Design of Mechanical Structure
- Synthesis of Optimal Control under Random Perturbation
- Stability of Dynamically System
- Applied Bifurcation Theory
- Mathematical Biology

TEACHING

- General course of Mathematics Analysis for Technical Universities: 1976-1992.
- Linear Algebra: 1980-1987 (MIIT).
- Ordinary and Partial Differential Equations: 1981-1992, 1988, 2000-2012 (MIIT).
- Functional Analysis: 1983, 1989 (MIIT)
- Optimization theory: 1978-1983, 1988(MIIT).
- Variation Methods in Mathematics: 1990-1992 (MIIT).
- Mathematical Methods of Optimal Design: 1990-1002 (MIIT).
- Complex Analysis: 1998-1999 (MIIT).
- Theory of Distribution. 1993-2012 (Moscow State University
- Dynamics Systems: 1993-2012 (Moscow State University).
- Mathematical Biology: 1993-2012 (Moscow State University).
- Dynamical Systems and Ecology Modeling: 1995-2010 (MIIT).
- Structural Stability and Optimization 1999 (Worcester Polytechnic Institute, USA).
- Dynamical System and Biology Modeling: 2006 -2010 (University of Applied Sciences, Mannghaim, Germany)

GRANTS

1993: International Science Foundation.
Emergency Grant (Principal Investigator)

1996-1997: Russian Foundation for Support of Basic Investigations.
96- 01- 00653-a .
Extremal Property of ODE Eigenvalues (Principal Investigator).

1998-2000: Russian Foundation for Support of Basic Investigations.
98-01-00894-a.
Investigation of Bifurcations in Mathematical Models Dynamics of Biology Systems. (Principal Investigator).

1998-2000: National Science Foundation (USA): Grant CMS-9610363, (Participant).

2005-2007: Russian Foundation for Support of Basic Investigations.
05-01-00894-a
. Hybrid Solutions of Hamilton-Bellman Equation and its Application to Applied Stochastic problem (Principal Investigator).

2010-2012: Russian Foundation for Support of Basic Investigations.
10-01-00374-a.
Mathematical models for optimal therapy cells and viruses (Principal Investigator).

2011: Distinguished Visiting Fellowship Grant of United Kingdom Royal Academy of Engineering.

2012-2014. Russian Foundation for Support of Basic Investigations.
12-01-92004 HHC-a. Russian-Taiwan Grant.
Investigation of Contemporary Mathematical Problems of Evolution for Cells and Viruses. (Principal Investigator).

- Member of Moscow Mathematical Society and Moscow Scientific Society.
- Member of American Mathematical Society.
- Chairman of the committee of Ph.D. degree awarding.
- Honored professor of Russian Government Education Ministry.

SELECTED PUBLICATIONS

1. Apriority estimates for an equation with parameter.
   Soviet. Math. Dokl. , 1970, v.3.

2. Estimates for pseudo-differential operators with application for tube domains. Soviet. Math. Dokl. , 1972, v. 203.

3. Numerical solutions for the problems of control in a random media. Space Research (Russia), 1971, v.9, 4.

4. Solution of some problems of optimal correction with errors of control. J. Appl. Math. and Mech. (Russia)., 1974, v.38, 2.

5. Numerical solution of the optimal problem momentum correction for systems under random perturbation (with F. Chernous'ko). USSR J. Computational math. and Math. Physics, 1974, v. 14, 1.

6. Synthesis of optimal controls for systems with errors. J. Mech. of Solids (Russia), 1976, 2.

7. Optimal momentum correction under random perturbations (with M.Borodovsky and F.Chernous'ko). J. Appl. Math. and Mech., (Russia), 1975, v.39, 5.

8. The asymptotic solution of a probabilistic optimal control problem. J. Appl. Math. and Mech., 1977, v.41, 1.

9. The solution for some class of differential games with perturbation method. J. Appl. Math. and Mech. (Russia), 1975, v. 39, 2.

10. Approximate optimal control of motion under the action of Poisson or Gaussian random perturbation (with V. Kolmonovsky). Differential Equations, (Russia), 1977, v.13, 9.

11. Ligation of DNA fragments with polynucleotide ligase and optimization of reaction(with co-authors). Soviet. Dokl. Biology, 1979, v. 224, 4.

12. Study of kinetic reaction of DNA fragments ligation catalyzed by DNA ligase. The case of heterogeneous molecules. Optimization of reaction conditions. J. Molecular Biology, (Russia), 1981, v. 15, 5.

