

LEONID BUNIMOVICH

CURRICULUM VITAE

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BUNIMOVICH, LEONID A Regents' Professor,
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EDUCATION:

1967	Bachelor's degree	Moscow University
1969	Master's degree	Moscow University
1973	Ph.D. in "Probability Theory and Mathematical Statistics"	Moscow University
1986	Doctor of Sciences in "Theoretical and Mathematical Physics"	Institute for Theoretical Physics of the Academy of Sciences of UkSSR

POSITIONS HELD:

1972-1977	Junior Scientist	Institute of Psychiatry of the Academy of Medical Sciences of the USSR
1977-1978	Senior Scientist	Research Institute of Paper
1978-1986	Senior Scientist	Institute of Oceanology of the Russian Academy of Sciences
1984	Visiting Researcher	Mathematical Institute of Hungarian Academy of Sci., Budapest
1986	Visiting Researcher	Banach Mathematical Center, Warsaw, Poland

1986-1992	Leading Scientist	Institute of Oceanology of the Russian Academy of Sciences
5-8/88	Director of Researcher	Centre de Physique Theorique, Marseille, France
6/88	Visiting Researcher	Institut des Hautes Etudes Scientifiques
6/88	Visiting Researcher	Universite de Paris VI
2/89	Visiting Researcher	Mathematical Institute, ETH, Zurich
6/89	Visiting Scholar	University of Bielefeld, Germany
11-12/89	Visiting Researcher	Courant Institute, New York University
1/90	Visiting Researcher	Mathematical Center, Rutgers University
6/90	Visiting Researcher	Institute for Scientific Interchanges, Turin, Italy
7/90	Visiting Scholar	Department of Mathematics, University of Rome 1
3-4/91	Visiting Researcher	Mathematical Center, Rutgers University
6/91	Visiting Researcher	Institute of the Statistical Mechanics of Turbulence, Marseille, France
7/91	Visiting Researcher	Institute for Scientific Interchanges, Turin, Italy
1990 – 1991	Professor	Department of Physics, University of Bielefeld, Germany
4-5/94	Visiting Professor	Weizmann Institute of Sciences
6/94	Visiting Professor	University of Modena, Italy
6-7/95	Visiting Professor	Universite de Paris VII
9/95	Visiting Professor	Newton's Institute, Cambridge
5/96	Visiting Researcher	Weizmann Institute of Sciences
6-7/96	Visiting Professor	Universite de Paris VII
6-7/97	Visiting Professor	Forschungsinstitut fuer Mathematik, ETH, Zuerich
6-7/98	Visiting Researcher	University of Rome, Italy

3/99	Visiting Researcher	Centro Int-le Ciencias, Cuernavaca, Mexico
7/99	Visiting Professor	University of Bologna
1997 – present	Adjunct Professor	School of Biology Georgia Institute of Technology
1991 - 1998	Professor	School of Mathematics Georgia Institute of Technology
1996 – 2003	Director	Southeast Applied Analysis Center
1998 - present	Regents' Professor	School of Mathematics Georgia Institute of Technology
2006 -present	Director	Applied & Biological Contemporary Mathematics Program

CURRENT FIELDS OF INTEREST:

Dynamical Systems, Ergodic Theory, Statistical Mechanics, Space-Time Chaos, Intermittency and Coherent Structures in Extended Systems, Geophysical Hydrodynamics, Mathematical Biology, Quantum Chaos, Waves in Nonhomogeneous Media, Lattice Gases, Cellular Automata, Percolation, Limit Theorems for Chaotic Dynamical Systems, Bioinformatics, Operations Research, Logistics, Neuroscience, Dynamical Networks

TEACHING EXPERIENCE:

Spring 2012	Math 3215	Intro. To Probability&Statistics	32 students
Fall 2011	Math 6705	Modeling and Dynamics	12 students
Fall 2010	Math 6705	Modeling and Dynamics	12 students
Spring 2010	Math 3215	Intro. To Probability&Statistics	97 students
Fall 2009	Math 6705	Modeling and Dynamics	6 students
Spring 2009	Math 3215	Intr. To Probability&Statistics	36 students
Fall 2008	Math 6705	Modeling and Dynamics	10 students
Spring 2008	Math 3215	Intr. To Probability&Statistics	34 students
Fall 2007	Math 6705	Modeling and Dynamics	12 students
Spring 2007	Math 3215	Intr. to Probability&Statistics	26 students
Fall 2006	Math 6705	Modeling and Dynamics	10 students
Fall 2006	Math	Ergodic Theory (reading course)	3 students
Spring 2006	Math 3215	Intr. to Probability&Statistics	33 students
Fall 2005	Math 6705	Modeling and Dynamics	12 students
Spring 2005	Math 3215	Intr. to Probability&Statistics	73 students
Fall 2004	Math 2401	Calculus III	119 students
Summer 2004	Math 8859	Intro. to Ergodic Theory (Reading Course)	1 student
Spring 2004	Math 3215	Intro. to Probability&Statistics	37 students
Fall 2003	Math 6705	Modeling and Dynamics	23 students
Spring 2003	Math 4280	Intro. to Information Theory	24 students
Fall 2002	Math 6705	Modeling and Dynamics	10 students
Spring 2002	Math 4280	Intro. to Information Theory	15 students
Fall 2001	Math 6705	Modeling and Dynamics	17 students
Fall 2001	Math 8500	Chaos and PDEs	01 student

Fall 2000	Math 6705	Modeling and Dynamics	07 students
Fall 2000	Math 8859	Dynamical Systems (Reading course)	03 students
Spring 2000	Math 8833	Entropy and Cellular Automata	05 students
Fall 1999	Math 8833A	Modeling and Dynamics	10 students
	Math 8900	Hyperbolic and Nonhyperbolic systems (Readers course)	02 students
Winter 1999	Math 8253	Dynamics and Stochastics	04 students
Fall 1998	Math 4216	Intro. to Statistics	29 students
Winter 1998	Math 4215	Intro. to Probability	36 students
Fall 1997	Math 4215	Intro. to Probability	35 students
	Math 8504	Hyperbolic Dynamics (Reading course)	04 students

PUBLICATIONS:

(a) Appeared:

"Isospectral graph reduction, spectral equivalence and global stability of dynamical networks", (with B.Webb), Nonlinearity, 25 (2012), 212-254.

"Where to place a hole to achieve maximal escape rate", (with A.yurchenko), Israel J. Math. 122 (2011), 229-252.

"The best sink and best source in a Markov chain", (with Yu.Bakhtin), J. Statist-I Physics 144 (2011), 467-478.

"Path length in protein-protein interaction network and biological complexity", (with Ke Xu, I.Bezakova, S.yi), Proteomics 11 (2011), 1857-1867.

