

## CURRICULUM VITAE

### PERSONAL DATA:

Name: Vitaliy A. Yatsenko, Dr., Prof.  
Place of Birth: Rivno, Ukraine  
Citizenship: Ukraine  
Business Address: Prospect Glushkova 40  
03022 Kiev, Ukraine  
fax: 38-044-526-41-24  
Home Address: Prospect Svobody 2, Apt. 21  
04108 Kiev, Ukraine  
phone: 38-044-460-64-07  
mob. phone: 38-050-384-29-67

### EDUCATION:

Middle School: Technical College, Kiev, Ukraine

Graduate/Professional: National Aviation University

[http://www.kuica.kiev.ua/main\\_en.phd](http://www.kuica.kiev.ua/main_en.phd)

Kiev, Ukraine, 1968-1973

M. S. (Electrical Engineering)

Ph. D. study at the V.M. Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine

<http://www.icyb.kiev.ua/index.html>

Kiev, Ukraine

1976-1980, (Control Systems)

Doctor of Science Programs at the V.M. Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine

Kiev, Ukraine, 1991-1996

(System Analysis and Optimization)

The description of these educational and research institutions see attached ADDENDUM.

## **POSTDOCTORAL TRAINING:**

In Mathematical Theory Systems: V.M. Glushkov Cybernetic Institute, Kiev, Ukraine, 1980-1982

In System Analysis and Theory Optimal Solution: V.M. Glushkov Cybernetic Institute, Kiev, Ukraine, 1983-1985

## **GRADUATE AND POST DOCTORAL ADVISOR:**

1. Prof. A. Kuchtenko, Glushkov Institute of Cybernetics, National Academy of Science of Ukraine, Kiev, Ukraine
2. Prof. V. Kuntsevich, Director of the Space Research Institute of National Academy of Science of Ukraine and National Space Agency of Ukraine, Kiev, Ukraine
3. Prof. V. Butkovskiy, Institute of Control Problems, Russian Academy of Science, Moscow, Russia
4. Prof. P. Knopov, Glushkov Institute of Cybernetics, National Academy of Science of Ukraine, Kiev, Ukraine
5. Prof, Y. Samoilenko, Institute of Mathematics, National Academy of Science of Ukraine, Kiev, Ukraine.

## **ACADEMIC AND PROFESSIONAL APPOINTMENTS:**

Engineer, Glushkov Cybernetic Institute, Department of Control Systems, Kiev, Ukraine, 1974-1976

Junior Researcher, Glushkov Cybernetic Institute, Department of Control Systems, Kiev, Ukraine, 1974-1976

Senior Researcher, Glushkov Cybernetic Institute, Department of Control Systems, Kiev, Ukraine, 1984-1996

Leading Researcher, Space Research Institute of the National Academy of Science of Ukraine and the National Space Agency of Ukraine, Kiev, Ukraine, 1996 - present

Professor of System Analysis and Optimization, Physical Technical Institute at the National Technical University of Ukraine "Kyiv Polytechnic Institute", 1999-2002

Professor of Applied Physics, Physical Technical Institute at the National Technical University of Ukraine "Kyiv Polytechnic Institute", 1999-2002

Professor of System Analysis and Optimization, Institute for Applied System

Analysis of the National Academy of Science of Ukraine, Kiev, Ukraine, 2000-2002

Professor of System Analysis and Optimization, Kiev-Mohyla Academy, Kiev, Ukraine, 2001-2006

Director of Scientific and Researchers on Molecular Cybernetic and Informatics, Kiev, Ukraine, 1993 - present

Research Scholar, University of Florida, Gainesville, Florida, 08/01/01-01/31/01

Research Scholar, University of Florida, Gainesville, Florida, 06/09/02 - 10/10/02.

Research Scholar, University of Florida, Gainesville, Florida, 04/03/06 - 05/27/06

## **RESEARCH ACTIVITIES:**

### ***NATO Grants:***

Co-Investigator- NATO Grant N SST.GLS.975032 (Scientific and Environmental Affairs Division), Project: Calculating Robust Bayesian Estimates Using Optimization approaches; 2000-2001.

Co-Investigator - NATO Grant N SST.GLS.975052 (Scientific and Environmental Affairs Division), Project: Information Technology for Analysis of Nuclear Objects on the Basis of Modern Mathematical Methods; 2002-2003.

### ***Science and Technology Center in Ukraine (STCU) Grants:***

The STCU is the first intergovernmental organization in Ukraine and was established by an Agreement signed on 15 October 1993, by the four founding Parties: Ukraine, Canada, Sweden and the United States of America. The Agreement was put into force by President Krawchuk's decree N 202 on 04 May 1994. The STCU began its first organizational steps in November 1994, and was fully registered in Ukraine on 14 February 1995. Its main purpose is:

To support research and development activities for peaceful applications by Ukrainian, Georgian, and Uzbekistan scientists and engineers, formerly involved with development of weapons of mass destruction and their means of delivery, as part of the general process of conversion to a civilian, market-oriented environment.

Co-Investigator - STCU Grant N Gr. 33 (J) (Funding Party - the United States of America), Project: Information Technology for Analysis of Ecological Dangerous Objects on the Basis of Modern Mathematical Modeling and Optimization Methods, 2002-2003.

Principal Investigator - STCU Grant N 2416 (Funding Party - the United States of America), Project: Development of the Method and Device for Remote Sensing of Vegetation, 2002-2004. Collaborators - Professor P. Pardalos.

Project Manager - STCU Grant N Uzb. 39 (J) (Funding Party - the United States of America), Project: Development of the Cryogenic-Optical Sensor for the Highly Sensitive Gravity Meters, 2002-2004. Collaborators - Professors Dr. Jose Principe, and P. Pardalos.