13. Study of kinetic reaction of DNA fragments ligation catalyzed by DNA ligase. The case of homogeneous molecules. Optimization of reaction conditions. J. Molecular Biology, (Russia), 1981, v. 15, 6.

14. A program for estimations of capacity of gas and oil fields (with T.Novikova). Prep. Institute for Problems in Mechanics USSR Academy of Science, 1977, №86.

15. Asymptotic solution in problems of the optimal control of the coefficients of elliptic operators. Soviet. Math. Dokl., 1981, v. 259, 5.

16. Asymptotic solution in problems of optimizing the stability and frequencies of thin-valued elastic structures (with V. Kartvelishvili). J. Mech. of Solids, (Russia), 1981, v.16, 6.

17. Bimodal solutions in eigenvalue optimization problem (with A.Seiranian) J. Appl. Math. and Mech. (Russia), 1983, v.47, 3.

18. Multiple eigenvalues in optimization problem (with A.Seiranian) Soviet Math. Dokl., 1983, v.272, 2.

19. On optimal design of cylindrical shells with fixed frequencies . J. Appl. Math. and Mech. (Russia), 1983, v. 47, 5.

20. Sufficient conditions for an extremum in the problems of control for the coefficients of elliptic operators. Russian Math. Surveys, 1985, v. 40, 2.

21. Multiple eigenvalues in the problems of optimization of spectral characteristics for the system with a finite number of degree of freedom. USSR J. Computation Math. and Math. Physics, 1986, 5.

22. Sufficient conditions for an extremum in the problem on optimal shape of elastic plates J. Applied Math. and Mech., (Russia),1985, v. 49, 4.

23. The optimal shapes of elastic solid under forced harmonic oscillation. J. Mech. of Solids., (Russia), 1985, v. 20, 4.

24. Condition of extreme for eigenvalues of elliptic boundary-value problem. Journ. of Optimize. Theory and Appl., 1991, v.68,3.

25. On optimal design for the flexible beam. (with I. Zharov) J. Appl. Mech. (Kiev), 1990, v. 26.

26. Analysis of oscillations for a beam with a crack by perturbation method (with M.Dimenberg).

27. On the hierarchy of principal functionals in optimal design problems. J. Mech. of Solids, (Russia), 1992, 4.

28. The condition of extremum in spectral problems with variable boundaries (with A.Myshkis). USSR J. Computation Math. and Math. Physics, 1987, 12.

29. On the radio between first and second frequencies of a membrane (with A.Myshkis). USSR J. Computational Math. and Math. Physics, 1992, v. 32, 2.

30.Extreme problem for Laplacian eigenvalue with free boundary (with A.Myshkis). Non-linear Analysis., 1992, v. 19, 9.

31.Influence of the position of a string in a membrane on the frequencies of normal oscillation (with A.Myshkis). Russian Journ. of Math. Physic,. 1992, v. 2,1.

32. The stabilization and destabilization effect in non-conservative systems (with N.Banichuk and A.Myshkis).
J. Appl. Math. and Mech., (Russia), 1989, 2.

33. On static stability of elastic non-conservative systems.
IUTAM Symposium Dynamical Problems of Rigid-Elastic Systems and Structures, Moscow, 1990, Springer Verlag, 1990.

34. Dynamical stability of non-conservative mechanical systems with small damping. (with N. Banichuck and A.Myshkis).
Mech. Structure and Machine., 1990, v. 18, 3.

35. On destabilizing effect f small dissipative forces in non-conservative systems. (with N.Banichuch and A.Myshkis).
Soviet. Math, Dokl., 1989, v. 310, 6.

36. Dynamically stability of elastic mechanical systems (with N.Banichuc).
J. Mech. of Solids, (Russia), 1990, 5.

37. On stability of elastic system non-conservative systems allowing divergent solution (with N.Banichuc).
J. Mech. of Solids, (Russia), 1992, 1.

38. On Various cases of instability for elastic non-conservative systems with damping.
Int. J. of Solids and Structures., 1993, v. 30, 24.

39. The properties of solution of a class of isoperimetric problems of stability optimization.
J. Applied Math. and Mech., (Russia), 1994, v. 58, 3.

40. Om optimal design of flexible structures and optimal positioning of actuators.
IUTAM Symposium. Optimal control of mechanical systems, Moscow, 1992.

41. Om optimal design of structures with actuators.
J. Technical Cybernetics, (Russia). 1993, v. 1.

42. On extreme properties for repeated eigenvalues for elliptic boundary-value problem.
Russian Math. Surveys, 1995, v. 3.