"Focusing components of chaotic billiards must be absolutely focusing" (with A.Grigo), Comm. Math. Phys. , v.29 3, (2010), 127-143

"Which hole is leaking the most: a topological approach to study open systems"(with V.Afraimovich), Nonlinearity, v.23, (2010)6 43-6 56 .

"Dynamical networks: continuous time and general discrete time models" (with V.Afraimovich, S.Moreno), Regular&Chaotic Dynamics, v.15, 129 -147.

"Supressing Fermi acceleration in two-dimensional driven billiards" (with E.Leonel), Phys. Rev. E, v.82, (2010))1-9.

"Supressing Fermi acceleration in driven elliptical billiard" (with E.Leonel), Phys. Rev. Letters, v.10 4,(2010)

22410 1-4.

"Track Billiards", (with G.DelMagno), Comm. Math. Phys. 13 (2009) 699-713.

"Ergodic and Mixing Properties of Triangular Map", (with M.Horvat et al.), PhysicaD 238 (2009) 395-415

"Criterium of Absolute Focusing for Focusing Components of Billiards", Regular&Chaotic Dynamics, 13 (2009), 16-23

"Chaotic Billiards", AMS Bulletin, 46 (2009) 683-690

"Semi-focusing Billiards:ergodicity", (with G.Del Magno), Ergodic Th. &Dyn-l Syst. 289 (2008) 1377-1417

"Chaotic and Nonchaotic Mushrooms", Discr.&Cont-s Dyn. Syst. 22 (2008) 63-74

"Relative Volume of KAM-tori and Uniform Distribution, Stickiness and Nonstickiness in Hamiltonian Systems", Nonlinearity 21 (2008) T13-17

"Deterministic Walks in Rigid Enviroments with Aging" (with A.Yurchenko), Discrete&Cont-s Dyn. Syst. 9 (2008) 37-46

"Peeping at Chaos; Nondestructive monitoring of chaotic systems" (with C.Dettmann), Europhys. Letters 80 (2007) 40001

"Dynamical Billiards", Scholarpedia (2007)

"Dynamical Networks: interplay of topology, interactions and local dynamics", Nonlinearity 20 (2007) 1761-71

"Deterministic Walks in Markov Environments" (with A. Yurchenko), Contemp-ry Math. 480 (2007) 57-72

"Semi-Focusing Billiards:Hyperbolicity" (with G.DelMagno), Comm. Math. Phys. 262 (2006) 17-32

"Long Range Action in Networks of Chaotic Elements" (with M.Blank), Nonlinearity 19 (2006) 329-344

"One-particle and few-particle billiards" (with S.Lansel, M.Porter), Chaos 013129 (2006)

"Deterministic Models of the Simplest Chemical Reactions" (with M.Demers), J. Stat-l Phys. 120 (2005) 239-252

"Chaos in Spatially Extended Systems via a Peak Crossing Bifurcation" (with A.Berger), Int. J. Bifurcations&Chaos 15 (2005) 3607-3622

"Coupled Map Lattices: at the age of maturity", Lect. Notes Phys. 671 (2005) 9-32

"Open Circular Billiards and Riemann Hypotheses" (with C.Dettmann), Phys. Rev. Lett. 94 (2005) 100201-100204

"Dynamical Systems and Benford's Law" (with A.Berger, T.Hill), AMS Transactions 357 (2005) 197-219

"Switched Flow Systems:Pseudo-Billiard Dynamics" (with M.Blank), Dynamical Systems:An Int-l J-l 14 (2004) 359-370

"Deterministic Walks in Random Environments", Physica D 187 (2004) 20-29

"Method of Stabilization of a Target Regime in Manufacturing and Logistics", In:"Nonlinear Dynamics of Production Systems" (ed. by G.Radons, R.Neugebauer), Wiley, Weinheim (2004) 25-38

"Complexity of Dynamics as Variability of Predictability" (with R.Stoop, N.Stoop), J. Stat. Phys. 114 (2004) 1127-1137

"Walks in Rigid Environments; Symmetry and Dynamics", Asterisque 286 (2004) 231-248

"Lorentz Gas", In: "Encyclopedia of Nonlinear Science" (ed. by A.Scott), Taylor&Francis, London-NY (2004) 538-540

"Deterministic Walks in Random Environments" (2004), *ibid.* 198-200

"Billiards", (2004), *ibid.* 53-55

"Lorentz Gas Cellular Automata on Graphs" (with D.Kreslavsky), Theor-l Computer Sci. 306 (2003) 195-221

"Kinematics, Equilibrium and Shape in Hamiltonian Systems: The LAB Effect", "Chaos" 13 (2003) 903-912

"Sistemi Dinamici" (with V.Afraimovich, J.Hale), In: Encycl. dell Szienza, vol.IX, LaGrande Scienza, 2003, pp.841-850

"One-dimensional Lorentz Gas with Rotating Scatterers; Exact Solutions" (with M.Khlabystova), J.Stat.Phys. 112 (2003) 1207-1219

"Multicomponent Dynamical Systems: SRB Measures and Phase Transitions" (with M.Blank), "Nonlinearity" 16 (2003) 387-401

"Absolute Focusing and Ergodicity of Billiards" , Regular&Chaotic Dynamics 8 (2003) 15-28

"Walks in Rigid Environments:Continuous Limits" (with M.Khlabystova), J.Stat.Phys. 108 (2002), 905-925.

"Lorentz Lattice Gases and Many-dimensional Turing Machines"(with M.Khlabystova) ,in : "Collision-based Computing" (ed.by A.Adamatzky), Springer, London, 2002, pp.443-467.

"**Some estimates** for 2-dimensional Infinite and Bounded Dilute Random Lorentz Gases" (with C.Boldrighini, A.Pellegrinotti), J.Stat.Phys. **109** (2002), 729-746.

“Mushrooms and Other Billiards with Divided Phase Space”, *Chaos* **11** (2001), 1-7.

“Motion of Particles in Random Media and Many-dimensional Turing Machines”, *Multiple-Valued Logic* **6** (2001), 463-482.

“Localization and Propagation in Random Lattices” (with M. Khlabytova), *J. Stat. Phys.* **104** (2001), 1155-1171.

“Lattice Dynamical Systems”, In: “From Finite to Infinite Dimensional Dynamical Systems (ed. by J.C. Robinson, P.A. Glendinning), Kluwer, London, 2001, 59-83.

“Dynamical Systems and Operations Research: A Basic Model”, *Discr & Cont’s Dynamical Systems* **1** (2001), 209-218.