### ***George Soros Grants:***

Soros Grants for Funding of a Conference Travel, International Conferences in Italy, Denmark, Japan, and Great Britain), 1994-1996.

### ***Other Grants and Programs:***

Research Scholar - Brain Dynamics Laboratory, Neuroscience Department, University of Florida. The program to provide lecturing, consultation, and research the mechanisms underlying the occurrence of epileptic seizures, 08/01/01-01/31/01. Collaborators - Professors J. Chris Sackellares, P. Pardalos.

Research Scholar - Brain Dynamics Laboratory, Neuroscience Department, University of Florida. The program to provide lecturing, consultation, and research the mechanisms underlying the occurrence of epileptic seizures, 06/09/02-11/30/02. Collaborators - Professors J. Chris Sackellares, P. Pardalos.

Principal Investigator - Ukrainian Ministry of Science, Grant N 1.7, Project: Realization of computational technologies on the base of principles of nonlinear dynamics of undulate and oscillatory processes in physical and biological systems, 1993-1994.

Project Manager - Ukrainian Ministry of Science, Grant N 5.3/321, Project: Development of scientific foundation of cofactor interaction dynamics and control process investigation of transport charges in a biomembrane, 1994-1995.

Project Manager - Ukrainian Ministry of Science, Grant N (1.2).3,133, Project: Dynamic investigation of molecular systems and control process for development new computer elements using modern technologies, 1994-1995.

Principal Investigator - Ukrainian Ministry of Science, Grant N 1.7, Project: Control of micro-processes and physical models of neural networks selforganization processes, 1994-1995.

Principal Investigator - Ukrainian Ministry of Science, Grant N (1.2).3,124, Project: Cognitive information decision support to production and solution new scientific problems, 1994-1995.

Project Manager - Ukrainian Agency of Marine Researches and Technologies, Grant N 6.9/10 133, Project: Development hydro-chemical sensors on the base of micro-system technologies, 1995-1996.

## **MEMBERSHIPS IN PROFESSIONAL SOCIETIES**

Member of Board of Scientific and Researchers in Molecular Cybernetics and Informatics, Kiev, Ukraine, 1993 - present.

Member of SPIE, 2005 - present.

## **TEACHING ACTIVITIES**

*Physics and Technology Institute at the National Technical University of Ukraine "Kyiv Polytechnic Institute"*

Nonlinear Dynamics Course: Physical Informatics, Lecture (5nd year Ap-

plied Mathematics Students), 1998 - 2002.

Nonlinear Physics Course: Synergetics, Lecture (5nd year Applied Physics Students), 1998 - 2000

Computer Science Course: Mathematical Modelling in Physics, Lecture (3nd year Applied Informatics Students), 1998 - 2002.

Nonlinear Dynamics Course: Physical Informatics, Lecture (3nd year System Analysis Students), 1999 - 2001.

### ***Kiev-Mohyla Academy***

Biomedical Engineering Course: Cybernetics Models in Biophysics, Lecture (5nd year Applied Biophysics Students), 2001 - present

### ***University of Florida***

Biomedical Engineering Course: Nonlinear Dynamic and Chaos, September 2001

## **GRADUATE RESEARCH ASSISTANTS**

N. Rakitina, Glushkov Cybernetic Institute, Department of Control Systems, Kiev, Ukraine, 1986-1989

A. Ishenko, Physical Technical Institute at the National Technical University of Ukraine "Kyiv Polytechnic Institute", Kiev, Ukraine, 1998-2000

N. Plishko, Space Research Institute of the National Academy of Science of Ukraine and the National Space Agency of Ukraine, Kiev, Ukraine, 1998 - present

## **DOCTORAL DISSERTATION COMMITTEES**

Member of Doctoral Dissertation Committee "System Analysis and Optimization", Space Research Institute of the National Academy of Science of Ukraine and the National Space Agency of Ukraine, 1998 - present.

Member of Doctoral Dissertation Committee "System Analysis and Optimization", Kiev State University, 2005 - present.

## DESCRIPTION OF CAREER RESEARCH GOALS

Dr. Vitaliy Yatsenko is the head of department for Advanced Sensors and Technologies at the Space Research Institute of the Ukrainian Academy of Sciences and the Space Agency of Ukraine. He is also Professor of the Kyiv-Mohyla Academy and the National Taras Shevchenko University in Kyiv. He is also the director of the Scientific Foundation of Scientists and Researchers on Molecular Cybernetics and Informatics (public organization).

Dr. Yatsenko obtained a PhD degree from the Glushkov Institute of Cybernetic in in Control Theory and Optimization. He has held visiting appointments at University of Florida and Northern Illinois University.

Dr. Yatsenko is a world leading expert in geometrical control theory and global optimization. He is the member of the editorial board of the Journal of Optimization Letters. He is the author of the book "Optimization and Control of Bilinear Systems: Theory, Algorithms, and Applications (Springer Optimization and Its Applications)". He has written numerous articles and developed several well known sensors for space applications.

His research is supported by NATO Grants, CRDF Grants, STCU Grants, and other government organizations. His recent research interests include bilinear systems, control of Lyapunov exponents, biomedical applications, and advanced sensors for space applications.

Dr. Yatsenko has been an invited lecturer at many universities and research institutes around the world. He has also organized several international conferences.

## COLLABORATORS DURING THE PAST 48 MONTHS

Dr. J Chris Sackellares, Principal Investigator Professor of Neurology and Biomedical Engineering. University of Florida, USA

Panos M. Pardalos, Prof. of Industrial and Systems Engineering and Computer Science Engineering, University of Florida, USA.

