

Curriculum Vitae

I. Name Panchuk

II. First name Anastasiia **Middle name** Anatolijivna

III. Birth place Kyiv, Ukraine

IV. Birth date 31.05.1978

V. Nationality Ukraine

VI. Address

Office:

Institute of Mathematics
National Academy of Sciences of Ukraine
Tereshchenkivska str., 3
01024 Kyiv
Ukraine
Tel.: +(380 66) 734 6718
Fax.: +(380 44) 235 2010
e-mail: anastasiia.panchuk@gmail.com
nastyap@imath.kiev.ua

Home:

Geroiv Dnipra str., 42b, apt. 92
04214 Kyiv
Ukraine

VII. Academic Position Senior scientific researcher

Institute of Mathematics
National Academy of Sciences of Ukraine

VIII. Scientific Biography

A. Education and Scientific Employment.

1995-2000	Student of Mechanics-Mathematics Faculty Kyiv National Taras Shevchenko University (graduated with honour diploma)
2000-2003	Post-graduate student Institute of Mathematics National Academy of Sciences of Ukraine (supervisor — Prof. Yuri Maistrenko)
2003 - 2008	Junior scientific researcher Institute of Mathematics National Academy of Sciences of Ukraine
2008 - 2011	Scientific researcher Institute of Mathematics National Academy of Sciences of Ukraine

2011 - present Senior scientific researcher
 Institute of Mathematics
 National Academy of Sciences of Ukraine

B. Academic Degrees.

M.Sc. in mathematics,
 Thesis title: “Pricing compound options in Black-Scholes model”.
 (supervisor: Dr. Maryna Svishchuk) June, 2000

Candidate of Physical and Mathematical Sciences (PhD),
 Thesis title: “Stability and asymptotic behaviour of solutions
 of a non-linear difference equations system”.
 (supervisor — Prof. Yuri Maistrenko) June, 2005

C. Scientific Background:

- nonlinear dynamical systems, theory of bifurcations and chaos
- piecewise smooth dynamical systems defined by difference equations and their applications in economics and other social sciences
- delay-differential equations, neural system models
- synchronization and clustering in networks of coupled elements

D. Grants:

- INTAS: Individual fellowship for young scientists, 2001–2003 (Ref. No. YSF 01-165, title “Asymptotic behaviour of systems of coupled oscillators”)
- Swedish Institute: Short-term research visit to University of Umeå, Sweden, May, 23 - June, 20, 2009 (within Visby Program, Ref. No. 382 /00635/2009/Ukraine)
- Swedish Institute: Short-term research visit to University of Umeå, Sweden, February, 25 - March, 10, 2011 (within Visby Program, Ref. No. 382 /01936/2010/Ukraine)
- COST: Short-term scientific mission to University of Tartu, Estonia, December, 3–15, 2012 (Ref. No. 031212-024707, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to Politechnical University of Cartagena, Spain, April, 15–24, 2013 (Ref. No. 150413-024708, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)

- COST: Short-term scientific mission to University of Amsterdam, Netherlands, May, 07–13, 2013 (Ref. No. 070513-030405, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to University of Urbino, Italy, September, 08–19, 2013 (Ref. No. 080913-034490, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to Umeå University, Sweden, January, 06–21, 2014 (Ref. No. 060114-038016, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to Politechnical University of Cartagena, Spain, February, 04–14, 2014 (Ref. No. 040214-039719, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to University of Urbino, Italy, March, 17–30, 2015 (Ref. No. 170315-056174, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- COST: Short-term scientific mission to University of Urbino, Italy, February, 15–26, 2016 (Ref. No. 150216-066945, within the framework of the Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation”)
- A temporary research position: University of Urbino, Italy, May–October, 2022 (within the framework of the research project “Modelli Dinamici in Economia e Finanza”)

