

CURRICULUM VITAE

of Sushko Iryna

Name: SUSHKO Iryna Mykhailivna

Born: 15.01.1967, Kyiv region, Ukraine

Citizenship: Ukraine

Academic position: Senior Scientific Researcher, Institute of Mathematics,
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Marital status: Married, two children

Languages: Ukrainian (native), Russian (native), English, Italian (basic)

Education and Scientific Employment

1984-1989	Cybernetics Faculty, Kiev State University Diploma of mathematician (Master's degree)
1989-1992	Postgraduate course Institute of Mathematics, National Academy of Sciences of Ukraine (supervisors: Prof. A. Sharkovsky and Prof. Yu. Maistrenko)
1993	Academic Degree of Candidate of Sciences in Physics and Mathematics (PhD)
1993-2002	Scientific Researcher, Ordinary Differential Equations Dept. Institute of Mathematics, National Academy of Sciences of Ukraine
2002-present	Senior Scientific Researcher Dept. of Differential Equations and Oscillation Theory Institute of Mathematics, National Academy of Sciences of Ukraine
Sep. 2004 - Sep. 2005	Scientific Researcher, University of Urbino, Italy (Marie Curie Fellowship within the 6-th European Community Framework Programme)
Nov. 2009 - Jun. 2010	Visiting Professor at the Kyiv School of Economics (Economics Education and Research Consortium, Inc)

Scientific Interests

- Theory of nonlinear dynamical systems: regular and chaotic attractors,
basins of attraction, bifurcation structure of parameter space, routes to chaos;

- Piecewise smooth dynamical systems: border-collision bifurcation, normal forms, degenerate bifurcations;
- Synchronization of periodic, quasiperiodic and chaotic processes;
- Applications in radioengineering (autooscillating systems), economics (business cycle models, growth models, etc.).

Research Projects, Fellowships, Grants

1. Complex dynamics of two-loops autooscillating systems (1988-1990, in cooperation with Moscow Institute of Radioengineering and Electronics of the USSR Academy of Sciences);
2. Structures emergence in the problems of thermoconductivity and emission (1990-1991, in cooperation with Physics and Engineering Institute of the Uzbek SSR Academy of Sciences);
3. Elaboration of new methods, algorithms and software for nonlinear dynamical systems (1991-1993, grant of the Academy of Sciences of Ukraine);
4. Investigation of mechanisms of bifurcations and chaos in two-dimensional maps (1993-1999, grant of the Academy of Sciences of Ukraine);
5. Cycles and chaotic invariant sets of two-dimensional endomorphisms generated by second order difference equation (1995, grant of the Int. Sci. Foundation);
6. Nonlinear Dynamics and Communications (1996, grant of the Swiss NSF);
7. Complex Dynamics of Duopoly Models (2001, grant of Istituto Nazionale di Alta Matematica Francesco Severi);
8. Bertrand Oligopoly (2001, grant of The Swedish Institute).
9. The fellowship by the Landau Network/Cariplo Foundation (2002, 2003, Universita Cattolica del Sacro Cuore, Milan, Italy).
10. The Marie-Curie International Fellowship within the 6th European Community Framework Programme (Sept. 2004 - Sept. 2005, University of Urbino, Italy).

International Conferences and Workshops

1. International School-Conference on Dynamical Systems (Trieste, Italy, 1991). The title of contribution: "On some family of two-dimensional piecewise linear maps".
2. Czech-Slovak Conference on Differential Equations and Their Applications EQUADIFF 8 (Bratislava, Slovakia, 1993): "Period adding phenomenon on two-dimensional piecewise linear maps".
3. International Workshop on Infinite Dimensional Evolution Processes (Trieste, Italy, 1993): "On some family of two-dimensional piecewise linear family".
4. International School-Conference "Differential Equations: Bifurcation and Chaos" (Crimea, Ukraine, 1994): "Two-dimensional piecewise linear endomorphisms: period adding phenomenon".
5. International Conference "Nonlinear Dynamics of Electronic Systems" NDES (Krakow, Poland, 1994): "Period adding phenomenon in piecewise linear endomorphisms arising from electronic systems".
6. International Conference "Dynamics Days" (Budapest, Hungary, 1994): "Period adding phenomenon in piecewise linear endomorphisms".