Dr. Jose Principe, Professor of Electrical and Computer Engineering, University of Florida, USA

Dr. Leonidas Iasemidis, Professor of Bioengineering, ASU, USA

Dr. Mark Yang, Professor. of Statistics, University of Florida, USA

Dr. Young Ro Yoon, Visiting Professor, Korea

Dr. Paul R. Carney, Assistant Professor of Pediatrics, University of Florida, USA

Biswa N. Datta, Professor of the Department of Mathematical Sciences,  
Northern Illinois University, De Kalb, Illinois, USA, (e-mail: dattab@math.niu.edu)

## BIBLIOGRAPHY

### *Completed Publications in Scientific Journals*

Author of 225 scientific publications, 109 of them are listed below.

1. Yatsenko V. (1984), Dynamic equivalent systems in the solution of some optimal control problems, *Avtomatika*, No. 4, 59–65.
2. Yatsenko V. (1985), Control systems and fiber bundles, *Avtomatika*, No. 5, 25–28.
3. Yatsenko V. (1987). A mathematical model of a controlled mechanical displacement sensor. In *Control of Distributed Systems*, pages 26–30. IK AN UkrSSR, Kiev (in Russian).
4. Yatsenko V. Partial decomposition for stochastic control systems, *Cybernetics and Computing Technology. Human-machine Control Systems*, 1988, vol. 77, P. 42-46.
5. Yatsenko V. (1989), Estimating the signal acting on macroscopic body in a controlled potential well, *Kibernetika*, No 2, 81–85.
6. Yatsenko V. Digital estimating the signal acting on macroscopic body in a controlled potential well *Cybernetics and Computing Technology. Human-machine Control Systems*, 1989, vol. 87, P. 82-84.
7. Yatsenko V. (1989), Invariant description of information- measuring systems, *Complex Control Systems*, Glushkov Cybernetics Institute, Ukraine, 69-72.
8. Yatsenko V. (1990), Syntactical pattern recognition for the finite dimensional quantum automaton, *Avtomatika*, No. 5, 10–13.
9. Yatsenko V. Symbolic-algebraic methods for analysis of nonlinear and bilinear models of human-machine control system, *Cybernetics and Comput-*

*ing Technology. Ergatic Control Systems*, 1990, vol. 98, P. 39–43.

10. Samoilenko Yu. I., Yatsenko V. A. (1991), Adaptive estimate the signal acting on macroscopic body in a controlled potential well, *Report of National Academy of Science of Ukraine*, No 3, 81–86.

11. Yatsenko V. A., Spirin, A. Yu. (1991), Yaremenko, N.P. Hierarhical-abstract structures of methods for analysis of control processes, *Cybernetics and Computing Technology. Human-machine Control Systems*, vol. 91, P. 82–87.

12. Semenov V. and Yatsenko V. (1992), Dynamically equivalent and digital simulation, *Cybernetics and Computing Technology. Complex Control Systems*, Vol. 96, 107–113.

13. Cherevko V. L., Yatsenko V. A. (1992), Control Systems and Modeling of Signals for Back-Scattering from Sea Surface. *Cybernetics and Computing Technology. Ergatic Control Systems*, vol.96,P.107-112.

14. V.A. Yatsenko, P.S. (1992), Knopov. Parameter estimation of almost periodic signal via controllable bilinear observations, *Automatica & Telemekhanika*, 3. P. 65–70.

15. Yatsenko V. (1993), Quantum Mechanical Analogy of Belman Optimal Principle for Control Dynamical Processes, in *Cybernetics and Computing Techniques*, Vol. 99, 43–49.

16. Yatsenko V. (1993), Research of chaotic dynamics and adaptive control of heart attractor parameters. Tools of deriving and data processing of a digital information, in: Proc. of Glushkov Cybernetics Institute, Ukraine, 68-72.

17. Gusha A.O., Palagyn A.V.,Privalko A.V. (1993), Charkianen V.N., and Yatsenko V.A. Methods of integral estimation and control of state of ecological systems based on biodetectors, *Automatica*, 1993, N2.

18. Yatsenko V. A., Rakitina N. A. (1994), The decomposition of the controlled dynamical model of information transform system with lokal and global symmetry, *Automatica*, N3-4. P. 61–70.

19. Samoilenko Yu. I., Yatsenko, V. A. (1994), Decomposition of nonlinear dynamic systems with periodic parameters, *Report of National Academy of Science of Ukraine*, No 4, 26–30.

20. Samoilenko Yu. I., Yatsenko, V. A. (1994), Hamiltomian model of a transputer type quantum automaton, *Report of National Academy of Science of Ukraine*, No 5.- P. 27–31.

21. Yatsenko V.A. (1995), Intelligent system of intigral estimation of water quality, *Sensors and Actuators: B. Chemical.*-1995.- 29.-N.1-3.-P. 332-338.