E. International Conferences and Workshops:

1. 2nd European Interdisciplinary School on Nonlinear Dynamics for System and Signal Analysis EUROATTRACTOR 2001, June 19 – 28, 2001, Warsaw, Poland.
Talk: *Asymptotical behaviour of mean-field coupled maps*
2. International Workshop and Seminar on Control, Communication, and Synchronization in Chaotic Dynamical Systems (Workshop: October 14 – 19, 2001 Seminar: October 20 – 26, 2001), Max Planck Institute for the Physics of Complex Systems, Dresden, Germany.
Talk: *Stable periodic clusters in system of globally coupled logistic maps*
3. NATO Advanced Study Institute “Synchronization: Theory and Application”, May 19 – June 1, 2002, Yalta, Ukraine.
Talk: *Stability of periodic clusters in a system of globally coupled oscillators*
4. Nonlinear Dynamics of Electronic Systems 2003, May 18 – 21, 2003, Scuol, Switzerland.
Talk: *Clustering in the turbulent phase*
5. Trends in Pattern Formation: From Amplitude Equations to Applications (2nd Workshop), September 15 – 19, 2003, Dresden, Germany.
Poster: *Clustering in globally coupled map systems*

6. School-Forum “Coupled Map Lattices 2004”, Institute Henri Poincaré, June 21 – July 2, Paris, France.
Talk: *Partial synchronization in globally coupled map systems*
7. International Conference and Workshops “Nonlinear Dynamics, Chaos, and Applications (NDCA)”, May 15-26, 2006, Yalta, Crimea, Ukraine.
Talk: *Synchronization of globally coupled chaotic maps: clusters and quasi-clusters*
8. European Conference on Iteration Theory (ECIT) 2008, September 7-13, 2008, Yalta, Crimea, Ukraine.
Talk: *Synchronization and stability in a non-autonomous iterative system*
9. The 6th International Conference on Nonlinear Economic Dynamics (NED09), 31 May – 2 June, 2009, Jönköping International Business School, Sweden.
Talk: *Industry dynamics, stability of Cournot equilibrium, entry of firms and renewal of capital*
10. 17th International Workshop on Nonlinear Dynamics of Electronic Systems, June 21-24, 2009, Rapperswil, Switzerland.
Talk: *Regular spiking in FitzHugh-Nagumo systems coupled through linear delay term*
11. Ukrainian Mathematical Congress – 2009 (devoted to 100-anniversary of M.M.Bogolyubov birth), 27-29 August, 2009, Institute of Mathematics, NAS of Ukraine, Kyiv, Ukraine.
Talk: *Iteration system with periodic perturbation: Application to economics*
12. International Workshop on Nonlinear Maps and their Applications (NOMA’09), September 10-11, 2009, University of Urbino, Italy.
Talk: *Regular spiking in FitzHugh-Nagumo systems coupled through linear delay term*
13. International Workshop on Delayed Complex Systems, October 5-9, 2009, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany.
Talk: *Regular spiking in asymmetrically delay-coupled FitzHugh-Nagumo systems*
14. 18th IEEE Workshop on Nonlinear Dynamics of Electronic Systems, May 26–28, 2010, Technische Universität Dresden, Germany.
Talk: *Coupled FitzHugh-Nagumo systems: Patterns induced by a delay coupling and a feedback*
15. International Workshop Nonlinear Dynamics on Networks, July 5–9, 2010, National Academy of Sciences of Ukraine, Kyiv, Ukraine.
Talk: *Coupled FitzHugh-Nagumo systems: patterns induced by a delay coupling and a feedback*
16. European Conference on Iteration Theory 2010, 12-17 September, 2010, Nant, France.
Talk: *Dynamics in the oligopoly model with recurring renewal of capital*
17. Third Workshop “Modelli Dinamici in Economia e Finanza” (MDEF2010), September 23-25, 2010, University of Urbino, Italy.
Talk: *Dynamics in the oligopoly model with recurring renewal of capital*

