

A1 Curriculum Vitae



Vitalii V. Akimenko

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(Who's who in the world /2002)

1. First name\surname\family name: Vitalii Volodymyrovich Akimenko.
2. Birth: 15 September 1965, Severodonetsk, Ukraine.
3. Nationality: Ukraine.
4. Nationality of birth: Ukraine.
5. Married (1993), two sons (1994, 2005 y. of b.).

A2 Scientific Formation

6. Diplomas & certificates :

- ◆ **Professor:** Attestation Collegiums of Ministry of Education and Sciences of Ukraine, Kiev, 2002.
 - ◆ **Doctor of Sciences (Professor) :** Supreme Attestation Committee of Ukraine, after public presentation of dissertation in the Institute of Space Research, Kiev, 2001. Major: System Analysis and Theory of Optimal Solutions.
 - ◆ **Diploma and award** of Nat.Ac. of Sc. of Ukraine for young scientists, 2000.
 - ◆ **Docent (Senior Lecturer) :** Scientific Council of East-Ukrainian State University, 1997.
 - ◆ **Candidate of Sciences (Ph.D.):** Moscow State University, 1991. Major: Mathematical Physics.
 - ◆ **Diploma (M.S.) :** Moscow State University, 1988. Major: Physics.
7. **Language possibility:** Ukrainian, Russian - fluently. English: IELTS General training, (2016) level B2, 6.5 (listening 5/ reading 6.5/ speaking 6.5/ writing 7).

A3 Research Activities

8. Occupied positions:

- ◆ **Professor**, Chair of System Analyses and Decision Make Theory at Taras Shevchenko National University of Kyiv, Ukraine, 2003 to present.
- ◆ **Head** of work group of Education and Science Ministry of Ukraine for development of branch standards in high education of Ukraine in direction Informatics, Kyiv, Ukraine, 2008 to 2012.
- ◆ **Chief of chair “Informatics”, Professor:** European University of Finance, Information Systems, Management and Business (private), Kyiv , Ukraine, 2002 – 2003.
- ◆ **Chief of chair “Informatics”, Professor:** EastUkrainian National University, Lugansk, Ukraine, 2000 – 2002.

- ◆ **Assistant of Dean, Senior Lecturer:** EastUkrainian State University, Lugansk, Ukraine, 1999 – 2000.
- ◆ **Lecturer:** EastUkrainian State University, Lugansk, Ukraine, 1993 –1999.
- ◆ **Assistant of Professor :** EastUkrainian State University, Lugansk, 1992-1993.

9. Scientific adviser of Ph.D. students:

- ◆ **Yefimenko A.A.** Ph.D. in technical sciences, specialty “System Analysis and Theory of Optimal Solution”. Taras Shevchenko National University of Kyiv, Faculty of Cybernetics, 2013.
- ◆ **Mitrohin S.A.** Ph.D. in technical sciences, specialty “System Analysis and Theory of Optimal Solution”. Taras Shevchenko National University of Kyiv, Faculty of Cybernetics, 2011.
- ◆ **Trofimchuk O.Yu.** Ph.D. in physical-mathematical sciences, specialty “System Analysis and Theory of Optimal Solution”. Taras Shevchenko National University of Kyiv, Faculty of Cybernetics, 2009.
- ◆ **Sugonyak I.I.** Ph.D. in technical sciences, specialty “System Analysis and Theory of Optimal Solution”. Taras Shevchenko National University of Kyiv, Faculty of Cybernetics, 2008.

10. Affiliation. Senior scientist: Institute of demography and social investigations of National Academy of Sciences (2007-2009), **Senior scientist:** Institute of space research of National Aerospace Agency and National Academy of Sciences of Ukraine (2003-2004), **Senior scientist** in the research scientific projects of Education and Science Ministry of Ukraine (1994 - 2012): " Development of elements of information-computer monitoring system and decision support system" (reg. № 0194 U 015293), "Development of integrated intelligent automated system of monitoring, management and decision support for coil factories" (reg. № 0194 U 022622), " Models and methods of construction of integrated complex computer monitoring systems" (reg. № 0196 U 021044), "Methods of non-linear monotonisation of difference schemes for mathematical models of atmosphere tracers for systems of the analysis and forecasting of pollution distribution in a atmosphere boundary layer" (reg. № 0199 U 001220).