22. Yatsenko, V. (1996), Determining the characteristics of water pollutants by neural sensors and pattern recognition methods, in *Journal of Chromatography*, Vol. 722, No. 1+2, 233–243.
23. Yatsenko V. (1993), Research of chaotic dynamics and adaptive control of heart attractor parameters. Tools of deriving and data processing of a digital information, in *Proc. of Glushkov Cybernetics Institute*, Ukraine, 68–72.
24. Andrushenko A.P., Samoilenko Yu. I., Yatsenko V.A. (1997), The presence of both stochastic and deterministic dynamics in electroretinograms measured under identical experimental conditions, in *Biological Cybernetics*. P. 661-665.
25. Yatsenko V. A., Ischenko A.V. (1998), Simulation of a controlled optical systems, *Cybernetics and Computing Technology. Ergatic Control Systems*, Vol. 115, P.52-58..
26. Yatsenko V. A., Plishko N. L. Synthesis of adaptive filters for bilinear systems with parametric uncertain, *Cybernetics and Computing Technology. Ergatic Control Systems*, 1998, vol. 115, P.65-75.
27. Cheborin O., Yatsenko V. Cryogenic sensor for gravimetric devices. *Space science and technology*, 1998, Vol. 4, No. 5/6.-P.129-140.
28. Yatsenko V. and Yurachkovsky Y. et al. (2001), Mathematical methods of diagnostics and forecasting of effectiveness of treatment papillomaviral infection. in: *Medical sciences*, 2001, Vol. 7, N 2/3.
29. Klimenko Yu., Cheremnich O., Yatsenko V. and Maslova N. (2001) State and Perspective of Creating New Generation Microsatellites, *New Materials. Nanotechnology and Architecture. Space Science and Technologies*, Vol. 7, No.2/3.-P. 52-65.
30. Yatsenko V., Kunzevich V., Cheremnich O.(2003). Development of cryogenic-optical for high sensitive gravitation measurement, in: *Space Science and Technologies*, Vol 9, No 4.-P. 67-72.
31. Kryuchkov E., Yatsenko V. (2003). The possibility to use of magnetic potential well for creation of gravimetric cryogenic device , in: *Problem of Control and Informatics*, Vol. 34. -P. 106-119.
32. Pardalos P., Butenko S., Yatsenko, V. (2003), Nonlinear dynamical systems and adaptive filters in biomedicine, in: *Annals of Operation Research*, Vol. 9, No. 5, Kluwer Academic Publishers, Dordrecht–Boston–London.-P. 119-142.
33. Pardalos P.M, Sackellares J.C, Yatsenko V.A, Yang MC, Shiau DS and Chaowolitwongse W. (2003), Statistical information approaches for the

modelling of the epileptic brain. *Computational Statistics and Data Analysis*, Vol. 43, No.1.-P.79-108.

34. Pardalos P., Iasemidis D. Yatsenko V., Shiau D., Sackellares J., Chaovalitwongse W. (2003), Analysis of EEG data using optimization, statistics, and dynamical system technics. *Computational Statistics and Data Analysis*, Vol. 44, No.1-2.-P.391-408.

35. Pardalos P., Yatsenko V. (2004), Control of Lyapunov exponents in nonlinear lattice, in: *WSEAS Transactions on Systems*, Ser. B, Vol. 10, No. 3. - P. 2975-2980.

36. Pardalos P., J. Chris Sackellares, Shiau D., Carney P., Prokopyev, O., Yatsenko V. (2004), Seizure warning algorithm based on optimization and nonlinear dynamics, in: *Mathematical Programming*, Springer, Ser. B, Vol. 101(2). - P. 365-385 (Pierskalla Best Paper Award).

37. Yatsenko V., Khandriga P. (2004), System Technology Dnepropetrovsk Application of principal component method for estimation of chlorophyll content in vegetation, in: *System Technology*, Dnepropetrovsk, 8 p.

38. Martish E., Radchenko O., Sidorenko V., Yatsenko V. (2005), Acoustic diagnostic of heterogenous plasma. *Space Science and Technology*, 2005, 011, System analysis of spatiotemporal dynamics of the epileptic mouse, in: *Space Science and Technology*, Vol 1/2.- P. 58-62

39. Pardalos P., Yatsenko V. Optimization Approach to the Estimation and Control of Lyapunov Exponents, in: *Journal of Optimization Theory and Applications*, 2006, Vol. 128, No.1.-P.1-20.

40. V.A. Yatsenko, P.M. Pardalos, V.V.Kozorez, R.A. Malitsky, A.M. Negrijko, V.M. Hodakovskiy, O.K. Cheremnykh, L.P. Yatsenko. The Laser Cryogenic Gravimeter For High-Sensitivity Gravitational Measurements. *Space Researches in Ukraine*. Space Agency of Ukraine, Kiev, 2006.-10P.

41. V. Kozorez, P. Pardalos, A.M.Negrijko, L.P.Yatsenko, V.A. Yatsenko et. al. Cryogenic-Optical Sensor for Highsensitive Gravitational Measurement. *Journal of Automation and Information Sciences*.(2006) Vol. 1-2.-P. 271-284.

42. S.P. Nair, P.M. Pardalos, and V.A. Yatsenko. Optimization in Control and Learning in Coupled Map Lattice Systems, in: *Journal of Optimization Theory and Applications*, 2007, No. 4 (accepted).

## **Books**

1. Pardalos, P., and Yatsenko, V. (2008), *Optimization and control of bi-*

*linear systems: theory, algorithms, applicatio*, Springer, Dordrecht–Boston–London, 370 p.

### ***Book Chapters***

1. Yatsenko, V. (1995), Hamiltonian model of a transputer type quantum automaton, in *Quantum Communications and Measurement*, New York, Plenum Publishing Corporation.

2. Pardalos, P., Knopov, P., Urysev, S. and Yatsenko, V. (2001), Optimal estimation of signal parameters using bilinear observation, in: *Optimization and related topics*, Rubinov A, and Gloveredited B. (eds.), Kluwer Academic Publishers, Dordrecht–Boston–London.-P.103-116.

3. Pardalos, P., J. Chris Sackellares, and Yatsenko, V. (2002), Classical and quantum controlled lattices: self–organization, optimization and biomedical applications, in: *Biocomputing*, Pardalos P. (ed.), Kluwer Academic Publishers, Dordrecht–Boston–London.-P.199-224.