7. International Workshop on Dynamical Systems (Moscow, Russia, 1994).
8. International Conference on Nonlinear Dynamics, Chaotic and Complex Systems (Zakopane, Poland, 1995): "Bifurcation phenomena for two-dimensional piecewise linear maps".
9. International School-Conference "Chaos. The Interplay Between Stochastic, Classics and Quanta" (Karpacz, Poland, 1995): "Period adding phenomenon in piecewise linear endomorphisms".
10. 3rd International Specialist Workshop on Nonlinear Dynamics of Electronic Systems (Dublin, Ireland, 1995): "Bifurcation Phenomena in Autooscillation Systems with Delay Leading to Two-dimensional Piecewise linear maps".
11. European Conference on Iteration Theory (Urbino, Italy, 1996): "Chaotic attractors at the transition from invertible to noninvertible maps in two-dimensional piecewise linear family".
12. International Workshop and Seminar "Beyond Quasiperiodicity: Complex Structures and Dynamics" (Dresden, Germany, 1999): "Bifurcation phenomena for two-dimensional piecewise linear maps".
13. Second International Conference on Discrete Chaotic Dynamics in Nature and Society (Odense, Denmark, 2000): "Influence of quasiperiodic forcing on synchronization processes".
14. International Workshop "The Mathematics of Dynamic Economic Models" (Copenhagen, Denmark, 2000): "Two-Dimensional Discrete-Time Dynamical Systems".
15. International Workshop "Dynamic Models in Economics and Finance" (Urbino, Italy, 2000): "An example of irregular growth cycles model".
16. International Conference "Oligopoly and Complex Dynamics: Methods and Models" (Umea, Sweden, 2001): "Complex Dynamics of the Generalized Palander Duopoly Model".
17. International Workshop "Oligopoly Games and Complexity" (Urbino, Italy, 2002): "Duopoly by Palander with discontinuous reaction functions".
18. International Workshop "Dynamic Models in Economics and Finance" (Urbino, Italy, 2002): "Business Cycle: The Hicksian Floor-Roof Model Revisited".
19. Italian Meeting on Game Theory and Application (Urbino, Italy, 2003): "Duopoly with Piecewise Linear Discontinuous Reaction Functions".
20. International Conference on Nonlinear Economic Dynamics (Tokyo, Japan, 2004): "The Hicksian Floor-Roof Model for two Regions Linked by Interregional Trade".
21. International Workshop "Dynamic Models in Economics and Finance" (Urbino, Italy, 2004): "Bistability and Border-Collision Bifurcations for a Family of Piecewise Smooth Unimodal Maps".
22. International Workshop "Bifurcations in Nonsmooth and Hybrid Dynamical Systems" (Milan, Italy, 2004): "Bistability and Border-Collision Bifurcations for a Family of Unimodal Piecewise Smooth Maps".
23. International Workshop "Complexity and Randomness in Economic Dynamical Systems", Bielefeld Graduate School of Economics and Management,

University of Bielefeld, Germany (Mar. 17-19, 2005): "Center-like Bifurcation for 2Dim Piecewise Linear Maps".

24. International Conference "Keynesian Macrodynamics - the Multiplier-Accelerator Model Revisited", University of Umeå, Sweden (June 10-11, 2005): "Hicksian Business Cycle Model with Smooth and Piecewise Linear Investment Function".

25. 2nd International Workshop "Functional Analysis Methods in Economics and Finance", University of Calabria, Cosenza, Italy (July 7-9, 2005): "Border-Collision Bifurcation Curves in an Irregular Growth Cycles Model".

26. International Conference on Nonlinear Economic Dynamics, University of Urbino, Italy (July 28-30, 2005): "Border-collision bifurcation in Duopoly Model with Capacity Limits".

27. European Marie Curie Conference "Putting the Knowledge Based Society into Practice", University of Manchester, UK (April 10-12, 2006): "Dynamical behavior and bifurcations in noninvertible maps of the plane and of the space".

28. European Conference on Iteration Theory, Gargnano, Italy (Sept. 10-16, 2006): "Center Bifurcation for a Two-Dimensional Piecewise Linear Map".

29. International Workshop "Dynamic Models in Economics and Finance", University of Urbino, Italy (Sept. 21-23, 2006).

30. European Conference on Iteration Theory, Yalta, Ukraine (Sept. 7-13, 2008): "On analogue of the center bifurcation at infinity".