“Ising-Type and Other Transitions in One-Dimensional Coupled Map Lattices with Sign Symmetry” (with C. Boldrighini, G. Cosimi, S. Frigio, A. Pellegrinotti), *J. Stat. Phys.* **102** (2001), 1271-1284.

“Dispersing, Defocusing and Astigmatism”, *Math. Education* **5** (2001), 106-124 (in Russian).

“Existence of Transport Coefficients”, In: “Lorentz and Hard Spheres Gas”, Springer-Verlag, Berlin, 2001, pp. 145-178.

“Generic Origins of Irregular Spiking in Neocortical Networks”, (with R. Stoop, W.-H. Steeb), *Biol. Cybern.* **83** (2001), 481-489.

“Walks in Rigid Environments,” *Physica A*, **279** (2000), 169-179.

“Noise-driven Neocortical Interactions: A Simple Generation Mechanism for Complex Neuron Spiking”, (with R. Stoop, K. Schindler), *Acta Biotheoretica* **48** (2000), 149-171.

“Hypercubicity and Astigmatism”, *J. Stat. Phys.* **101** (2000), 373-384.

“Neocortical Networks of Pyramidal Neurons,” (with R. Stoop, K. Schindler), *Nonlinearity* **13** (2000), 1515-1529.

“Billiards and other Hyperbolic Systems”, In: *Dynamical Systems, Ergodic Theory and Applications*, Springer, Ser. “Mathem. Physics”, v. **1** (2000), 192-233.

“When Pyramidal Neurons Lock, When They Respond Chaotically and When They Like to Synchronize, (with R. Stoop, K. Schindler), *Neuroscience Res.* **36**, (2000), 81-91.

“Controlling Production Lines,” In: “Handbook of Chaos Control” (ed. by H. Schuster) Wiley – VCH, (1999).

“Dynamics of Two and Three-Worker Production Lines” (with J. Bartholdi, D. Eisenstein), *Operations Res.*, **47**, (1999).

“Inhibitory Connections Enhance Pattern Recurrence in Networks of Neocortical Pyramidal Cells” (with R. Stoop, K. Schindler), *Phys., Lett. A*, **258**, (1999).

“Space-time Chaos in Spatially Continuous Systems”, *Physica D* **131**, (1999).

“Propagation and Self-organization in Lattice Random Media (with P. Groszils, J.P. Boon, E.G.D. Cohen), J. Stat. Phys. **97** (1999), 575-608.

“How High-Dimensional Stadia Look Like” (with J. Rehacek), Commun. Math. Phys., **197** (1998).

“On the Ergodicity of High-dimensional Focusing Billiards” (with J. Rehacek) Ann. Inst. H. Poincare, **68** (1998).

“Localized Solutions in Lattice Systems and Bifurcations Caused by Spatial Interactions” (with D. Turaev), Nonlinearity **11** (1998).

“Nowhere Dispersing 3D Billiards with Nonvanishing Lyapunov Exponents” (with J. Rehacek), Commun. Math. Physics, vol. **189** (1997), 729-757.

On Localization of Vorticity in Lorentz Gases,” J. Stat. Physics, vol. **87** (1997), 449-457.

“Non-equilibrium Statistical Mechanics and Ergodic Theory,” In: “Nonlinear Dynamics, Chaotic and Complex Systems,” (ed by E. Infeld et al.), Cambridge Univ. Press, (1997), 41-51.

“On Stability of Structures and Patterns in Extended Systems” (with V. Franceschini, C. Giberti, C. Vernia), Physica D **103** (1997), 412-418.

“Dynamics of Spatial Averages” (with M. Jiang), “Chaos,” **7** (1997), 21-26.

“Coupled Map Lattices: Some Topological and Ergodic Properties”, Physica D, vol. **103** (1997), 1-17.

“On New Mechanism of Transition to Chaos in Lattice Dynamical Systems” (with S. Venkatagiri), Physics Reports, vol. **290** (1997), 81-100.

“Stable Chaotic Waves Generated by Hyperbolic PDEs” (with A. Babin), Nonlinearity, vol. **9** (1996), 853-875.

“Many-Dimensional Lorentz Cellular Automata and Turing Machines,” Int. J. Bifurcation & Chaos, vol. **6** (1996), 1127-1135.

“Chaotic Focusing Billiards in Higher Dimensions” (with G. Casati, I. Guarneri), Phys. Rev. Let., vol. **77** (1996), 2941-2944.

“Onset of Chaos in Coupled Map Lattices via the peak-crossing Bifurcation” (with S. Venkatagiri), Nonlinearity, vol. **9** (1996), 1281-1298.

“Viscosity for a Periodic Two Disk Fluid: An Existence Proof” (with H. Spohn), Commun. Math. Physics, vol. **176** (1996), 661-680.

“Continued Fractions and Geometrical Optics,” Advances in Math, AMS Publ., vol. **171** (1995), 45-55.

“Ising-type Transitions in Coupled Map Lattices” (with C. Boldrighini, G. Cosimi, S. Frigio, A. Pellegrinotti), J. Stat. Phys., **80** (1995), 1185-1205.

“Coupled Map Lattices: One Step Forward and Two Steps Back,” Physica D, vol. **86** (1995), 248-255.

- “On the Problem of Stability in Lattice Dynamical Systems” (with E. Carlen), *J. Diff. Equations.*, vol. **22** (1995), 213-229.
- “Density of Defects and Spatial Entropy in Extended Systems” (with V.S. Afraimovich), *Physica D*, vol. **8** (1995), 277-288.
- “Variational Principle for Periodic Trajectories of Hyperbolic Billiards,” *Chaos*, vol. **5** (1995), 349-359.
- “Rotators, Periodicity and Absence of Diffusion in Cyclic Cellular Automata” (with S.T. Troubetzkoy), *J. Statistical Physics*, vol. **74** (1994), 1-10.
- “Space-time Chaos, Coherent Structures and Patterns in Extended Systems” in “Chaotic Dynamics and Transport in Fluids and Plasma” (ed. by I. Prigogine), *Amer. Inst. of Physics Publ.*, NY (1994), 3-14.
- “Mechanisms that Produce non-Gaussian Behavior in Lattice Gas Cellular Automata”(with S.T. Troubetzkoy) in “Dynamics of Complex and Irregular Structures” (ed. by P. Blanchard), *World Scientific*, (1994), 86-92.
- “The Simplest Structures in Coupled Map Lattices and their Stability” (with V.S. Afraimovich), *Random and Computational Dynamics*, vol. **1** (1993), 423-444.
- “Statistical Mechanics of Coupled Map Lattices” (with Ya G. Sinai) in “Coupled Map Lattices” (ed. by K. Kaneko), *Wiley*, (1993), 167-187.
- “Observations of the Fractal Properties of the Japan Sea Surface Temperature Patterns” (with A. Ostrovskii, S-I Umatani), *International Journal of Remote Sensing*, vol. **14** (1993), 2185-2201.
- “Topological Properties of Flipping Lorentz Lattice Gases” (with S. Troubetzkoy), *J. Statistical Physics*, vol. **72** (1993), 297-307.
- “Two Mechanisms of Chaos in Hamiltonian Systems and Space-Time Chaos” *Proceedings of the X International Congress on Mathematical Physics*, Springer (1992) 52-69.
- “On Absolutely Focusing Mirrors" in "Ergodic Theory and Related Topics" (ed. by U. Krengel et al), *Springer Lect. Notes Math.*, vol. **1514** (1992), 62-82.
- “Ergodic Systems of N Balls in a Billiard Table” (with C. Liverani, A. Pellegrinotti, Yu, Suhov), *Commun. in Math Physics*, vol. **146** (1992), 357-396.
- “Recurrence Properties of Lorentz Lattice Gas Cellular Automata” (with S. Troubetzkoy), *Journal of Statistical Physics*, vol. **67** (1992), 289-302.
- “Phase Transitions in Lorentz Gases” in “From Phase Transitions to Chaos” (ed. by G. Györgyi et al), *World Scientific* (1992), 501-511.
- “Coupled Trivial Maps”(with R. Livi, G. Martizez, S. Ruffo), *Chaos V. vol.2* (1992), 283-292.
- “Simple and Complex Patterns in Coupled Map Lattices” in “Chaos, Order and Patterns” (ed. by G. Casati, P. Cvitanovic), *London, Pitman*, (1992), 229-236.