4. Pardalos, P., Yatsenko, V., and Butenko, S. (2002), Robust recursive estimation and quantum minimax strategies, in: *Cooperative Control and Optimization*, Pardalos P. and Murphey R. (eds.), Kluwer Academic Publish.Dordrecht–Boston–London.-P.213-230.

5. Pardalos, P., Yatsenko, V., and Grundel, D. (2004), Nonlinear Dynamics of Sea Clutter and Detection of Small Targets, in: *Recent Developments in Cooperative Control and Optimization*, Pardalos P., Murphey R., and Butenko S (eds.), Kluwer Academic Publish.Dordrecht–Boston–London.-P.407-426.

### ***Patents***

1.Yatsenko, V.A., Vischnev I.P. et.all. Supercconducting magnetic suspension.- Patent number 1417552 (USSR), Request N 3989496 (Patent was registrated by 15 April 1988).

### ***Articles in Conference Proceedings***

1. Yatsenko V.A. Gelfand-Levitan’s integral equation and some filtration problems, in *Proc. Workshop "Integral Equations in Applied Modeling"*, Kiev, December, 1986, Institute of Electrodynamics National Academy of

Science of Ukraine - Kiev, 1986. Vol. 1.- P. 172-173.

2. Yatsenko, V. (1993), Research of chaotic dynamics and adaptive control of heart attractor parameters. Tools of deriving and data processing of a digital information, in *Proc. of Glushkov Cybernetics Institute*, Ukraine, 68-72.

3. Yatsenko V., Kolesnik Yu., Titarenko T. Identification of the non-Gaussian chaotic dynamics of the radioemmission back scattering processes, in *Proc. of 10th IFAC Symposium on System Identification SYSID'94, Kobenhavn, 4-6 July 1994.*-Kobenhavn: Danish Automation Society, 1994.-V1.- P. 313-317.

4. Yatsenko V.A. Intelligent system of integral estimation and biosensors on the base off photosynthesizing object, in *Proc. 2-nd European Conference on Optical Chemical Sensors and Biosensors*, Firenze, 19-21 Apr., 1995, Firenze: IROE - CNR, 1995.-117-118.

5. Yatsenko V.A., Rakitina N.A. Identification of structure of dynamic information transformation systems, in *Proc. International 94 New Orleans Conference "Information Processing IP'94"*, Orlean, 9-11 Nov. 1994 -Orlean, 1994.P. 313-129.

6. Yatsenko, V.A. Determination of pollutions by chromatographic techniques and biosensors in water samples, in *Proc. International Symposium on Chromatography, 22-25 Jan. 1995. - Singapore: Scientific World*, 1995.- P.517-518.

7. Yatsenko, V.A. Biosensors on the base of photosynthesizing object, in *Proc. International Symposium on Chromatography, 22-25 Jan. 1995. - Singapore: Scientific World*, 1995.- P.519-521.

8. Yatsenko, V.A. Characterization of industrial waters using intelligent detectors, in *Proc. International Symposium on Chromatography, 22-25 Jan. 1995. - Singapore: Scientific World*, 1995.- P.731-739.

9. Yatsenko V.A. Intelligent sensors on the photosynthesizing object and used for estimation of water quality, in *Proc. European Symposium "Optics for Environmental and Public Safety", 19-23 June, 1995, Munich Fairgrounds*, Munich, FR Germany.Proc. 2508.- Rep. 2508-32.

10. Yatsenko V.A. Intelligent sensors on the photosynthesizing object and used for estimation of water quality, in *Proc. European Symposium "Optics for Environmental and Public Safety", 19-23 June, 1995, Munich Fairgrounds*, Munich, FR Germany. Proc. 2508.- Rep. 2508-32.

11. Yatsenko V.A. Neurosensors for operation in water and in the atmosphere, in *Proc. European Symposium "Optics for Environmental and Public Safety", 19-23 June, 1995, Munich Fairgrounds*, Munich, FR Germany.Proc.Vol. 2505.-report 2505-22.