18. The 7th International Conference on Nonlinear Economic Dynamics (NED11), 1 — 3 June, 2011, Cartagena, Spain.
Talk: *Oligopoly model with recurring renewal of capital*
19. International Conference on Differential Equations and Their Applications, 8 — 10 June, 2011, Kyiv National Taras Shevchenko University, Ukraine.
Talk: *Delay differential equations for modeling coupled neurons*
20. International Workshop on Nonlinear Maps and their Applications (NOMA'11), September 15-16, 2011, University of Évora, Portugal.
Talk: *Three Segmented Piecewise-Linear Map*
21. International Conference on Structural Nonlinear Dynamics and Diagnosis (CSNDD), April 30-May 2, 2012, Marrakech, Morocco.
Talk: *Delay FitzHugh-Nagumo equations for modelling coupled neurons*
22. International Conference on Emergent Dynamics of Oscillatory Networks, May 20-27, 2012, Mellas, Crimea, Ukraine.
Talk: *Delay FitzHugh-Nagumo equations for modelling coupled neurons*
23. International Workshop “Modelli Dinamici in Economia e Finanza”, September 20-22, 2012, University of Urbino, Italy.
Talk: *Oligopoly model with recurrent renewal of capital: modifications and new results*
24. European Conference on Iteration Theory (ECIT) 2012, September 9-15, 2012, Ponta Delgada, São Miguel, Açores, Portugal.
Talk: *Cycles and their bifurcations in a bimodal piecewise linear map*
25. International Conference on Nonlinear Economic Dynamics (NED13), 4—6 July, 2013, Siena, Italy.
Talk (together with T. Puu): *Disequilibrium trade and dynamics of stock markets*
26. 8th SICC International Tutorial Workshop “Topics in nonlinear dynamics”, Bifurcations in Piecewise-Smooth Systems: Perspectives, Methodologies and Open Problems, 11–13 September, 2013, University of Urbino (PU), Italy
Talk: *Bifurcation structure in 1D PWL bimodal maps. Regular dynamics*
27. International Conference on Nonlinear Economic Dynamics (NED15), 25—27 June, 2015, Tokyo, Japan.
Talk (together with T. Puu): *Dynamics of a stock market involving disequilibrium trade*
28. Training School on “Qualitative Theory of Dynamical Systems, Tools and Applications”, 17–19 September, 2015, University of Urbino “Carlo Bo” — DESP, Italy
Lecture: *Global analysis of dynamical systems and numerical methods*
29. Final GeComplexity Conference “The EU in the new complex geography of economic systems: models, tools and policy evaluation”, 26–27 May, 2016, Heraklion, Crete, Greece.
Talk: *Dynamics of a stock market involving disequilibrium trade*

30. 9th International Workshop “Modelli Dinamici in Economia e Finanza”, 23–25 June, 2016, University of Urbino “Carlo Bo” — DESP, Italy.
Talk: *Renewable resource exploitation described by a discrete time nonlinear model with replicator dynamics*
31. 11th International Conference “Progress on Difference Equations” (PODE 2017), 29–31 May, 2017, University of Urbino “Carlo Bo” — DESP, Italy.
Talk: *Bifurcation structures related to chaotic attractors in a 1D PWL map defined on three partitions*
32. 10th International Workshop “Modelli Dinamici in Economia e Finanza”, 6–8 September, 2018, University of Urbino “Carlo Bo” — DESP, Italy.
Talk: *A piecewise linear map with two discontinuities: bifurcation structures in the chaotic domain*
33. International Conference on Nonlinear Economic Dynamics (NED19), 4–6 September, 2019, Kyiv, Ukraine.
Talk: *Modelling learning and teaching interaction by a map with vanishing denominators*
34. International Conference on Difference Equations and Applications (ICDEA 2021 Virtual), 26–30 July, 2021, Sarajevo, Bosnia and Herzegovina.
Talk: *Border collision bifurcations of chaotic attractors in 1D maps with multiple discontinuities*
35. International Conference on Nonlinear Economic Dynamics (NED21), 13–15 September, 2021, Milan, Italy.
Talk: *Interplay between honest and dishonest agents given an endogenous monitoring: bifurcation structure overview*
36. European Conference on Iteration Theory (ECIT) 2022, 13–17 June, 2022, Reichenau an der Rax, Austria.
Talk 1: *Border collision bifurcations of chaotic attractors in 1D maps with multiple discontinuities*
Talk 2: *The first return map: revealing bifurcation mechanisms in a 2D nonsmooth map*
37. International Conference on Difference Equations and Applications (ICDEA 2022), 18–22 July, 2022, Paris-Saclay University, Gif-sur-Yvette, France.
Talk: *Exterior, interior and expansion-like border collisions for chaotic attractors in 1D discontinuous maps*
38. 11th International Workshop “Modelli Dinamici in Economia e Finanza”, 8–10 September, 2022, University of Urbino “Carlo Bo” — DESP, Italy.
Talk: *A 2D nonsmooth map modeling fraud in a public procurement: Advantages of the first return map*
39. International Workshop “From Modeling and Analysis to Approximation and Fast Algorithms”, 2–6 December, 2022, Hasenwinkel, Germany.
Talk: *Border collision bifurcations for chaotic attractors in 1D maps with multiple discontinuities*

