

Vasilii A. Gromov



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Degrees:

DSc in Mathematical models and numerical methods (2017).

Title: **Models, methods, and algorithms of bifurcation theory for the nonlinear elliptic equations of the von Karman-type.**

This thesis makes the original contribution towards one of the challenging issues facing computational mathematics, which is how to develop models, methods, and algorithms of bifurcation theory for nonlinear elliptic equations of von Karman type for both direct and inverse bifurcation problems.

PhD in Computational Mechanics (2006).

Title: **Post-critical behaviour and solution branching for the cylindrical shell theory non-linear problems.**

The theses deal with creating complex real-world non-linear systems models (thin-walled shells) and sophisticated computational methods to analyze them. Also catastrophe theory methods were applied to the problem.

MSc in Applied Mathematics (2000).

Title: **Catastrophe of spherical shell.**

The theses deal with developing sophisticated computational methods for non-linear boundary problems.

Scientometrics (06.10.2018):

Base	URL	Total articles	Times Cited	
ResearcherID	http://www.researcherid.com/rid/M-6614-2015	15	42	Average Citation=3.82
ORCID	http://orcid.org/0000-0001-5891-6597	15		
Scopus	https://www.scopus.com/authid/detail.uri?authorId=35228959300	17	50	
Research Gate	https://www.researchgate.net/profile/Vasilii_Gromov	40	90	RGScore=17.6 (top 35%)
Google Scholar	https://scholar.google.com.ua/citations?user=nw7Gm6gAAAAJ&hl=ru	51	121	Since 2013=117

Academic ranks:

senior researcher (2008), associate professor (2011), full professor (2018).

Research interests

For the time being, my studies may be grouped into three distinct groups. Those of the first group concerns with numerical methods to construct the complete bifurcation structure for nonlinear boundary problem for partially differential equations. The second group deals with methods to forecast chaotic time series in the frameworks of predictive clustering approach that take into account subjacent strange attractors. The third group investigates natural languages in the context of self-organization. I advanced and tested hypothesis that any natural language is self-organized critical system. Besides that, I investigate properties of semantic and emotional trajectories of literary pieces. All three groups, I believe, may be perceived as a whole, if one accounts for nonlinear nature of the world and its inherited complexity. All these studies imply wide-ranging simulation together with a sophisticated theoretical analysis of nonlinear systems.

Besides that, a number of papers describe author's innovative projects, which deals with optimization of complex real-world logistics networks and socio-medical systems; for the former we used complex metaheuristics based upon distributed artificial intelligence; for the latter constructive neural networks.

For each group mentioned above (both the former 'scientific' and the later 'applied'), the obtained results are published in journals indexed in Web of Science Core Collection.

Monograph:

1. N.I. Obodan, O.G. Lebedeyev, V.A. Gromov, Nonlinear behavior and stability of thin-walled shells, Springer-Verlag, N.-Y., 2013.

Papers: The total number of papers amount to 200; those published in journals indexed by Web of Science Core Collection are listed below [an impact-factor and quartile are presented in brackets]:

1. V.A. Gromov, A.M. Migrina, A Language as a Self-Organized Critical System, Complexity Vol. 2017 Article ID 9212538 (2017) 1–7. [IF=4.62., Q1]
2. N.I. Obodan, V.J. Adlucky, V.A. Gromov, Rapid identification of pre-buckling states: A case of cylindrical shell, Thin-Walled Structures 124 (2018) 449–457. [IF=2.83, Q1]
3. V.A. Gromov, K.A. Kuznietzov, T. Pigden, Decision support system for light petroleum products supply chain, Oper Res (2017) 1–18. [IF=1.07, Q2]
4. N.I. Obodan, V.J. Adlucky, V.A. Gromov, Inverse Bifurcation Problem for von Karman-type Elliptic Equations, Proceedings of the 14-th

International Conference “Advanced Trends in Radioelectronics, Telecommunications and Computer Engineering TCSET” (2018).

5. N.I. Obodan, V.A. Gromov, The Complete Bifurcation Structure of Nonlinear Boundary Problem for Cylindrical Panel Subjected to Uniform External Pressure, *Thin-walled structures* Vol. 107 (2016) 612–619. [IF=2.83, Q1]

6. K.A. Kuznietsov, V.A. Gromov, V.A. Skorohod, Cluster-based supply chain logistics: a case study of a Ukrainian food distributor, *IMA J of Management Mathematics* Vol. 28(4) (2017) 553–578. [IF=1.49, Q1]

7. V.A. Gromov, A.S. Konev Precocious identification of popular topics on Twitter with the employment of predictive clustering, *Neural Computing and Applications* Vol. 28(11) (2017) 3317–3322. [IF=1.57, Q2]

8. N.I. Obodan, V.J. Adlucky, V.A. Gromov Vulnerability Assessment of Loaded Thin-Walled Shells Under an External Pulse Action, *Strength of Materials*, Vol. 49(2) (2017) 335-342. [IF=0.44, Q3]

9. A. Kabeshova, C.P. Launay, V.A. Gromov, B. Fantino, E.J. Levinoff, G. Allali, O. Beauchet, Falling in the elderly: Do statistical models matter for performance criteria of fall prediction? Results from two large population-based studies, *European J of Internal Medicine* Vol. 27 (2016) 48–56. [IF=2.96, Q1]

10. V.A. Gromov, E.A. Borisenko, Chaotic time series prediction and clustering methods, *Neural Computing and Applications* Vol. 2 (2015) 307–315. [IF=1.57, Q2]