11. List of publications:

- 1) Akimenko V.V., Age-structured SIR epidemic model with the fixed incubation period of infection, (submitted).
- 2) Akimenko V.V., Anguelov R., Steady states and outbreaks of two-phase nonlinear age-structured model of population dynamics with discrete time delay, *Journal of Biological Dynamics*, 11 (1) (2017) 75-101.
- 3) Akimenko V.V., Nonlinear age-structured models of polycyclic population dynamics with death rates as a power functions with exponent n . *Mathematics and Computers in Simulation*, (2016) DOI: 10.1016/j.matcom.2016.08.004
- 4) Akimenko V.V. Asymptotically stable states of non-linear age-structured monocyclic cell population model I. Travelling wave solution. *Mathematics and Computers in Simulation*, (2015) DOI: 10.1016/j.matcom.2015.06.004

- 5) Akimenko V.V. Asymptotically stable states of non-linear age-structured monocyclic cell population model II. Numerical simulation. *Mathematics and Computers in Simulation*, (2015) DOI: 10.1016/j.matcom.2015.06.003
- 6) Akimenko V.V., Zahorodnii Yu.V. Analytical and numerical solutions for the age-structured cells aggregation dynamics model, *Cybernetics and Systems Analysis*, V.50, 4 (2014) 578-593.
- 7) Akimenko V.V., Zahorodnii Yu.V., Boyko A.L. Identification of parameters of evolutionary model of monocyclic cells aggregation with the hop plants example, *Computers and Mathematics With Application*, 66 (2013) 1547–1553.
- 8) Akimenko V.V., Yefimenko A.A. Resolving of the 2^N - Lotka - Volterra system of splitting logistical model for the competition problem, *Chaotic Modeling and Simulation*, 4 (2012) 651-661.
- 9) Akimenko V.V., Yefimenko A.A. Model of optimum control of founds and competition ability for information-communication's company, *Cybernetics and Systems Analysis*, V.48, 5 (2012) 722-735.
- 10) Akimenko V.V., Yefimenko A.A. Numerical Method for Solving the Diffusive Lotke–Volterra Model with Discontinuous Coefficients for the Problem of Companies Competition, *Journal of Automation and Information Sciences*, V.44, 4 (2012) 71-80.
- 11) Akimenko V.V., Zahorodnii Yu.V. Modeling of dynamics of monocycle cells aggregation, *Cybernetics and Systems Analysis*, V.47, 1 (2011) 29-43.
- 12) Akimenko V.V., Zahorodnii Yu.V., Romanenko V.V. The optimum control problem of monocycle biological cells aggregation, *Journal of Automation and Information Sciences*, V.42, 9 (2010) 42-52.
- 13) Akimenko V.V., Mitrohin S.A. The optimum control modeling by the nonlinear filtration of land water logging process, *Journal of Automation and Information Sciences*, v.42, 8 (2010), 65-82.
- 14) Branch National Standard of High Education of Ukraine. Educational Professional Characteristics for Bachelor in direction of study “Informatics” /Head of work group Akimenko V.V. Order №880 of Ministry of Education and Sciences of Ukraine from 16.09.2010 (in Ukrainian). – 32p.
- 15) Branch National Standard of High Education of Ukraine. Educational Professional Program for Bachelor in direction of study “Informatics” /Head of work group Akimenko V.V. Order №880 of Ministry of Education and Sciences of Ukraine from 16.09.2010 (in Ukrainian). – 93p.
- 16) Akimenko V.V., Nakonechny O.G., Trofimchuk O., Yr. Modeling of convection - diffusions processes on basis of multidimensional integro- differential equation with degenerated parabolicity, *Cybernetics and Systems Analysis*, v.45, 2 (2009), 232-244.
- 17) Akimenko V.V., Sugonyak I.I. A model of optimal control over a nonlinear multi-dimensional innovation diffusion process, *Cybernetics and Systems Analysis*, V.44, 4 (2008), 564-574.