“Diffusive Energy Growth in Classical and Quantum Driven Oscillators” (with H.R. Jauslin, J.L. Lebowitz, A. Pellegrinotti, P. Nielaba), *J. of Statistical Physics*, vol. **62**, (1991), 793-817.

“On the Estimation of Parameters of Nonlinear Lattice Models” (with D. Yu. Gupalo, A. G. Ostrovsky, L.I. Piterbarg), *Mathematical Modeling*, vol. **3** (1991), 48-56.

“Coherent Structures and Nonlinear Dynamics” in “Coherent Structures in the Ocean” (ed. by G.I Barenblatt et al.), Moscow, Nauka, (1991), 62-75.

“Robust Quasihomogeneous Configurations in Coupled Map Lattices,” *Complex Systems*, vol. **5**, (1991), 415-423.

“Conditions of Stochasticity of Two-Dimensional Billiards,” *Chaos*, vol. **1**, (1991), 187-193.

“Decay of Correlations and the Central Limit Theorem for Two-Dimensional Billiards” (with Ya. G. Sinai, N.I. Chernov), *Russian Mathem. Surveys*, vol. **46** (1991), 47-106.

“A Theorem on Ergodicity of Two-Dimensional Hyperbolic Billiards,” *Commun. in Math. Phys.*, vol. **130**, (1990), 599-621.

“Space-Time Chaos and Coherent Structures in Coupled Map Lattices” in “New Trends in Nonlinear Dynamics and Pattern Forming Phenomena” (ed. P. Coullet, P. Huerre). Plenum, NY, (1990), 167-169.

“The Emergence of Coherent Structures in Coupled Map Lattices” (with A. Lambert, R. Lima), *J. of Statistical Physics*, vol. **61**, (1990), 253-262.

“Markov Partitions for Two-Dimensional Hyperbolic Billiards” (with Ya. G. Sinai, N.I. Chernov) *Russian Mathem. Surveys*, vol. **45**, (1990), 105-152.

“Space-Time Chaos and Arising of Coherent Structures in the Map Lattices” in “Dynamical Systems and Turbulence” (ed. by A. N. Sharkovsky), Kiev, published by the Mathematical Institute of the Academy of Sciences of the USSR, (1989), 33-43.

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“Many-Dimensional Nowhere Dispersing Billiards with Chaotic Behavior,” *Physica D*, vol. **33**, (1988), 58-64.

“Two Mechanisms of Dynamical Chaos : Permanent Stochasticity and Intermittency” in “Nonlinear and Turbulent Processes in Physics” (ed. by V.G. Bar'yakhtar et al.), Kiev, Naukova Dumka, (1988), 190-193.

“Measure Theory and Ergodic Theory” (with A.M. Vershik), Suppl. to John von Neumann “Selected Papers on Functional Analysis,” Moscow, Nauka (1988), 360-365.

“Space-Time Chaos in Coupled Map Lattices” (with Ya G. Sinai) *Nonlinearity*, vol. **1**, (1988), 491-516.

“On one exactly solvable model of intermittency of hydrophysical and hydrobiological fields” in “Biology of Black Sea”(ed. by M. E. Vinogradov), (1988), 61-69.

“Rigorous Results in Nonequilibrium Statistical Mechanics” in “Ergodic Theory and Related Topics” (ed. by H.

Michel), Teubner-Texte zur Mathematik, Leipzig, vol. **94**, (1987), 41-52.

“Dispersion of Internal Waves in Horizontally Inhomogeneous Ocean” (with V.V. Zhmur), USSR Academy of Sciences, Doklady, vol. **286**, (1986), 197-200.

“On the Stochastic Dynamics of Rays in Resonators,” Radiofizika, vol. **28**, (1985), 1601-1602.

“Dispersion of Internal Waves on the Ensemble of Spots of the Mixed Fluid” (with V.V. Zhmur), Academy of Sciences of the USSR Izvestija, ser. “Physics of the Ocean and Atmosphere”, vol. **24**, (1985), 311-318.

“Dispersion of Internal Waves on Layers of Mixed Fluid in Two-Layer Ocean with the Shift of Velocity” (with V.V. Zhmur), Academy of Sciences of the USSR Izvestija, ser. “Physics of the Ocean and Atmosphere,” vol. **24**, (1985), 1086-1094.

“Statistical Properties of the Lorenz Model,” Radiofizika, vol. **28**, (1985), 1472-1473.

“On the Rate of Decay of Correlations in Dynamical Systems with Chaotic Behavior,” Soviet J. of Theor. and Exper. Physics, vol. **89**, (1985), 842-852.

“On the Diffusion in Dynamical Systems” in “Statistical Physics and Dynamical Systems (Rigorous Results)” (ed. by A. Jaffe et al.), Birkhauser (1985), 46-56.

“On the Kinetic Description of Spatially Nonuniform Wave Fields” in “Nonlinear and Turbulent Processes in Physics” (ed. by R.Z. Sagdeev), vol. **1**, Harwood Ac. Publ. (1984), 873-877.

“Dynamical Systems with Elastic Reflections,” Russian Mathem. Surveys, vol. **39**, (1984), 184-185.