40. 13th International Conference “Progress on Difference Equations” (PODE 2023), 29–31 May, 2023, Università Cattolica del Sacro Cuore, Milano, Italy.
Talk: *Bifurcations of chaotic attractors in 1D maps with multiple discontinuities*
41. International Conference on Nonlinear Economic Dynamics (NED23), 19–21 June, 2023, University of Agder (UiA), Kristiansand, Norway.
Talk: *Evolution of dishonest behavior in public procurement. The role of updating control*
42. International Conference on Difference Equations and Applications (ICDEA 2023), 17–21 July, 2023, Pibulsongkram Rajabhat University, Phitsanulok, Thailand.
Talk: *Bifurcation structures in a discontinuous 2D map, modeling exchange rate dynamics*
43. Workshop on Dynamic Macroeconomics in Honour of Ingrid Kubin, 19 September, 2023, Vienna University of Economics and Business, Austria.
Talk: *Evolution of dishonest behavior in public procurement. The role of updating control*
44. International Conference “Complex Dynamical Systems” (CDS 2023), 2–4 October, 2023, Institute of Mathematics, NAS of Ukraine.
Talk: *Bifurcations of chaotic attractors in 1D maps with multiple discontinuities*
45. International Conference on Difference Equations and Applications (ICDEA 2024), 24–28 June, 2024, Paris, France.
Talk: *Bifurcation structures in a discontinuous 2D map, modeling exchange rate dynamics*

F. Guest Researcher:

- Denmark Technical University, Lyngby, Denmark (March–April, 2001)
- Swiss Federal Institute of Technology, Lausanne, Switzerland (January–March, 2002; January–March, 2003)
- Bristol University, UK (February, 2006)
- Technical University of Berlin, Germany (December, 2006; November, 2008; October 2009; October–November, 2010)
- University of Umeå, Sweden (March, 2008; May–June, 2009; April, 2010; February–March, 2011; January, 2014)
- University of Urbino, Italy (September, 2009; June–July, 2010; September, 2010; September, 2011; September, 2012; September, 2013; September, 2014; March, 2015; February, 2016; June, 2017; May–October, 2022)
- Politechnical University of Cartagena, Spain (November, 2009; June, 2012; April, 2013; February, 2014; October, 2017)
- University of Tartu, Estonia (December, 2012)
- University of Amsterdam, Netherlands (May, 2013)
- CAMGSD, Instituto Superior Técnico, Universidade de Lisboa, Portugal (April, 2018; April, 2022)

Teaching:

- Università Cattolica del Sacro Cuore, Milano, Italy; Teaching course “Mathematics for Management” (October–November, 2022; October–November, 2023)