- 18) Akimenko V.V., Sugonyak I.I. A model of optimal control over a nonlinear multi-dimensional innovation diffusion process, *Cybernetics and Systems Analysis*, V.44, 4 (2008), 564-574.
- 19) Akimenko V.V., Nakonechny O.G., Trofimchuk O.Yu. The model of optimum control for the system of integral-differential equations with degenerate parabolicity, *Cybernetics and Systems Analysis*, v.43, 6 (2007) 90-102.
- 20) Akimenko V.V., Nakonechny A.G., Voloshuk S.D. Scenarios of optimum transregional migration process control in conditions of social risks, *Cybernetics and Systems Analysis*, v.43, 1 (2007) 116-133.
- 21) Akimenko V.V., Nakonechny A.G., Sugonyak I.I. Modeling of optimum control processes in the conditions of uncertainty in the economical systems with hierarchy, *Journal of Automation and Information Sciences*, v.39, 2 (2007) 62-72.
- 22) Akimenko V.V., Nakonechny O.G. Optimum control models for transregional migration process meaning social risks, *Cybernetics and Systems Analysis*, v.42, 3 (2006) 107-122.
- 23) Akimenko V.V., Cheremnykh O.K. Modeling of vortical flows on a background of 2-dim convective thermo-mass-exchange process, *Journal of Automation and Information Sciences*, v.36, 3 (2004) 64-80.
- 24) Akimenko V.V. Modelling of two-dimensional transport processes by using of nonlinear monotonous second order schemes, *Cybernetics and Systems Analysis*, v.39, 6 (2003) 839-853.
- 25) Akimenko V.V. The mathematical model of atmospheric air pollution management in the system of regional monitoring centres, *Journal of Automation and Information Sciences*, v.33, 2, (2001) 137-151.
- 26) Akimenko V.V. Computer administrative decision support system in conditions of the fuzzy information for systems of atmosphere ecological monitoring, *Cybernetics and Systems Analysis*, v.36, 5 (2000) 763-775.
- 27) Akimenko V.V., Nonlinear monotone smoothing of an implicit difference scheme for parabolic equation, *Journal of Automation and Information Sciences*, v.32, 9 (2000) 75-81.
- 28) Akimenko V.V., On application of nonlinear monotone high order approximation schemes in the atmosphere pollution modeling problem, *Journal of Automation and Information Sciences*, v.31, 9 (1999) 76-85.
- 29) Akimenko V.V. The maximum principle and non-linear monotone schemes for parabolic equations, *Computational Mathematics and Mathematical Physics*, v.39, 4 (1999) 590-600.
- 30) Akimenko V.V. Monotone high-order schemes for transport equations, *Computational Mathematics and Mathematical Physics*, v.39, 5 (1999) 805-816.
- 31) Akimenko V.V. Mathematical modelling of ecological stability of a region's boundary atmosphere layer, Lugansk, East- Ukrainian State University publ., 1998.

- 32) Akimenko V.V. On quadrature and cubature formulas for a class of multiple singular integrals, *Ukrainian Mathematical Journal*, v.49, 12 (1997) 1891-1898.
- 33) Akimenko V.V., Glasko V.B., Kal'ner V.D., Kal'ner Yu.V., Tikhonov A.N. Control of cooling during hardening taking into account the effect of stresses on phase transformations, *Journal of Engineering Physics*, v.61, 5 (1991) 1425-1429.
- 34) Tikhonov A.N., Akimenko V.V., Kal'ner V.D., Glasko V.B., Kal'ner Yu.V., Kulik N.I. Planning a physical experiment on determination of the parameters of a material by using mathematical methods, *Journal of Engineering Physics*, v.61, 2 (1991) 941-946.
- 35) Tikhonov A.N., Kal'ner V.D., Shklyarov I.N., Glasko V.B., Kulik N.I., Akimenko V.V. Effect of high-temperature heating of bimetallic steel billets, *Journal of Engineering Physics*, v.58, 3 (1990) 281-289.
- 36) Tikhonov A.N., Kal'ner V.D., Glasko V.B., Kulik N.I., Akimenko V.V. Optimization of heating bimetallic steel stock to high temperatures, *Metal Science and Heat Treatment*, v.32, 2 (1990) 105-112.

12. Participation in research and teaching programs

University of Pretoria, Department of Mathematics and Applied Mathematics, 03/11/2014 – 04/12/2014. Research and teaching.

13. Participation in the International Conferences and Workshops

- 37) Akimenko V.V., Krivan V. Travelling wave solution and dynamic regimes of non-linear age-structured predator-prey model of Di-trophic food web modules. European Conference On Mathematical And Theoretical Biology ECMTB/SMB 2016, University of Nottingham, UK, contributed talk..
- 38) Akimenko V.V. Nonlinear Age-Structured Models of Polycyclic Population Dynamics with Density Dependent Death Rate. Featuring International Conference Biomath 2016, Blagoevgrad, Bulgaria, contributed talk. *Biomath Communications*, V.3, 1 (2016), p.15.
- 39) Akimenko V.V., Piou C. Models of Outbreaks and Phase Polyphenism in Locust Population. The International Society for Ecological Modelling Global Conference 2016, Baltimore, USA, contributed talk. (www.isemconference.com)
- 40) Akimenko V., Anguelov R. Travelling wave solution and recurrent algorithm for the nonlinear age-structured models of polycyclic population dynamics. Featuring International Conference BIOMATH 2015, Blagoevgrad, Bulgaria, contributed talk. *Biomath Communications*, V.2, 1 (2015) 36.
- 41) Akimenko V., Anguelov R. Travelling wave solution for the non-linear age-structured model of polycyclic population dynamics. 6th Workshop Dynamical Systems Applied to Biology and Natural Sciences, 2015, University of Lisbon, Portugal, contributed talk.
- 42) Akimenko V.V. Modeling of monocyclic cell population dynamics with non-linear death rate. Models in Population Dynamics and Ecology - MPDE'14, 2014, University of Torino, Italy, contributed talk.