31. International Workshop "Dynamic Models in Economics and Finance", University of Urbino, Italy (Sept. 25-27, 2008).

32. International Conference on Nonlinear Economic Dynamics, Yonkoping, Sweden (May 31 - June 2, 2009): "Center Bifurcation of a point on the Poincaré Equator".

33. Ukrainian Mathematical Congress, Kiev, Ukraine (Aug. 27-29, 2009): "Degenerate Bifurcations and Border Collision in One- and Two-dimensional Piecewise Smooth Maps".

34. International Workshop on Nonlinear Maps and their Applications, Urbino, Italy (Sept. 10-11, 2009): "Degenerate bifurcations in one- and two-dimensional piecewise smooth maps".

Invited lector

1. International School on Discrete Dynamical Systems (Urbino, Italy, 2004).

2. Tutorial Workshop "Nonlinear Dynamics in Economic Modelling", University of Trento, CIFREM, Italy (March 12-13, 2009).

3. Tutorial Workshop "Discrete Dynamical Systems and Applications" (Urbino, June 30 - July 3, 2010).

Invited researcher, seminar talks

1. National Institute of Applied Sciences (Toulouse, France, Dec. 1993).

2. Department of Economics, University of Urbino (Italy, Sept. 1994, Mar. 1997, Feb.-Mar. 2001, Mar. 2008, Sept.-Oct. 2009).

3. Technical University of Denmark (Lyngby, Denmark, Dec. 1996, Aug. 1999).

4. Swiss Federal Institute of Technology (Lausanne, Switzerland, Feb. 1997).
5. Heriot-Watt University of Edinburgh (Edinburgh, UK, May 1999).
6. University of Potsdam (Germany, Mar. 1999, Oct. 1999).
7. University of Odense (Denmark, Apr.-June 2000, Apr.-May 2001, Sept.-Oct. 2001).
8. Isak Newton Institute for Mathematical Sciences, Cambridge University (UK, Oct. 2002).
9. University of Umea (Sweden, June 2001, June 2003, Mar. 2008).
10. Università Cattolica del Sacro Cuore (Milan, Italy, Feb.-March, May-June, 2002; Nov.-Dec. 2003; Feb.-March 2004).
11. University of Napoli, Dept. of Mathematics and Statistics (Italy, Sept. 29, 2004).
12. University of Bristol, Dept. of Engineering Mathematics (UK, Feb. 14-21, 2005).
13. University of Genova, Dept. of Math. (Italy, Mar. 14, 2005).
14. University of Bologna, Dept. of Math. (Italy, Apr. 14, 2005).
15. University of Piacenza, Dept. of Economics (Italy, May 6, 2005).
16. University of Calabria, Dept. of Administrative Sciences (Rende, Italy, June 7, 2005, Oct. 19, 2009).
17. Weierstrass Institute for Applied Analysis and Stochastics (Berlin, Germany, Aug. 23-27, 2005, Dec. 4-22, 2006).
18. Instituto Superior Tecnico, Dept. de Matematica (Lisbon, Nov. 2006).

Member of Organizing Committees

1. International School-Workshop on Dynamical Systems and Turbulence (1991, Crimea, Ukraine).
2. International School-Conference "Differential Equations: Bifurcations and Chaos" (1994, Crimea, Ukraine).
3. European Conference on Iteration Theory (Yalta, Crimea, Ukraine, Sep. 7-13, 2008).

Editing

1. T. Puu, I. Sushko. "Oligopoly and Complex Dynamics. Models and Tools", Springer, 2002.
2. G.-I. Bischi, I. Sushko. Special Issue of *Chaos, Solitons and Fractals* "Dynamic Modelling in Economics and Finance" in honour of Professor Carl Chiarella, *Vol. 29, Issue 3*, 2006.
3. T. Puu, I. Sushko. "Business Cycles Dynamics. Models and Tools", Springer, 2006.
4. A. Sharkovsky, I. Sushko. Proceedings of ECIT08, *Grazer Mathematische Berichte*, 2009.

Referee for Journals

Physica D, Chaos, Mathematics and Computers in Simulation, International Journal of Bifurcations and Chaos, Journal of Economic Dynamics and Control.

Author of 52 scientific publications.