12. Yatsenko V.A. Characterization of industrial waters using intelligent detectors, in *Proc. European Symposium "Optics for Environmental and Public Safety", 19-23 June, 1995, Munich Fairgrounds, Munich, FR Germany.-Proc.2508.-Report 2508-13.-8p.*
13. Yatsenko V.A. Mathematical models reflecting the dynamics and self-organization features inherent in superconducting controlled by optical signal sensor of vibration, in *Proc. European Symposium "Optics for Environmental and Public Safety", 19-23 June, 1995, Munich Fairgrounds, Munich, FR Germany.-Proc.2508.-Report 2509-13.-8p.*
14. Yatsenko V.A. Soliton mechanism of optical anisotropy photoinduction in Langmuir - Blodgett films as the sensor, in *Proc. Intern. Workshop, Sevastopol, 12-16 Sept., 1995, - Sevastopol, 1995. - P. 23-24.*
15. Yatsenko V.A. Sensitive elements of space cryogenic gravitation sensors, in *Proc. European Symposium on Remote Sensing, 21-24 Sept., 1995, Barcelona, Spain, Order Proceedings of SPIE, Vol. 3498.*
16. Yatsenko, V. (1997), Selective control at a microlevel of pathological processes on the base of models of chaotic dynamics and complex nonlinear resonances, in *13-th international congress "Biosignal 96", 25-27 June 1996, Brno, Technical university Brno.-1997.*
17. Yatsenko V.A. Sensitive elements of space cryogenic gravitation sensors, in *European Symposium on Remote Sensing. 21-24 Sept. 1998, Barcelona, Spain, Order Proceedings of SPIE, Vol. 3498.*
18. V.A. Yatsenko. Multichannel intelligent system for infrared and mm wave synchronized observation. *European Symposium on Remote Sensing. 21-24 Sept. 1998, Barcelona, Spain, Order Proceedings of SPIE, Vol. 3495.*
19. Yatsenko V. (2000), Methods of risk analysis for energy objects, in: *Proceedings of International Energy Conference, July 23-28, 2000, Las Vegas, Nevada, USA.*
20. Kuz'kov V.P., Eremenko N.A., Khymenko O.A., Kugel V.I., Yatsenko V.A. The Concept of a Multichannel System Installed at the ISS for Study of the Earth's Surface and Atmosphere //Space Science and Technology (Ukraine), 2000, Vol.6, n.4, pp. 65-67. 4.
21. V.Kuz'kov V.P., Eremenko N.A., Khimenko O.A., Kugel V.I., Yatsenko V.A.- The Concept of a Multichannel System for Surface, Atmosphere Investigations of the Earth and Near Space Observations.//Proc.Int. Symposium Interball", Kiev, 1-4 February, 2000, pp.77-80.
22. Yatsenko, V., Kuz'kov, V. (2001) , Global optimization of cryogenic-optical sensors, In *Proc. of the 8th International Symposium on Remote Sensing: Sensors, Systems, and Next Generation Satellites V, 17-21 September 2001, Toulouse, France, Vol. 4540.-P.433-441.*

23. Yatsenko, V., Kuz'kov, V. (2001) , Concept of a multi-channel systems installed at the International Space Station, In Proc. SPIE. The 8th International Symposium on Remote Sensing: Sensors, Systems, and Next-generation Satellites V, 17-21 September 2001, Toulouse, France, Vol. 4540A, pp. 466-468.
24. Pardalos, P., J. Chris Sackellares, L, Iosemidis, and Yatsenko, V. (2002), Global optimization approaches to reconstruction of dynamical systems related to epileptic seizures, in: *Proc. 5th International Workshop on Mathematical Methods in Scattering theory and Biomedical Technology*, Pardalos P. (ed.), World Scientific.-P.308-318.
25. Yatsenko, V., Pardalos, P. and Principe, J.(2002), Cryogenic-optical sensor for the highly sensitive gravity meters: Advance Sensors, Systems, and Next Generation Satellites V, Remote Sensing 23 - 27 September 2002 Crete, Greece 17-21 September: Abstracts, SPIE, Vol. 44881-70.-P.549-558.
26. Pardalos, P., Kochubey, S. and Yatsenko, V. (2002), Method and the device for remote sensing of vegetation: Remote Sensing for Agriculture, Ecosystems, and Hydrology IV, Remote Sensing 23 - 27 September 2002 Crete, Greece 17-21 September: Abstracts, SPIE Vol. 4879-36.
27. Yatsenko, V. (2002), Functional structure of the cryogenic optical sensor and mathematical models of signal. Proc. of SPIE., Vol. 5172, SPIE Conference 'Optical Science and Technology', 3-8 August 2003, San Diego, Convention Center, California USA.
28. V.A. Yatsenko, H.C. Chiarini, P.M. Pardalos (2003), New Adaptive Methods for Sensing of Chemical Components and Biological Agents Proc. of SPIE "Remote Sensing for Agriculture, Ecosystems, and Hydrology V", International Symposium "Remote Sensing" 8-10 September, Barcelona, Spain, Vol. 5232.-p.719-728.
29. Kochubey s., Zhan l. Estimation of chlorophyll concentration in vegetation using global optimization approach. Int. Conference "AeroSense. Technologies and Systems for Defence and Security", 21-25 April 2003, Orlando USA, Proc. of SPIE, Technologies, Systems, and Architectures for Transnational Defence II, Vol.. 5072.-P.50-59
30. S.M. Kochubey, V.A. Yatsenko V. A monitoring system for agriculture crops on chlorophyll basis. Proc. of SPIE "Remote Sensing for Agriculture, Ecosystems, and Hydrology V", International Symposium "Remote Sensing" 8-10 September 2003, Barcelona, Spain, Vol. 5232.-p.92-99.
31. V. Yatsenko. Quantum optimization for solving nonconvex problem. Proc. of Int. SPIE Conference "Quantum Information and Computation". 21-25 April 2003, Orlando, USA, Vol.5105.
32. Yatsenko V., Principe J. Cryogenic sensor for space operations Proc.

of SPIE. Int. Conference "AeroSense". Technologies and Systems for Defence & Security", 21-25 April 2003, Orlando USA, Proc. of SPIE, Technologies, Systems, and Architectures for Transnational Defence II, Vol.5088.

33. Sackellares J., Carney O. Prokopyev O., Geometric Models, Fiber Bundles and Biomedical Applications. Proceedings of the Institute of Mathematics of National Academy of Sciences of Ukraine. 2004.-P.1518-1525.

34. M. Sobol, V. Yatsenko. Confocal laser scanning microscope in the cell biology investigations. Proc. CAOL 2005. 2nd International Conference on Advanced Optoelectronics and Laser, Yalta, Crimea, Ukraine, September 12-17, 2005, IEEE, Vol. 1, P. 303-305.

35. V. Yatsenko, S. Kochubey, V. Donets. Optical spectrometer and software for remote sensing of vegetations. Proc. CAOL 2005. 2nd International Conference on Advanced Optoelectronics and Laser, Yalta, Crimea, Ukraine, September 12-17, 2005, IEEE, Vol. 2, P. 267-269.