- 43) Akimenko V.V. Equilibrium and quasi-stationary states of non-linear age-structured monocyclic cell population model. 9th European Conference On Mathematical And Theoretical Biology ECMTB 2014, University of Gotheburg, Sweden, contributed talk.
- 44) Akimenko V.V. Calculating equilibrium and quasi-stationary states for non-linear model of evolutionary dynamics of monocyclic cell population. Featuring International Conference BIOMATH 2014, Sofia, Bulgaria, contributed talk. Biomath Communications, V.1, 1 (2014) 36.
- 45) Akimenko V.V. “Travelling-wave” solution of non-linear age-structured monocyclic cell population model. Workshop BioMath, 2014, University of Ottawa, contributed talk.
- 46) Akimenko V.V. Evolutionary age-structured cell dynamics models. Models in Population Dynamics and Ecology - MPDE’13, 2013, University of Osnabrück, Germany, contributed talk. Abstract collection, p.29.
- 47) Akimenko V.V., Zahorodnii Yu.V. Evolutionary age-structured cell dynamics models for plant systems. The sixth international meeting on synthetic biology SB6.0, 2013, London, UK, Imperial College, poster. Conference book, p.63.
- 48) Akimenko V.V., Zahorodnii Yu.V. The parameter estimation and optimal control problems for the monocyclic and polycyclic age-structured cell aggregation models: analytical and numerical approaches. Oxford Conference on Challenges in Applied Mathematics 2013. University of Oxford, 2013, poster.
- 49) Akimenko V.V., Zahorodnii Yu.V. Evolutionary age-structured cells dynamics models. International Conference on Bioinformatics and Computational Biology - BIOCAMP 2012, contributed talk. Varna, Bulgaria: University of Plovdiv.
- 50) Akimenko V.V., Yefimenko A. Optimal control problem for splitting reaction diffusion multicomponents model with breaking up parameters. Workshop on Stochastic Modelling of Reaction-Diffusion Processes In Biology: University of Oxford, 2012, poster.
- 51) Akimenko V.V., Zahorodnii Yu.V. The Problem of Optimal Control for Evolutionary Age-Structured Cells Models. Workshop Design, Optimization and Control In Systems And Synthetic Biology. Paris, France: INRIA 2012, poster.
- 52) Akimenko V.V., Zahorodnii Yu.V. The Problems of Parameters Identification and Optimal Control for the Monocycle Cells Aggregation Model. International Conference on Mathematical Methods and Models in Biosciences BIOMATH 2012. Sofia, Bulgaria: Institute of Mathematics and Informatics, section talk.
- 53) Akimenko V.V., Zagorodniy Yu.V. Monocycle cells growth process: modeling, identification of parameters and operating. RoSBNet Workshop, Oxford: University of Oxford, 2011, poster.

A4 Teaching experience

14. Courses: “The Models of Population Dynamics”, “System Analysis and Design of Information Systems”, “The Mathematical Methods of System Analysis”, “Optimisation Models of Social-Economical Processes”, “Data Mining”, "Mathematical Physics Equations", "Mathematical Modelling and Calculations", "Special Course of Mathematical Analyses And Matrix Theory", "Decision Making Theory", "Theory of probabilities and mathematical statistics", "Theory of Systems and System Analysis".

A5 Recommendation letters

- 1) Anatoliy V. Anisimov – Doctor of Sciences, Professor, Dean of Faculty of Cybernetics, Taras Shevchenko National University of Kyiv, Ukraine. E-m.: ava@unicyb.kiev.ua
- 2) Roumen Anguelov – Professor, Head of Department of Applied Mathematics and Mathematics, University of Pretoria, Pretoria, SAR. E-m: roumen.anguelov@up.ac.za
- 3) Svetoslav Markov - Professor of the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences, Sofia, Bulgaria. E-m: smarkov@bio.bas.bg
- 4) Mykola M. Glybovets - Doctor of Sciences, Professor, Dean of Faculty of Informatics, National University of Kyiv-Mohyla Academy, Kyiv, Ukraine. E-m.: glib@ukma.kiev.ua