G. Publications:

1. G. Campisi, A. Panchuk, F. Tramontana, A discontinuous model of exchange rate dynamics with sentiment traders. *Annals of Operations Research*, **337**, P. 913–935, (2024). doi: 10.1007/s10479-023-05387-2. Q1. [Scopus]
2. V. Avrutin, A. Panchuk, I. Sushko, Can a border collision bifurcation of a chaotic attractor lead to its expansion?, *Proceedings of the Royal Society A*, **479**, P. 20230260 (2023); doi: 10.1098/rspa.2023.0260. Q1. [Scopus]
3. A. Panchuk, I. Sushko, E. Michetti, R. Coppier, Revealing bifurcation mechanisms in a 2D nonsmooth map by means of the first return map, *Communications in Nonlinear Science and Numerical Simulation*, **117**, P. 106946 (2023); doi:10.1016/j.cnsns.2022.106946. Q1. [Scopus]
4. V. Avrutin, A. Panchuk, I. Sushko, Border collision bifurcations of chaotic attractors in one-dimensional maps with multiple discontinuities, *Proceedings of the Royal Society A*, **477**, P. 20210432 (2021); doi: 10.1098/rspa.2021.0432. Q1. [Scopus]
5. A. Panchuk, F. Westerhoff, Speculative behavior and chaotic asset price dynamics: On the emergence of a bandcount accretion bifurcation structure, *Discrete & Continuous Dynamical Systems – B*, **26**(11), pp. 5941–5964 (2021); doi: 10.3934/dcdsb.2021117. Q2. [Scopus]
6. L. C. Baiardi, A. Panchuk, Global dynamic scenarios in a discrete-time model of renewable resource exploitation: a mathematical study, *Nonlinear Dynamics*, **102**, pp. 1111–1127 (2020); doi: 10.1007/s11071-020-05898-8. Q1. [Scopus]
7. L. C. Baiardi, A. K. Naimzada, A. Panchuk, Endogenous desired debt in a Minskyan business model, *Chaos, Solitons & Fractals*, **131**, pp. 109470 (2020); doi: 10.1016/j.chaos.2019.109470. Q1. [Scopus]
8. U. Merlone, A. Panchuk, P. van Geert, Modeling learning and teaching interaction by a map with vanishing denominators: Fixed points stability and bifurcations, *Chaos, Solitons & Fractals*, **126**, pp. 253–265 (2019); doi: 10.1016/j.chaos.2019.06.008. Q1. [Scopus]
9. A. Panchuk, I. Sushko, F. Westerhoff, A financial market model with two discontinuities: bifurcation structures in the chaotic domain, *Chaos*, **28**, pp. 055908 (2018); doi: 10.1063/1.5024382. Q1. [Scopus]
10. A. Panchuk, T. Puu, Dynamics of a durable commodity market involving trade at disequilibrium, *Communications in Nonlinear Science and Numerical Simulation*, **58**, pp. 2–14 (2018); doi: 10.1016/j.cnsns.2017.08.003. Q1. [Scopus]
11. A. Panchuk, I. Sushko, V. Avrutin, Bifurcation structures in a bimodal piecewise linear map, *Frontiers in Applied Mathematics and Statistics*, **3**, pp. 1–7 (2017); doi: 10.3389/fams.2017.00007. [Scopus]

12. A. Panchuk, Some aspects on global analysis of discrete time dynamical systems, In: *Qualitative Theory of Dynamical Systems, Tools and Applications for Economic Modelling*, G. I. Bischi, A. Panchuk, D. Radi (Eds.), Springer(2016), pp. 161–186; doi: 10.1007/978-3-319-33276-5_2. [Scopus]
13. A. Panchuk, Dynamics of industrial oligopoly market involving capacity limits and recurrent investment, In: *Complexity and Geographical Economics*, P. Commendatore, S. Kayam, I. Kubin (Eds.), Springer (2015), pp. 249–275; doi: 10.1007/978-3-319-12805-4_10.
14. J. S. Cánovas, A. Panchuk, T. Puu, Asymptotic dynamics of a piecewise smooth map modelling a competitive market, *Math. Comp. Simul.*, **117**, pp. 20–38 (2015); doi: 10.1016/j.matcom.2015.05.004. Q2. [Scopus]
15. I. Foroni, A. Avellone, A. Panchuk, Sudden transition from equilibrium stability to chaotic dynamics in a cautious tâtonnement model, *Chaos, Solitons & Fractals*, **79**, pp. 105–115 (2015); doi: 10.1016/j.chaos.2015.05.013. Q2. [Scopus]
16. A. Panchuk, I. Sushko, V. Avrutin, Bifurcation structures in a bimodal piecewise linear map: Chaotic dynamics, *Int. J. Bif. Chaos*, **25**(3), 1530006 (2015); doi: 10.1142/S0218127415300062. Q2. [Scopus]
17. A. Panchuk, T. Puu, Oligopoly model with recurrent renewal of capital revisited, *Math. Comp. Simul.*, **108**, pp. 119–128 (2015); doi: 10.1016/j.matcom.2013.09.007. Q2. [Scopus]
18. J. S. Cánovas, A. Panchuk, T. Puu, Role of reinvestment in a competitive market, No 12, Geocomplexity Discussion Paper Series, Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation” (2015); <https://EconPapers.repec.org/RePEc:cst:wpaper:12>.
19. A. Panchuk, CompDTIME: Computing one-dimensional invariant manifolds for saddle points of discrete time dynamical systems, No 11, Geocomplexity Discussion Paper Series, Action IS1104 “The EU in the new complex geography of economic systems: models, tools and policy evaluation” (2015); <https://EconPapers.repec.org/RePEc:cst:wpaper:11>.
20. A. Panchuk, I. Sushko, B. Schenke, V. Avrutin, Bifurcation structures in a bimodal piecewise linear map: Regular dynamics, *Int. J. Bif. Chaos*, **23**(12), 1330040 (2013); doi: 10.1142/S0218127413300401. Q2. [Scopus]
21. A. Panchuk, D. P. Rosin, P. Hövel, E. Schöll, Synchronization of coupled neural oscillators with heterogeneous delays, *Int. J. Bif. Chaos*, **23**(12), 1330039 (2013); doi: 10.1142/S0218127413300395. Q2. [Scopus]
22. A. Panchuk, T. Puu, Industry dynamics, stability of Cournot equilibrium, and renewal of capital, In: *Nonlinear Economic Dynamics*, T. Puu, A. Panchuk, Eds., Nova Science Publishers, pp. 259-276 (2011). [Scopus]
23. A. Panchuk, Three segmented piecewise-linear map, In: Proc. Int. Conf. “Nonlinear Maps and their Applications” (NOMA), Evora, Portugal, September 15–16, pp.3–6 (2011).