List of publications

1. V.L.Maistrenko, Yu.L.Maistrenko, I.A.Soroka, I.M.Sushko. Dynamics of the nonlinear difference equations with two deviations. Abstracts of the XII Int. Conference on Nonlinear Oscillations. Krakow, 1990, pp. 99-100.
2. V.L.Maistrenko, Yu.L.Maistrenko, I.M.Sushko. On one noninvertible plane map arising in radiophysics. *Preprint of the Institute of Mathematics of the Academy of Science of Ukraine, 1992, 33 p.*
3. Yu.L.Maistrenko, V.L.Maistrenko, I.M.Sushko. Attractors of piecewise linear maps of straight line and plane. *Preprint of the Institute of Mathematics of the Academy of Sciences of Ukraine, 1992, 55 p.*
4. I.M.Sushko. Thesis "Stability and bifurcations of solutions of the families of difference equations with two deviations of argument". *Institute of Mathematics of the Academy of Sciences of Ukraine, 1993, 76 p.*
5. V.L.Maistrenko, Yu.L.Maistrenko, I.M.Sushko. Noninvertible two-dimensional maps arising in radiophysics. *Int. J. "Bifurcation and Chaos", Vol. 4, No. 2 (1994) 383-400.*
6. Yu.L.Maistrenko, V.L.Maistrenko, I.M.Sushko. Period adding phenomenon in piecewise linear endomorphisms arising from electronic systems. *Proc. of the Workshop NDES-94, Krakow, Poland, 1994, 39-44.*
7. I.M.Sushko. Two-dimensional piecewise linear endomorphisms: period adding phenomenon. *Abstracts of School-Conference DEBC-94, Institute of Mathematics, Academy of Sciences of Ukraine, Kiev, 1994, 104.*
8. Yu.L.Maistrenko, V.L.Maistrenko, I.M.Sushko. Bifurcation phenomena in generators with delay lines. *J. "Radioengineering and electronics", Moscow, No. 8-9, 1994, 1367-1380.*
9. Yu.L.Maistrenko, V.L.Maistrenko, I.M.Sushko. Order for the appearance of attractors in piecewise linear systems. *In a book: Chaos and Nonlinear Mechanics, Series B, vol. 7, World Scientific, 1994.*
10. Yu. Maistrenko, I.Sushko. Bifurcation phenomena in autooscillation systems with delay leading to two-dimensional piecewise linear maps. *Proceeding NDES 95, Dublin, 1995.*
11. I.Sushko, Yu.Maistrenko and L.Gardini. Chaotic attractors at the transition from invertible to noninvertible maps in a two-dimensional piecewise linear family. *Abstracts of European Conference on Iteration Theory, September 8-14, 1996, Urbino, Italy.*
12. Ch.Mira, Ch. Rauzy, Yu.L.Maistrenko, & I.M.Sushko. Some properties of a two-dimensional piecewise-linear noninvertible map, *Int. J. Bifurcation and Chaos, Vol. 6, No. 12A (1996), 2299-2319.*
13. Yu.L. Maistrenko and I.M. Sushko. Bifurcation phenomena for two-dimensional piecewise linear maps, *J. Tech. Phys., Vol. 37, No. 3-4 (1996), 371-378.*
14. Yu. Maistrenko, I.Sushko and L.Gardini. About Two Mechanisms of Reunion of Chaotic Attractors, *Chaos, Solitons & Fractals, Vol.9, No.8, (1998), 1373-1390.*