“On Decay of Correlations in Dynamical Systems,” *ibid.* vol. **2**, (1984), 1241-1245.

“On the Relation of the Spatial Intermittency of the Oceanic Internal Waves Field and its Relaxation Times” (with V.I. Shrira), Soviet Academy of Sciences, Doklady, vol. **276**, (1984), 1460-1464.

“On Boltzmann Equation for the Lorentz Gas,” with C. Boldroghini, Ya. G. Sinai, J. of Statistical Physics, vol. **32**, (1983), 477-501.

“Method for the Classification of Records of Fluctuations of Hydrophysical Fields” (with V.S. Belyaev), Oceanology, vol. **17**, (1983), 882-886.

“Statistical Properties of Lorenz Attractors” in “Nonlinear Dynamics and Turbulence” (ed. by G.I. Barenblatt et al.), London, Pitman, (1983), 71-92.

“Reflection of Internal Waves from the Moving Jump of Velocity” (with V.V. Zhmur), Izvestija of the USSR Academy of Sciences, ser. “Physics of the Ocean and Atmosphere” vol. **25**, (1983), 1062-1067.

“The Rate of Correlations Decay in One-Dimensional Ecological Models” (with Ya.G.Sinai), in “Thermodynamics and Kinetics of Biological Processes” (ed. J. Lamprecht, A.I. Zotin), de Gruyter & Co. Berlin-NY, (1982), 297-307.

“Some New Advancements in the Physical Applications of Ergodic Theory” in “Ergodic Theory and Related

Topics” (ed. by H. Michel), Berlin, Akad. Verlag (1982), 27-33.

“Confidence Intervals for the Vertical Gradients of the Velocity of the Flow and for Richardson Number,” *Oceanology*, vol. **21**, (1982), 131-136.

“On the Estimation of the Concentration of the Mariner Sediments,” *Oceanology*, vol. **21**, (1982), 671-674.

“Clinical and Statistical Laws of the Dynamics of Schizophrenia” (with Yu. I. Liberman, N.A. Shmaonova), *Journal of Neurology and Psychiatry*, vol. **48**, (1981), 34-42.

“Some Rigorous Results of Nonequilibrium Statistical Physics,” *Russian Mathem. Surveys*, vol. **36**, (1981), 752-753.

“Statistical Properties of the Lorentz Gas with Periodic Configuration of Scatterers,” *Commun. in Math. Phys.*, vol. **78**, (1981), 479-497

“On the Polyloci Models of Heredity” in “Mathematical Models in Ecology and Genetics” (ed. by Yu. M. Svirezhev), Moscow, Nauka (1981), 114-120.

“Markov Partitions for Dispersed Billiards,” with Ya. G. Sinai, *Commun. in Math. Phys.*, vol. **78**, (1980), 247-280.

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“On Some Asymptotic Properties of Polyloci Systems,” *General Biology Reports* (1979), 126-128.

“On Recalculation of Norms of Parameters of the Quality for the New Test,” *Reliability and Control of the Quality*, vol. **8**, (1979), 216-224.

“On the Ergodic Properties of Nowhere Dispersing Billiards,” *Commun. in Math. Phys.*, vol. **65**, (1979), 295-312.

“On the Problem of Recalculation of Parameters of the Quality in Application to the Standardization” (with S.M. Smolensky), *Trans-s of the 22nd. Conference of the Europe Society for the Control of Quality*, GDR (1978), 463-478.

“On Classification of Diseases with Attacks,” *General Biology Reports* (1978), 106-108.

“The Estimation of the Number of Antitymozitic Antibodies for Schizophrenia” (with S.G. Kushner, T.P. Maznina), *Journal of Neurology and Psychiatry*, vol. **43**, (1978), 697-700.

“On the Structure of Migrations of Populations of Economically Developed Countries” in “Applications of Multivariate Statistical Analysis in Economics” (ed. by S. A. Aivasian et al), Tartu Nauka (1977), 83-87.

“Hierarchical Structure of Human Populations,” General Biology Reports (1977), 190-193.

“On the Valuability of Clinical and Pharmacokinetic Parameters for the Forecasting of the Efficiency of Prophylactics of Affective Psychoses” (with E.I. Minsker et al.), Journal of Neurology and Psychiatry, vol. **42**, (1977), 671-678.

“On the Model of Hierarchical Structure of the Human Populations,” Genetika, vol. **11**, (1975), 134-143.

“On the Genetical Heterogeneity of Human Hereditary Diseases,” Genetika, vol. **11**, (1975), 125-133.

“On Ergodic Properties of Some Billiards,” Functional Analysis and its Applications, vol. **8**, (1974), 254-255.

“The Central Limit Theorem for One Class of Billiards,” Probability Theory and Applications, vol. **29**, (1974), 63-83.

“On Billiards Close to Dispersing Ones,” Mathematical Sbornik, vol. **94**, (1974), 45-67.

“On One Class of Special Flows,” Izvestija Academy of Sciences of the USSR, ser. Mathematics, vol. **37**, (1974), 213-227.

“On the Ergodic Properties of Billiards Close to Dispersing Ones,” Doklady of the Academy of Sciences of the USSR, vol. **211**, (1973), 1024-1027.

“Inclusion of Bernoulli Shifts into Some Special Flows,” Russian Mathem. Surveys, vol. **28**, (1973), 171-172.

“On the Main Theorem of the Theory of Dispersing Billiards,” with Ya.G. Sinai, Mathematical Sbornik, vol. **93**, (1973), 415-431.

“The Central Limit Theorem for Dispersing Billiards,” Doklady of the Academy of Sciences of the USSR, vol. **204**, (1972), 778-781.

“On One Transformation of the Circle,” Mathem. Zametky, vol. **5**, (1970), 205-216.

(c) Unpublished Material:

“Dynamical Systems with Chaotic Behavior,” Dissertation for the Degree of Doctor of Science in Mathematical Physics, Institute of Theoretical Physics of Ac. of Sci. USSR, 1986, 336 p.

“Hydrodynamical Instabilities,” Institute of Oceanology of Ac. Sci. USSR, 1980, 78 p.

“Statistical Properties of Some Flows of Symbolic Dynamics and of Billiards Close to Dispersing Ones,” Candidate Dissertation (Ph.D.), Moscow University, Dept. of Mathematics, 1972, 130 p.

(d) A Few Selected Conference Papers

“Illumination Problem and Absolutely Focusing Mirrors”, Proc. International Symposium of Photo-Optical Engineering Society, (2001), v4446, pp. 185-192.

“Control of Oscillations and Chaos in Canonical Neocortical Microcircuits”, (with R. Stoop, A. Kern), Proc. IEEE Conference on Control of Oscillations and Chaos, (2000) pp. 439-444.