43. Optimal bounded response control for a second-order system under a white-noise excitation (with M.Dimentberg).
J. of Vibration and Control 2000, v. 6.

44. On optimal shapes for bending column. (with V. Posviansky).
J. Applied Math. and Mech., (Russia) 2002, v. 64 №6.

45. Hybrid solution method for dynamic programming equation for MDOF Stochastic system (with M.Dimentberg and D. Yurchenko).
Dynamics and Control 2000, №10.

46. Bounded parametric control of random vibration. (with M.Dimentberg)
Proc. Of Royal Society. London. A. 2000, 456.

47. Transition of planar to whirling oscillations in certain nonlinear system (with M.Dimentberg and D.Yurchenko)
Nonlinear Dynamics, 2000, №23.

48. Mathematical model of the interaction between pollution and the environment (with A.Novozhilov and A.Mescherin).
Bulletin of Moscow State University. 2001, №1.

49. Multiple eigenvalues in nonconservative stabilization problem for elastic system.
Mech. of Solids (Russia), 2002, v. 42.

50. Locations method for Hopf bifurcation's set points (with A.Halin)

Russian J. Computational Math. and Math. Physics, 2002, v.42.

51. Exact solutions of the Hamilton – Jacobi – Bellman equation for problems of optimal correction with a constrained overall control resource (with K.Volosov)
J. of Applied Math. and Mech. (Russia)2004, № 68

52. Local solution of Hamilton – Jacobi – Bellman equation and its application to control problems of oscillations.
J. Computers and Control (Russia) 2004, № 2.

53. Mathematical problem of ecology and dynamical system with discrete time (Russia, Monograph) (with A.Novozhikov), Moscow, MSU, Publishing 2003, 86 p.

54. Exact solutions of the Hamilton – Jacobi – Bellman equation for optimal correction problem with integral restriction on summary resource.
Russian Math. Dokl. 2002, 358, № 3.

55. Stabilitizing effect of nonlinear damping for a system with follower force. (with A.Novozhilov)
J. of Funct. Different. Equation, 2005, v. 12.

56. Mathematical models of ecology and dynamical system (Russia, Monograph) (with A.Novozhilov)
Moscow MSU Paplishing, 2004, 241 p.

57. Steady- state solutions in distributed of Eigen-Schuster systems .
Differential Equation (Russia) 2006, 42, № 12.

58. Local solutions of Hamilton – Jacobi – Bellman equation in stochastic problems of optimal control.
Russia Math. Dokl. 2006, 409, № 1.

59 Stability and limit behavior of the open distributed system of hypercyclic. Differential Equation, 2009, v.45, # 11, p.1530-1542 (together with E. Lukasheva)

60. Local solutions of Hamilton – Jacobi – Bellman equation and its application. (with D.Yurchenko and P.Minandi).
J. Remote Control (Russia) 2007, № 6.

61. Optimal control synthesis in therapy problem of avascular tumour growth (together with E. Chumerina).
Russian J. Computational Math. and Math. Physics, 2008, 48, № 6.

62. Stability and limit behavior for open distributed hypercycling system. Differential Equation (Russia) 2009, v.15, № 11.

63. Optimal strategy of therapy in mathematical model of no homogeneous tumor cells (with A.V. Antipov). Russian J. Computational Math. and Math. Physics 2009,v.49, №11.

64. Existence and stability of stationary solutions to spatially extended autocatalytic and hypercyclic systems under global regulation and with nonlinear growth rate. Nonlinear Analysis: Real World Application, 2010, 11, №3: 1897-1917 (together with V.P. Posviansky and A.S. Novozhilov) .

65. Dynamical Systems and Biological Models , Monograph, p.400 . (with A.S. Novozhilov and A.P.Platonov), 2010, Moscow. FiIZMATLIT Publishing.

66. Smooth solution of the Hamilton-Jacobi-Bellman equation in mathematical model of optimal treatment of viral infection. Differential Equation, 2010, v.46, #11 ,1571-1583 (together with S. Zaychic).

67. On the LQG theory with bounded control. Nonlinear Differential Equation Applications, 2010, 17, #5, 527-534 (together with D.V. Iourtchenko and J.L. Menaldy).

68. Eigenvalues asymptotic of the Jacobi matrix of a system of semilinear parabolic equation. Mathematical Notices 2011, v.89, #2, p. 38-45 (together with M. Safro).

69. A note on replication equation with explicit space and global regulation. Mathematical Biosciences and Engineering, 2011, 8(3) (together with V.P. Posviansky and A.S. Novozhilov) .