15. I.Sushko, Y.Maistrenko and L.Gardini. On chaotic attractors at the transition from homeomorphism to endomorphism in a family of two-dimensional maps. *Grazer Math. Ber.*, Nr. 339 (1999), 335-346.
16. I.Sushko, Yu.Maistrenko and U.Feudel. Influence of quasiperiodic forcing on synchronization processes. *Abstracts of Second Int. Conf. on Discrete Chaotic Dynamics in Nature and Society*, May 9-13, 2000, Odense, Denmark.
17. I.Sushko. On an example of irregular growth cycles model. *Abstracts of Int. Workshop on Dynamic Models in Economics and Finance*, Sept. 28-30, 2000, Urbino, Italy.
18. Tõnu Puu, Laura Gardini and Irina Sushko. Cournot Duopoly with Kinked Linear Demand According to Palander and Wald. In: *Oligopoly and Complex Dynamics: Models and Tools*, T. Puu and I. Sushko (Ed.s), Springer, 2002.
19. Irina Sushko, Laura Gardini and Tõnu Puu. Duopoly with Piecewise Linear Discontinuous Reaction Functions. In: *Oligopoly and Complex Dynamics: Models and Tools*, T. Puu and I. Sushko (Ed.s), Springer, 2002.
20. I.Sushko, Tõnu Puu and Laura Gardini. Business Cycles: The Hicksian Floor-Roof Model Revisited. *Abstracts of Second Int. Workshop on Dynamic Models in Economics and Finance*, Sept 26-28, 2002, Urbino, Italy.
21. Eireen Neumann, Irina Sushko, Yuri Maistrenko, Ulrike Feudel. Synchronization and desynchronization under the influence of quasiperiodic forcing. *Physical Review E* 67, 026202, 2003.
22. Gustav Kristensen, Sergiy Yanchuk and Irina Sushko. Dynamical Approach to Complex Regional Economic Growth based on Keynesian Model for China. *Chaos, Solitons & Fractals*, Vol.18, No.5 (2003), 937-952.
23. Irina Sushko, Tõnu Puu and Laura Gardini. The Hicksian Floor-Roof Model for two Regions Linked by Interregional Trade. *Chaos, Solitons & Fractals*, Vol.18, No.3 (2003), 593-612.
24. M.Gallegati, L.Gardini, T.Puu and I.Sushko. Hicks' Trade Cycle Revisited: Cycles and Bifurcations, *Mathematics and Computers in Simulation*, 63 (2003). 505-527.
25. Irina Sushko, Laura Gardini and Tõnu Puu. Duopoly with Piecewise Linear Discontinuous Reaction Functions. *Abstracts of Italian Meeting on Game Theory and Application (XV IMGTA)*, July 9-12, 2003, Urbino, Italy.
26. Tõnu Puu, Irina Sushko. A Business Cycle Model with Cubic Nonlinearity, *Chaos, Solitons & Fractals*, Vol. 19, (2004), 597-612.
27. Irina Sushko, Laura Gardini and Tõnu Puu. Tongues of Periodicity in a Family of Two-dimensional Discontinuous Maps of Real Möbius Type, *Chaos, Solitons & Fractals* 21 (2004), 403-412.
28. Gustav Kristensen and Irina Sushko. Complex Market Dynamics under Box-Cox Monopoly, *Chaos, Solitons & Fractals* 21 (2004), 591-602.
29. Tõnu Puu, Laura Gardini and Irina Sushko. A Hicksian Multiplier-Accelerator Model with Floor Determined by Capital Stock, *Journal of Economic Behaviour and Organization*, Vol. 56 (2005), 331-348.
30. Irina Sushko, Anna Agliari and Laura Gardini. Bistability and Border-Collision Bifurcations for a Family of Unimodal Piecewise Smooth Maps. *Ab-*

stracts of Third Int. Workshop on Dynamic Models in Economics and Finance, Sept 16-18, 2004, Urbino, Italy.

31. Tõnu Puu, Laura Gardini and Iryna Sushko. On the Change of Periodicities in the Hicksian Multiplier-Accelerator Model with a Consumption Floor. *Abstracts of Third Int. Workshop on Dynamic Models in Economics and Finance*, Sept 16-18, 2004, Urbino, Italy.

32. Iryna Sushko, Anna Agliari and Laura Gardini. Bistability and Border-Collision Bifurcations for a Family of Unimodal Piecewise Smooth Maps. *Discrete and Continuous Dynamical Systems, Series B (2005)*, Vol. 5, N 3, 881-897.

33. Iryna Sushko, Laura Gardini and Gian-Italo Bischi. Border-Collision Bifurcations in a Duopoly Model with Capacity Limits. *Abstracts of Int. Workshop on Nonlinear Economic Dynamics*, July 28-30, 2005, Urbino, Italy.

34. Gian-Italo Bischi and Iryna Sushko. Foreword "Dynamic Modelling in Economics and Finance" in honour of Professor Carl Chiarella, *Chaos, Solitons & Fractals*, Vol. 29, Issue 3 (2006), 515-516.

35. Tõnu Puu, Laura Gardini and Iryna Sushko. On the Change of Periodicities in the Hicksian Multiplier-Accelerator Model with a Consumption Floor. In: *Dynamic Modelling in Economics and Finance in honour of Professor Carl Chiarella* (G.I. Bischi and I. Sushko Ed.s), *Chaos, Solitons & Fractals*, Vol. 29, Issue 3 (2006), 681-696.