“Towards Close-to-Nature Neural Networks” (with R. Stoop), Nonlinear Dynamics of Electronic Systems (NDES 99), 1999.

“On Local and Global Synchronization in Networks of Neocortical Pyramidal Cells” (with R. Stoop), Proc. ICECS, pp. 29-32, 1999.

“On a Network of Rat Cortical Neurons Transmitting Periodic Messages” (with R. Stoop), Nonlinear Theory and Applications (ed. By T. Saito), World Scientific, (1997), 169-172.

“Space-Time Chaos in Networks of Chaotic Elements and Spatial Intermittency,” *ibid.*, 261-263.

Books:

High-Frequency Internal Gravity Waves. Internal Waves Album (with T. Paka, V. Shrira, V. Vasilenko), IOAS Publ. 1989, 318 p. (in Russian)

Sinai’s Moscow Seminar on Dynamical Systems (edited with B.M. Gurevich, Ya. B. Pesin), Advances in Math. Sci., Ser. 2, v. 171, AMS Publ., 1996, 247p.

RESEARCH GRANTS AND CONTRACTS

Funded:

NSF, "Networks and Synchronization" (with Stevens Inst. Tech-gy and ORNL), \$ 312,000 (GaTech 100K), 2010-11

"Dynamics and Kinetics", NSF, 2009-2011, \$225,000

"Dynamical Networks" (with I.Belykh), GSU, 2009, \$11,000

"UBM: Quantitative Systems Biology" (with M.Borodovsky, J.Choi), NSF, 2005-2008, \$300,000.

"Novel Approaches to Plankton Seasonal Succession" (with C.Klausmeier, E.Litchman), NSF Ecological Biology, 2005-2008, \$349,995

"Chaos and Disorder in Mathematics and Physics" (with D.Dolgopyat), Conference, 2005, \$15,000

“Dynamics and Kinetics”, NSF, 2002-2007, \$375,000.

“Mechanisms of Chaos”, Max Kade Foundation, 2001-2002, \$48,800.

“Dynamics and Kinetics”, NSF, 1999-2002, \$102,437.

"Southeast Applied Analysis Center," NSF, 1996-2001, \$500,000.

(Co-PIs: T. Hill, J. Hale)

"Dynamics and Kinetics of Spatially Extended Systems," NSF, 1996-1999, \$123,000.

"Qualitative Properties in Dynamics and Mathematical Physics," French-USA Cooperation, NSF, 1993-1996, \$17,000. (Co-PIs: J. Hale, J. Geronimo, E. Harrell, and K. Mischaikow)

"Billiards in Classical and Quantum Physics," USA-Israel Binational Science Foundation, 1993-1996, (Co-PI: U. Smilansky) \$61,500.

"Space-Time and Transport Phenomena in Extended Systems," NSF, 1993-1996, \$110,700.

"Lorentz Lattice Gas Cellular Automata," NATO, Collaborative research USA-Germany, 1993, (Co-PI: S. Troubetzkoy) \$12,000.

RECENT INVITED TALKS:

2011

Distinguished Invited Lecturer, Centro Internacional de Ciencias, (CIC) Mexico
"Weak Chaos and Transport", Int-l Workshop, Plenary, Cuernavaca
'Billiards and Related Systems', Plenary opening lecture, Int-l conf., Ubatuba, Brasil
Plenary, "Weak chaos", intl. conf., Marseille
Plenary, 'Quantum Chaos and nonlinear science', intl conf., UNAM
Plenary, "Living nonlinear systems", Intl workshop, UCSD
Plenary lecturer (2 lectures), 'Dynl systems', Intl workshop, Natl Center Fundl science, Taiwan
Plenary "Open systems", intl workshop, MPI Phys. Complex Systems, Dresden
Invited (long talk) 'Hyperbolic systems', Intl workshop, CIRM, Luminy,
Invited (long talk) "Hamiltonian systems", Fields Intt, Toronto
Invited (long talk) "Analysis&math. physics", Pachuka, Mexico
Inst. Math., Acad. Sinica, Taipei, colm
Kaoshung univ., Taiwan, Math Collm
Two lectures in Hsinchu Univ. Taiwan for Math.faculty&postdocs&gradstudents
Univ. Libre Bruxelles, Physics colm
MPI "Nonlinear Dynamics&Synchronization", colm, Goettingen
Univ. of Marburg, Physics colm
Univ Paris 6, "Ergodic theory", seminar
"Buiding Engg Complex Systems", workshop, NSF, Washington

2010

Billiards and Related systems", workshop, keynote lecturer (2 lectures), Bristol Univ. Funds: organizers
"Extended dynamical systems". Warwick Univ., Int-l conf., invited speaker, Funds: organizers
"Complex Dynamical systems and Networks", Int-l conf., Dresden, Germany, invited lecture, Funds: org-zers
"Dynamics: new directions", plenary, Guanajuato, Mexico, Funds: organizers and my NSF grant
"Neurodynamics", worktshop, GSU, invited speaker
Applied Math Colloquium, Oxford, UK, funds: organizers
Physics Colloquium, GSU
Dynamical Systems seminar , Imperial College, London, funds: org-zers

Math Colloquium, Univ. Southern Calif-a, Funds; org-s
Probability Theory seminar, NCSU, Funds: organizers

2009

"Billiards and Related Systems", keynote, conf. San Paulo, Brasil
"Nonlinear Dynamics", workshop, Courant Inst.
"Nonlinear Dynamics and its Appl-s in Science", keynote, symp-m, Goettingen
"Pseudochaos and Weak Chaos", plenary, ICTP, Trieste
"Nonlinear Dynamics", plenary, Rappersville, Switzerland
Math Colloquium, Northwestern Univ.
Physics Coll-m, Northwestern Univ.
Colloquium, MPI for Nonlin. Dy.& Selforg-n, Goettingen
Colloquium, Queen Mary Univ., London

2008

"Dynamics Days USA", plenary
"Nonl. Dyn.&stat. Mech. of Complex Syst.", workshop, keynote, Lavin, Switzerland
"Complex Networks", workshop, keynote ETH, Zurich
"Random Dynamical Systems", conf., Bielefeld, Germany
"Networks in Biology", conf., Cargese, France
"Billiards", conf., Orlean, France
"Neuroscience", workshop, GSU
"Dyn- Systems in Biology", Conf., Courant Inst.
"Dyn. Syst-s &Stat. Mech.", workshop, Schroedinger Inst., Vienna
Colloquium, MPI "Nonlin. Dyn.&Selforganization", Goettingen
Colloquium, Univ. Paris 7, Physics
Theory Seminar, Inst. Inform-n Trans. Probl-s, Moscow, Russia
Colloquium, Wake Forest Univ.