11. A. Kabeshova, C.P. Launay, V.A. Gromov, C. Annweiler, B. Fantino, O. Beauchet, Artificial Neural Network and Falls in Community-Dwellers: A New Approach to Identify the Risk of Recurrent Falling?, *J of the American Medical Directors Association* Vol. 16(4) (2015) 277–281. [IF=5.78, Q1]

12. N.I. Obodan, V.A. Gromov, Nonlinear behavior and buckling of cylindrical shells subjected to localized external pressure, *J of Engineering Mathematics* Vol. 78(1) (2014) 239–248. [IF=1.07, Q1]

13. A. Kabeshova, C. Annweiler, B. Fantino, T. Philip, V.A. Gromov, C.P. Launay, O. Beauchet, A regression tree for identifying combinations of fall risk factors associated to recurrent falling: a cross-sectional elderly population-based study, *Aging – Clinical and experimental research* Vol. 26(3) (2014) 331–336. [IF=1.39, Q3]

14. V.A. Gromov, A.N. Shulga, Chaotic time series prediction with employment of ant colonies optimization, *Expert systems with applications* Vol. 39(9) (2012) 8474–8478. [IF=1.97, Q1]

15. V.A. Gromov, K.A. Kuznetsov, Decision-making support system for light petroleum products traffic and transport management, *Proceedings of the 11th International Conference “Modern Problems of Radio Engineering, Telecommunications and Computer Science TCSET'2012”* (2012).

16. N.I. Obodan, V.A. Gromov, Numerical analysis of the branching of the solutions for the non-linear cylindrical shell theory, International applied mechanics Vol. 42(1) (2006) 90–97. [SNIP=0.91, Q2]

Honours: Marquis Who's who in the world 2014, 2015, 2018.

Marquis Who's who in Science and Engineering 2016-2017 (12th Edition).

The International Biographical Centre:

Cambridge Certificate for Outstanding Scientific Achievement 2015

the Leading Professionals of the World 2014 - A Lifetime of Scientific Achievement 2014

Innovative projects:

Petrol Stations Sales Prediction (2015) – prediction of daily sales for large petrol supply chain (USA, Canada); incomplete and noised data, extremely small samples. I was charged with general mathematical model and forecast methods development.

Urban Logistics 2.0 (2011) – decision-making support system for dispatcher office of large oil products transportation company DneprNefteProduct (enhancement of Urban Logistics 1.0). The system operates for the fuel-stations of the southern and eastern part of Ukraine. I was charged with project management, general mathematical model creation, and forecast methods development for oil products sales with employment of state-of-art statistical methods. I also was a system architect for the project.

Salesmen Optimization (2010) – decision-making support system for logistics department of large distribution company. I was charged with project management, general mathematical model creation, statistical clustering method development, multi-criteria optimization analysis.

Urban Logistics (2009) – decision-making support system for dispatcher office of large oil products transportation company DneprNefteProduct. I was charged with project management, general mathematical model creation, and forecast methods development for oil products sales with employment of state-of-art statistical methods. I also developed necessary software for statistical forecast methods for the project.

Academic positions:

Associate professor of School of Data Analysis and Artificial Intelligence, National Research University Higher School of Economics (2108-present).

Seniour researcher of Center for Reliability and Sustainability of Structures (Dnepropetrovsk National University, 2007-2018), research officer of the same center (2000-2007).

Associate professor of Computational Mathematics and Mathematical Cybernetics Department (2006-2018); assistant professor (the same department, 2002-2006).

Expert of Ukrainian Ministry of Science and Education in charge with licensing of mastership and bachelorship programmes in the field of Computer Science and Applied Mathematics (2011-2018).

Visiting positions:

Visiting professor of Universite du Maine (Faculty of Science and Technologies, May 2011).

Visiting lecturer of Universite du Maine (Engineering Higher School, November 2011). I deliver lectures on Data Mining.

Reviewer:

I reviewed papers for 11 journals including Artificial intelligence review (AIR), Journal of Intelligent and Fuzzy Systems, Neural Computing and Applications, Algorithms, Nonlinear Engineering, Entropy, IMA Journal of Management Mathematics, Operational Research.

<https://publons.com/a/493841/>

Lecturer:

Supervised Ph.D. thesis: Anastasia V. Kabeshova (2015, co-supervision with Prof. Olivier Beauchet, geriatrist), University of Angers (France). Title: Prediction of fallings for aged persons: advantages of nonlinear models (Predire la chute de la personne agee: apports des modeles mathematiques non-lineaires)

I deliver (or delivered) lectures on:

For Masters in Data Mining

- Time series forecasting with applications
- Probability and statistics
- Bio-inspired algorithms and real-world logistics

For Masters in AI and System Analysis:

- Non-linear time series forecasting;
- Theory of self-organizing systems;
- Theory of statistical complexity;
- Catastrophe theory;
- Foresighting;
- Complex Networks;
- Deep learning;

For Bachelors in System Analysis:

- Statistical forecasting of economical process;
- Neural networks.
- Data Mining;
- Qualitative theory of ordinary differential equations;
- Theory of complex systems;

- Design patterns;
- Object-oriented programming.

I took part in the development of bachelor's, master's, and PhD programmes (both concepts and curricula) in decision-making support systems (artificial intelligence) and system analysis.

International cooperation:

I was a founder and a coordinator of double diploma mastership programme (computer science) between Dnepropetrovsk National University and Universite du Maine (France).

Language: Fluent in English (C1 TOEFL (2018) 105/120), Russian (native), and Ukrainian.

Date of birth: 23 April 1979

Background: philosophy, classics, swimming.