36. Iryna Sushko, Anna Agliari and Laura Gardini. Bifurcation Structure of Parameter Plane for a Family of Unimodal Piecewise Smooth Maps: Border-Collision Bifurcation Curves. In: *Dynamic Modelling in Economics and Finance in honour of Professor Carl Chiarella* (G.I. Bischi and I. Sushko Ed.s), *Chaos, Solitons & Fractals*, Vol. 29, Issue 3 (2006), 756-770.

37. Iryna Sushko and Laura Gardini. Center Bifurcation for a Two-Dimensional Piecewise Linear Map. In: *Business Cycles Dynamics. Models and Tools* (T. Puu and I.Sushko Ed.s), Springer, 2006.

38. Laura Gardini, Tõnu Puu and Iryna Sushko. The Hicksian Model with Investment Floor and Income Ceiling. In: *Business Cycles Dynamics. Models and Tools* (T. Puu and I.Sushko Ed.s), Springer, 2006.

39. Laura Gardini, Tõnu Puu and Iryna Sushko. A Goodwin-type Model with a Piecewise Linear Investment Function. In: *Business Cycles Dynamics. Models and Tools* (T. Puu and I.Sushko Ed.s), Springer, 2006.

40. Iryna Sushko, Tõnu Puu and Laura Gardini. Chapter 12. A Goodwin-type Model with Cubic Investment Function. In: *Business Cycles Dynamics. Models and Tools* (T. Puu and I.Sushko Ed.s), Springer, 2006.

41. Laura Gardini, Ahmad Naimzada and Iryna Sushko. Growing Through Chaotic Intervals. *Abstracts of AMASES*, Sept. 2-6, 2007, Lecce, Italy.

42. Iryna Sushko and Laura Gardini. Center Bifurcation for Two-Dimensional Border-Collision Normal Form, *Int. J. Bifurcation and Chaos*, Vol. 18, Issue 4 (2008), 1029-1050.

43. Laura Gardini and Iryna Sushko. On analogue of the center bifurcation at infinity. *Abstracts of European Conference on Iteration Theory*, Sept. 7-13, 2008, Yalta, Ukraine.

44. Laura Gardini, Iryna Sushko and Ahmad Naimzada. Growing Through Chaotic Intervals. *Abstracts of 5th Int. Workshop on Dynamic Models in Economics and Finance*, Sept. 25-27, 2008, Urbino, Italy.
45. Laura Gardini, Iryna Sushko and Ahmad Naimzada. Growing Through Chaotic Intervals. *Journal of Economic Theory* 143 (2008), 541-557.
46. Iryna Sushko, Michael Wegener, Frank Westerhoff, and Georg Zaklan. Endogenous business cycle dynamics within the inventory model of Metzler: Adding an inventory floor. *Nonlinear Dynamics, Psychology and Life Sciences*, Vol. 13, No. 2 (2009), 225-235.
47. I. Sushko, L. Gardini. Degenerate Bifurcations and Border Collision in One- and Two-dimensional Piecewise Smooth Maps. *Abstracts of Ukrainian Mathematical Congress*, Aug. 27-29, 2009, Kiev, Ukraine.
48. Iryna Sushko and Laura Gardini. Degenerate bifurcations in one- and two-dimensional piecewise smooth maps. *Proc. of NOMA 2009*, 1-4.
49. Iryna Sushko, Laura Gardini and Tõnu Puu. Regular and Chaotic Growth in a Hicksian Floor/Ceiling Model. *Journal of Economic Behaviour and Organization*, 2009 (to appear).
50. Laura Gardini and Iryna Sushko. Center Bifurcation of a point on the Poincaré Equator. Proc. of ECIT 2008, *Grazer Math. Ber.* 2009 (to appear).
51. Iryna Sushko and Laura Gardini. Degenerate Bifurcations and Border Collisions in Piecewise Smooth 1D and 2D Maps. *Int. J. Bifurcation and Chaos*, 2010 (to appear).
52. Laura Gardini, Fabio Tramontana and Iryna Sushko. Border Collision Bifurcations in one-dimensional linear-hyperbolic maps, *Mathematics and Computers in Simulation*, 2010 (to appear).