2007

"Dynamics of Extended Systems", Int-l workshop, MSRI
"Statistical Mechanics", Int-l conf., Rutgers
"Chaotic Dynamics of Smooth Systems", Int-l Conf., Lisbon
"Microscopic Origin of Instability and Noise", Int-l Conf., Leipzig
Bernstein Center for Neuroscience, Coll-m, Goettingen
CalTech, Colloquium
Univ. of Maryland, Coll-m
Univ. of Maryland, seminar "Dyn. Systems"
Univ. of Keele, UK, Coll-m
Center for Systems Biology, GaTech

2006

"European Dynamics Days", Plenary, Crete
"Dynamical Systems and Statistical Mechanics", Plenary, Durham, UK
"Dynamical Chaos:From Rigorous Results to Nanotechnology",
Plenary, Singapore
"Nonlinear Dynamics in Finite Lattices", Plenary, Dresden, Germany
"Courant Dynamics Days", Courant Inst., NY
"Dynamical Systems", Intl. conf., Univ. of Maryland

Int-l Moslim University, Colloquium, Kuala Lumpur, Malaysia
MIMOS, Colloquium, Kuala Lumpur
"Dynamical Systems and Nonequilibrium Statistical Mechanics",
Two months program, Plenary lecture, Univ. of Singapore
Institute of Mathematical Sciences, Colloquium, Singapore
Bioinformatics workshop, Clarksville, North GA College
Univ. of Connecticut, Colloquium

2005

"Time at Work", Int-l Workshop, In-i H. Poincare, Paris
"Facing Chaos Through Nonlinear Dynamics", Int-l School/Workshop, lectures, Maribor, Slovenia
"Ergodic Theory & Probability Theory", Int-l Workshop, UNC, Chapel Hill
"Dyn-l Systems & Appl-s", Int-l Workshop, Penn State Univ
Univ. of Chicago, Applied Math. & PDE, Seminar
Univ. of Alabama at Birmingham, Coll-m
MPI for Nonlinear Dynamics & Selforganization,
Goettingen, Germany, Coll-m
Center for Neurodynamics, Goettingen, seminar
Univ. of Potsdam, Stat. Phys. & Nonlinear Dyn-cs
Center, Germany, col-m
Delaware Valley College, PA
Bioinformatics & Comp-l Biology, seminar,
SOB & Bioeng-g, GaTech

2004

"Pacific Dynamics Days", Plenary, Singapore
"Coupled Map Lattices", Plenary Lectures, In-t H. Poincare, Paris
"Dynamical Systems", Int-l Conf., Jerusalem
"Courant Dynamics Days", Int-l Conf., Courant Inst.
ETH-Univ. of Zurich Physics Colloquium, Zurich
Univ. of Bristol, UK, Colloquium
Asia-Pacific Logistics Institute, Colloquium, Singapore
Univ. of Indiana, Math Colloquium
DARPA Workshop "Evolution of Uncertainties", Plenary, Hartford
Bioinformatics Retreat School, Lecture, Clarksville, GA

2003

"Dynamics Days", Plenary, Palma de Mallorca, Spain
"Kolmogorov's Legacy in Physics", Plenary, ICTP, Trieste, Italy
"Nonlinear Dynamics of Production Systems", Keynote speaker, Chemnitz, Germany
Burrett Lectures, Invited lecturer, Univ. of Tennessee, Knoxville
Int-l conf. on Classical & Quantum Chaos, Keynote speaker, Cuernavaca, Mexico
"Statistical Physics", Int-l conf., plenary, Rutgers Univ.
"Dynamical Systems", Int-l workshop, plenary, IPAM, UCLA
Univ. of Potsdam, Physics Coll-m, Germany
Max Planck Inst-te for Stroemungsforschung, Goettingen, Colloquium
Univ. of Darmstadt, MathPhys Colloquium, Darmstadt, Germany
Univ. of CA Irvine, Math Colloquium

2002

“Complex Adaptive Systems”, Plenary, Int-l Conf., IAS, Bremen
 “Evolution of Innovations”, Int-l Conf., Czech Ac. Sci., Prague
 “Microscopic Chaos and Transport in Many-Particle Systems”, Plenary, Dresden
 “Synchronization in Multicomponent Systems”, Int-l Conf., Plenary, Mellas, Ukraine
 “Dif-l Eq-ns & Math. Physics”, Int-l Conf., Birmingham
 “Mathematics of Biological Computations”, Int-l Workshop, Lavin, Switzerland
 Institut of Neuroinformatics, Zurich, Colloquium
 Dynamical Systems Seminar, ETH, Zurich
 Institute for Stochastics, Goettingen Univ., Colloquium
 MPI fuer Stromungsforschung, Colloquium, Goettingen
 Univ. of Potsdam, Statistical Physics and Complex Systems
 Humboldt Univ., Berlin, Statistical Physics Seminar
 Univ. of Texas, Austin, Colloquium, Institute of Nonlinear Science

2001

“Dynamical Systems”, Plenary Speaker, International Conference, Trieste, Italy
 International Symposium of Photo-Optical Engineering Society, San Diego
 “Nonlinear Science”, International Conference, Cocoyoc, Mexico
 “Latin American School in Physics”, Principal Lecturer (5 lectures), Mexico City
 “French Summer School in Geometry”, Principal Lecturer (5 lectures), Montpellier
 “Mathematical Approaches to Biological Computations”, Workshop, (2 lectures), Lavin, Switzerland
 “Nonlinear Dynamics”, Workshop, University of California, San Diego, LaJolla AMS Meeting, Irvine
 Centre de Physique Theorique, University of Luminy, Marseille, Colloquium
 University of Chicago, Seminar on Applied Math & PDE's
 Rockefeller University, New York, Seminar of the Center for Biology & Physics
 University of Santiago, Chile
 Georgia State University, Colloquium
 United Technologies RC, Division of Control and Dynamical Systems
 Morris Brown College, Math Colloquium

2000

“Nonlinear Dynamics of Production Systems,” Plenary, Internl Symposium, Cottbus, Germany
 “Dynamical Systems”, Plenary, International Conference, University of Maryland
 “Quantum Chaos and Complex Systems”, Plenary, International Conference, University of Washington, Seattle
 “Dynamical Systems”, International Conference, Rio de Janeiro
 “Nonlinearity”, Workshop, London
 “New Frontiers in Dynamical Systems”, International Conference, Edinburgh
 “Differential Equations and Dynamical Systems”, International Conference, Kennesaw, USA
 “Statistical Physics”, Conference, Rutgers University
 “Dynamical Systems”, Workshop, Los Angeles
 “Dynamical Systems and Stat. Mech.”, Conference, New Brunswick
 “Southeast Probability Days”, Atlanta
 AMS Meeting, Toronto
 AMS Meeting, Birmingham
 University of Santiago, Chile, Applied Math Colloquium
 Arizona State University, Colloquium
 Arizona State University, Interdisciplinary Seminar