70. On strategy on a mathematical model for leukemia therapy. Nonlinear Analysis: Real World Application: 13, 2012, 1044-1059 (together with E. Fimmel, Y. Todorov, Y. Semenov and F. Nurenberg).

71. An optimal strategy for leukemia therapy: a multy – objective approach. Russian Journal of Numerical Analyses and Mathematical Modelling. 2012, 26, 6, p. 589-604. (together with E. Fimmel, Y. Todorov, Y. Semenov and F. Nurenberg).

72. On reaction- diffusion replicator systems: spatial patters and asymptotic behavior. Russian Journal of Numerical Analyses and Mathematical Modelling. 2012, 26, 6, p. 555-524. (together with A/S/ Novozhilov).

73. Поиск источников хаотических колебаний в энергосистемах. Мир Транспорта, 2010, № 5, с. 12-19 (совместно с А. Гороховым и Г. Л. Эпштейном).

74. A note on the replication equation with explicit space and global regulation. Mathematical Biosciences and Engineering, 2011, v.8, № 3,659-676, (together with V.P. Posviansky and A.S. Novozhilov).

75. Асимптотика собственных значений матрицы Якоби для систем полулинейных параболических уравнений. Математические Заметки. 2011, т. 89, № 2, с. 204-213, (Совместно с М.В. Сафро).

76. On strategies on a mathematical model for leukemia therapy. Nonlinear Analysis: Real World Application, 2012, 13, 1044-1059, (together with E. Fimmel, Y. Todorov, Y.S. Semenov, F. Nirenberg).

77. On the reaction-diffusion replicator systems: spatial patterns and asymptotic behavior. Russian Journal of Numerical Analysis and Mathematical Modeling, 2012 v.26, №6, 555-564, (together with V.P. Posviansky and A.S. Novozhilov).

78. On optimal strategy for leukemia therapy: a multy-objective approach. Russian Journal of Numerical Analysis and Mathematical Modeling, 2012 v.26, №6, pp.589-604, (together with E. Fimmel, Y. Todorov, Y.S. Semenov, F. Nirenberg).

79. Исследование динамики открытых репликаторных систем. Вестник МГУ, сер. 2012,15, №3, с. 28-35.(совместно с Е. Павлович).

80. Исключение доминируемых видов в открытых репликаторных системах. Прикладная математика и информатика: Труды факультета ВМК МГУ, МАКС Пресс, 2012, №40, с.87-96 (Совместно с Е. Павлович).

81. Оптимальное управление в математической модели терапии лейкемии с фазовыми ограничениями. Вестник МГУ, сер. 15, 2012, №4, с. 25-28, (совместно с А. Гончаровым и И. Тодоровым).

82. Solution of the feedback control problem in the mathematical model of leukemia therapy. Journal of Optimization Theory and Applications. 2013. Vol. 159, no. 3. P. 590–605, (together with Y. Todorov I. Yegorov and D, Yurchenko)

83. On Optimal and Suboptimal Treatment Strategies for a Mathematical Model of Leukemia. Mathematical Biosciences and Engineering. 2013, 10-1, 151-165, (together with E. Fimmel and Yu. S. Semenov).

84. On assessing quality of therapy in non-linear distributed mathematical models for brain tumor growth dynamics. Mathematical Bioscience, 2014, 248, 88-96, (together with E. Fimmel and S.Yu. Kovalenko).

85. Linear algebra of the permutation invariant Crow-Kimura model of prebiotic evolution. Mathematical Biosciences, 2014, 256, 42-57, (together with A.S. Novozhilov and Yuri S. Semenov).

86. Hybrid Cellular Automat on Method for Homogeneous Tumour Growth Modelling. Russian Journal of Numerical Analysis and Mathematical Modelling, 2014 v .29 ,№5, 319-329, (together with. K. Zapolsky and Yu. Admiralsky).

87. Replicators equations and space. Math. Model. Natural Phenomena, 2014, v.9, №3, 47-67, (together with V.P. Posvyanski and A.S. Novozhilov).

88. On the behavior of the leading eigenvalue of Eigen evolutionary matrices. Mathematical Biosciences, 2014, 258,134-147, (together with Yuri. S. Semenov and Artem S. Novozhilov).

89. On viable therapy strategy for a mathematical spatial cancer model describing the dynamics of malignant and healthy cells. Mathematical Bioscience and Engineering, 2015. v. 12, №1, (together with S. Kovalenko and E. Fimmel).