24. T. Puu, A. Panchuk, Oligopoly and stability, *Chaos, Solitons & Fractals*, **41**(5), pp. 2505–2516 (2009); doi: 10.1016/j.chaos.2008.09.037. Q1. [Scopus]
25. A. Panchuk, T. Puu, Cournot equilibrium stability in a non-autonomous system modeling the oligopoly market, *Grazer Mathematische Berichte*, **354**, pp. 201–218 (2009).
26. A. Panchuk, T. Puu, Stability in a non-autonomous iterative system: An application to oligopoly, *Comp. Math. Appl.*, **58**(10), pp. 2022–2034 (2009); doi: 10.1016/j.camwa.2009.06.048. Q2. [Scopus]
27. M. A. Dahlem, G. Hiller, A. Panchuk, E. Schöll, Dynamics of delay-coupled excitable neural systems, *Int. J. Bif. Chaos*, **19**(2), pp. 745–753 (2009); doi: 10.1142/S0218127409023111. Q2. [Scopus]
28. A. Panchuk, M. Dahlem, E. Schöll, Regular spiking in asymmetrically delay-coupled FitzHugh-Nagumo systems, <http://arxiv.org/abs/0911.2071> (2009).
29. A. Panchuk, M. Dahlem, E. Schöll, Regular spiking in FitzHugh-Nagumo systems coupled through linear delay, In: Proc. 17th Int. Workshop on Nonlinear Dynamics of Electronic Systems (NDES 2009), pp. 176–179 (2009).
30. A. Panchuk, M. Dahlem, E. Schöll, Modelling coupled neurons: role of the delay terms in producing spiking and bursting, In: Proc. Int. Workshop on Nonlinear Maps and their Applications (NOMA'09), pp. 120–123 (2009).
31. M. A. Dahlem, F. M. Schneider, A. Panchuk, G. Hiller, and E. Schöll, Control of sub-excitable waves in neural networks by nonlocal coupling, In: Proc. Int. Workshop Networks 2007, Aranjuez, 10–11 September 2007, pp. 1–15 (2007).
32. A. Panchuk, Partial synchronization in systems of globally coupled maps, *Nonlin. Osc. (Kiev)*, **Vol. 7**(2), pp.229–240 (2004); (in Ukrainian); http://www.imath.kiev.ua/nosc/admin/private/published_files/205/NOSC205200471999.pdf.
33. Yu. Maistrenko, A. Panchuk, *Clustering zones in the turbulent phase of a system of globally coupled chaotic maps*, *Chaos* **Vol. 13**, No. 3, pp.990–998 (2003); doi: 10.1063/1.1592331. Q1. [Scopus]
34. A. Panchuk, Yu. Maistrenko, and M. Hasler, *Clustering in the turbulent phase*, Proc. of NDES'03, Scuol, Switzerland, 2003, pp.193–196 (2003).
35. A. Panchuk, Yu. Maistrenko, *Stability of periodic clusters in globally coupled maps*, *Nonlin. Osc. (Kiev)*, **Vol. 5**(3), pp.334–345 (2002);
36. A. Panchuk, Yu. Maistrenko, *Asymptotic behaviour of mean-field coupled maps*, Proc. of Int. Conf. EUROATTRACTOR 2001, **Vol. 2**, pp. 256–262 (2003).