36. V. Yatsenko, S. Kochubey, V. Donets, T. Kazantsev. Hardware-software complex for chlorophyll estimation in phytocenoses under field conditions. Proc. of SPIE "Detectors and Associated Signal Processing II", Jena 13-14 September, 2005, Vol. 5964, P.1-6.

### ***Abstracts and Preliminary Communications***

1. Kozorez, V. and Yatsenko, V. (1985). Differential-geometrical methods of analysis of nonlinear controlled circuits with a Josephson junction. In *Int. Conf Theor. Electrical Engineering*, pages 87–88. Nauka, Moscow.

2. Samoilenko, Yu. and Yatsenko, V. (1991). Quantum mechanical approach to optimization problems. In *Proc. Intern. Conf. Optim.*, Vladivostok, IPU, Moscow.

3. Yatsenko V.A Attractor model of global behaviour of ecology system. Materials of international conference of risk in ecology systems., Kiev, November 1992.

4. Yatsenko V.A., Gushcha A.A. et al. Intelligent systems of integrel estimation and control of ecoobject state based on photosynthesizing biodelectors, in *European Conference on Analytical Chemistry, Edinburgh, 5-11 Sept. 1993.*-Edinburgh: Edinburgh University, 1993.-PI12.

5. Yatsenko V.A. Identification of the non-Gaussian dynamics of the radioemmission back scattering processes and quantum estimation, *Differential Equation: Bifurcations and Chaos*, Katsiveli, 3-14 May 1994: Abstracts.-Kiev: Inst. of Mathematics, 1994.-P. 110.

6. Yatsenko V.A. Ischenko A.V. Dual measurement of atmospheric tur-

bulence on basis of adaptive control of astronomical telescope, in *8th Scientific Assembly of IAGA with ICMA and STP Symposia, Uppsala, 4-15 Aug. 1997*.-Uppsala: Uppsala University, 1997.-P. 160-161.

7. Yatsenko V. Parameter estimation of almost periodic signal via controllable bilinear observations”.-26-28 Sept. 1998, Harvard, USA, Book Abstract, Boston University.

8. Yatsenko V. Development of the Method and the Device for Remote Sensing of Vegetation. 7th International Conference on Wetland Systems for Water Pollution Control (<http://conference.ifas.ufl.edu/wpc/>), University of Florida, November 11-16, 2000

9. Yatsenko V. Intelligent Sensors for Water-Quality Monitoring. 7th International Conference on Wetland Systems for Water Pollution Control (<http://conference.ifas.ufl.edu/wpc/>), University of Florida, November 11-16, 2000

10. Pardalos P. and Yatsenko V. Self-organization, control and optimization in biomacromolecular Neural Networks, *Biocomputing-2001, International Conference on Biocomputing February 25-27, 2001*, Center for Applied Optimization, University of Florida.

11. Kochubey, S. , Pardalos, P., and Yatsenko V. Method and the device for remote sensing of vegetation, in *Proc. European Symposium on Remote Sensing, 23-27 September 2002*, Capsis Sofitel Conference Ctr. Agia Pelagia Crete, Greece, Vol. (4879-36).

12. Kochubey, S. , Pardalos, and Yatsenko V. Method and the device for remote sensing of vegetation, in *Proc. European Symposium on Remote Sensing, 23-27 September 2002*, Capsis Sofitel Conference Ctr. Agia Pelagia Crete, Greece, Vol. (4881A-70).

13. Pardalos, P., and Yatsenko V. Cooperative control of physical processes, geometrical structures, and optimization , in *Book Abstract of International Conference on Cooperative Control and optimization, 123-14 November 2001*, Gainesville, Florida, USA.

14. Yatsenko V., and Pardalos, P. Global optimization of cryogenic-optical sensor, in *Proc. of SPIE on Sensors, Systems, and Next-Generation Satellites, 17-20 September 2001*, Toulouse, France, Vol. 4540.

15. Sackellares J. Chris, Yatsenko, V. and (2002), Bifurcation and dynamical systems, International Workshop, in: *International Workshop "Problems of Decision Making and Control Under Uncertainties", May 14-20, 2002*, National University of Kiev,

16. Sackellares J., Zhang Li, Yatsenko V. (2002). Controllability of Lyapunov spectrum and bilinear control process, in: *International Conference Dedicated to the 65-th Anniversary of B.N. Pschenichnyi, June 25-28, 2002*,

Kyiv, Ukraine.

17. Yatsenko, V., Pardalos, P. and Principe, J.(2002), Cryogenic-optical sensor for the highly sensitive gravity meters: Advance Sensors, Systems, and Next Generation Satellites V, Remote Sensing 23 - 27 September 2002 Crete, Greece 17-21 September: Abstracts, SPIE, Vol. 44881-70.

18. Pardalos, P., Kochubey, S. and Yatsenko, V. (2002), Method and the device for remote sensing of vegetation: Remote Sensing for Agriculture, Ecosystems, and Hydrology IV, Remote Sensing 23 - 27 September 2002 Crete, Greece 17-21 September: Abstracts, SPIE Vol. 4879-36.

19. Pardalos, P., Yatsenko, V. Spectral remote sensing and optimization, in: *Spectral Remote Sensing of Vegetation, Abstracts*, USPA Conference, Las Vegas, Nevada, December 3-5, 2002 (<http://www.epa.gov/nerlesd1/landsci/default.html>).

19. Pardalos, P., Sackellares J.C, Yatsenko, V., and Zhang, Z. Control of chaotic systems: a practical application to epilepsy. 2-nd International Conference on Control problems: Abstracts, Moscow, Institute of Control problems, 2003.

20. Pardalos, P., J. Chris Sackellares, and Yatsenko, V. (2002), Computational geometry and spatiotemporal dynamics of the epileptic human brain, in: *Computational Geometry, Abstracts*, DIMACS series, 2003.

21. Pardalos, P., Yatsenko V. , in *Book Abstract of International Conference on Cooperative Control and optimization, 123-14 November 2001*, Gainesville, Florida, USA.

### ***Preprints***

1. Yatsenko V., Gapeluk A., Sosnitskiy V. (1991), Filtration and data processing methods of biomagnetic noisy signals, in . *Preprint . of Glushkov Cybernetics Institute*, Ukraine, 91-9.-P. 25.

2. Yatsenko V., Spirin A. (1993) , Geometric models of problem orientation systems using cellular automata, in . *Preprint, Glushkov Cybernetics Institute*, Ukraine, 93-35.-P.14.

3. Yatsenko V. (1982) Dynamic equivalent systems in the solution of some optimal control problems, Glushkov Cybernetics Institute, Review of dissertation for the PhD's degree, Kiev, Ukraine. - P. 18.

4. Yatsenko V. (1996) Identification and control of the bilinear dynamic systems, Glushkov Cybernetics Institute, Review of dissertation for the doctor's degree, Kiev, Ukraine. - P. 30.

## *Application*

### *Space Research Institute*

Space Research Institute was established in 1996 at the National Space Agency of Ukraine and National Academy of Sciences of Ukraine for organisation of scientific space researches in the country, conducting and co-ordination of scientific and engineering activities in the area of peaceful exploration and use of outer space.

The Institute's main activities are:

- pure and applied research in outer space, astrophysic research of objects in the universe, including in ranges unavailable from the earth surface;

- development of strategy and principles of universe exploration means use in solving scientific and applied issues for the needs of the economy;

- development and testing, in the space environment, of scientific space exploration equipment and relevant technological processes;

- development of new spacecraft navigation and control systems and earth and space monitoring systems;

- improvement of existing ones; creation of information space systems; working out suggestions on the conception and strategy for space programmes.

The Institute's main projects includes: use of earth remote sensing and geographic information systems (GIS) for informational support of environmental control; monitoring, estimation, and forecasting of underwater petrochemical pollution in Ukraine; Interball project on exploration of solar-earth relations; Variant project on measurement of electromagnetic field and electric current flows in ionosphere; Poperejennia (Warning) project: satellite complex for exploration of ionosphere phenomena related to seismic activity; planning and controlling system for science and engineering experimentation aboard the Ukrainian explorer unit of the International Space Station.

### *National Aviation University*

National Aviation University has a long and impressive record of academic achievement and is internationally recognized for its teaching and research. Thousands of specialists from more than 86 countries in the world have been trained in the National Aviation University, which is one of the largest universities in Europe. Famous scientists, managers of aviation companies, manufacturing plants, organizations and maintenance centers for aircraft repair and transportation companies, dealing with passengers and cargo transportation are among the graduates of the University. Scientific

and technical research of the University allows to train highly qualified specialists not only in the sphere of aviation, but for the related fields. 25 000 Students are studying at 11 faculties. The University offers 60 programs for Bachelor's degree studies, Master's and postgraduate studies. Research interest of all faculties includes different areas and postgraduate students have all necessary to conduct their investigation in engineering studies.

The University has an excellent reputation being one of the leading educational establishment in Ukraine and world wide and plays an important role in the training programs of International Civil Aviation Organization. The ICAO regional centers in the field of aviation security, flight safety and aircraft airworthiness train aviation specialists using ICAO programs and training packages.

The training of highly qualified teaching professors and scientists (Candidates of Sciences and Doctors of Sciences (PhD)) through graduate and doctorate programs is of the highest priority at the University - and for this reason, this activity is given serious attention. Graduate school programs at the National Aviation University (before 2000 the University was called - the Kiev International University of Civil Aviation, and it had had several other names previously) were started in 1954, which since have provided graduate student training to about 1380 people in more than 20 areas of science (specialities). The number includes 160 international graduate students, whom the University began to provide training to in 1968.

***V.M. Glushkov Institute of Cybernetics  
of the National Academy of Sciences of Ukraine***

V.M. Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine has gained a wide recognition in Ukraine and abroad as the scientific center specializing in developing the fundamental and application problems of cybernetics, computer engineering and informatization. The history of the Institute has started in 1957 with the creation of the Computer Center of the Academy of Sciences of the Ukrainian SSR based on the former Calculus Mathematics and Computer Engineering Laboratory of the Institute of Mathematics of the Ukrainian National Academy of Sciences. In 1961 the Computer Center was renamed to the Institute of Cybernetics.

Over the period of 25 years the Institute was headed by the famous Soviet scientist and science organizer, academician V.M. Glushkov. In 1993 the Cybernetical Center of the National Academy of Sciences of the Ukraine was created on the basis of the Institute.

Today it comprises the Institute of Cybernetics, the base organization; the Institute of Problems of Mathematical Machines and Systems; the Institute of Software Systems. The priority directions of research and development in the Institute of Cybernetics are:

- development of the general theory and methods of system analysis, mathematical simulation, optimization and artificial intelligence;
- development of the general theory of control methods for constructing intelligent control systems of various levels and purposes;
- development of the general theory of computers and promising methods of computer engineering, artificial intelligence and information sciences;
- design of promising general-purpose and application software system;
- development of new information technologies and intelligent systems;
- development of fundamental and application problems of society informatization, social, economic and production-technological structures.