University of Toronto, Colloquium
University of Southern California, Colloquium
University of Southern California, Dynamics Seminar
United Technologies RC, UTRC Colloquium
United Technologies RC, Dynamics and Control Seminar
Emory University, Analysis Seminar
School of Biology, Georgia Tech., Colloquium

1999

“Dynamics and Stochasticity,” Brussels, Plenary Speaker, Internal Conference
“Nonlinear Dynamics and Kinetic Theory,” Vienna, Plenary Speaker, International Conference
“Dynamics Days,” Como, Italy, Plenary Speaker
“Symmetry in Nature,” International Workshop, Centro Internazionale Ciencias Mexico
“Spatio-temporal Dynamical Systems,” International Workshop, Plenary Speaker, Cuernavaca, Mexico
“Dynamical Systems and Statistical Physics”, International Workshop, Schroedinger Inst., Austria
AMS-SMM Meeting, Denton, Texas
Southeast Probability Days, Atlanta
SIAM Conf. on Industrial Math., Raleigh, N.C.
Auburn Univ., Colloquium
Mathematics Inst., SUNY at Stony Brook
Rutgers University, Math. Physics Seminar
Los Alamos National Lab, Center for Nonlinear Studies
Morris Brown College of Atlanta
Oak Ridge National Lab
Univ. of Rome I, Italy
Univ. of Bologna, Italy
Univ. of Modena, Italy
CIC, Cuernavaca, Mexico
UNAM, Cuernavaca, Mexico
Technical Univ., Mexico City, Colloquium
SIAM Conference on Dynamical Systems and Applies., Session “Lattice Systems,” Snowbird
SIAM Conference on Dynamical Systems and Applies., Session “Operations Research,” Snowbird

1998

International Conference “Classical and Quantum Chaos,” Plenary Talk, Toulouse, France
International Conference “Probabilistic and Thermodynamic Aspects of Nonlinear Dynamics,”
Plenary Talk, Brussels
International Conference “Disordered Dynamical Systems,” Plenary Talk, Dresden, Germany
Congress on Statistical Physics, Paris, France
Southeast Geometry Conference, Athens, Georgia
AMS-SIAM Workshop, Courant Institute, NYU, N.Y.
University of Rome I, Math. Phys. Seminar
University of Rome III, Colloquium
University of Camenino, Italy, Colloquium
University of Sussex, Brighton, England, Analysis Seminar
University of Colorado, Boulder, Colloquium
Division of Applied Mathematics, University of Colorado, Seminar

1997

SIAM International Conference on Dynamical Systems and their Applications, Snowbird, Utah, Plenary Lecture
International Conference “Transport Theory and Statistical Mechanics,” Oberwolfach, Germany
International Conference “Nonlinear Theory & Applications,” Honolulu
AMS Meeting, Atlanta, Georgia
Southeast Applied Probability Days
City of Zurich Joint Probability Seminar, ETH, Zurich
Seminar, Mathematics Department, University of Geneva
Colloquium, University of Lausanne
Colloquium, University of Bern
Colloquium, University of Edinburgh
Seminar, Math. Physics, Univ. of Texas at Austin
Colloquium, Los Alamos National Lab, CNLS

1996

International Conference "Statistical Mechanics as the Branch of Probability Theory," Vienna, Plenary Talk
Conference "Multifractals and Dynamical Systems," Courant Institute
Conference "Nonuniform Hyperbolicity and Statistical Mechanics," Rutgers University
AMS Meeting, Chattanooga, TE
AMS Meeting, Columbia, MO
Queen Mary College, London, Colloquium
Weizmann Institute of Sciences, Colloquium
Hebrew University, Jerusalem, Israel
Tel-Aviv University, Israel
Universite de Paris VII, 4 Lectures
Universite Libre de Bruxelles, Colloquium
Universite di Bologna, Colloquium
Emory University, Physics Colloquium
University of Birmingham, Colloquium

1995

Euroconference on Dynamical Systems, Plenary Lecture, Cambridge University, UK
International Conference "Nonlinear Dynamics, Chaotic and Complex Systems", Zakopane, Poland, Plenary Lecture
“Dynamics Days,” Lyon, France, Plenary Lecture
ASI NATO “From Finite to Infinite Dynamical Systems,” Newton's Institute, Cambridge, UK, Plenary Lecturer (3 lectures)
“Lattice Dynamical Systems,” Paris, Plenary Talk
Workshop on Thermodynamic Formalism, Lavin, Switzerland
Southeast Topological Conference, University of Delaware
Conference on Dynamical Systems, Maryland
Conference on Statistical Physics, Rutgers University
SIAM Conf. on Dynamical Systems, 2 talks
Southeast Probability Days
University of Alabama at Birmingham, Colloquium

1994

Symposium on Classical and Quantum Billiards, Plenary Lecture and Invited Talk, Ascona, Switzerland

AMS Meeting, Manhattan, KS
Conference on Statistical Physics, Rutgers University
Conference on Nonlinear Dynamics in Science and Engineering, Atlanta
Université Paris VII
Weizmann Institute of Sciences, Colloquium and Seminar
Hebrew University, Jerusalem
Tel Aviv University, Israel
Centre de Physique Theorique, Marseille, 2 seminars
Duke University, Colloquium
Ohio State, Colloquium and Seminar
Univ. of Illinois at UC, Physics Colloquium
Univ. Of Illinois at UC Center for Complex Systems, Colloquium

1993

International Conference on Chaos, Order and Patterns, Como, Italy
Summer School on Mathematical Physics for Young Scientists, Ravello, Italy
International Conference on Chaos, Woods Hole
Annual Meeting of American Mathematical Society, San Antonio
Institute for Nonlinear Studies, Univ. of San Diego, 2 seminars
Univ. of Virginia, Charlottesville
Institute for Physical Science and Technology, Univ. of Maryland
International Workshop on Space-Time Dynamics, Univ. of Montreal, Canada (3 lectures)
Institute of Physics, Univ. of Muenchen, Germany
Institute for Nonlinear Dynamics, Univ. of Frankfurt am Mein, Germany
Univ. of Bielefeld, Germany
Univ. of Heidelberg, Germany
Univ. of Bologna, Italy
Univ. of Modena, Italy

1992

“Dynamics Days,” Austin
Southeast Conference on Dynamical Systems, Raleigh
International Conference on Differential Equations and Mathematical Physics, Atlanta, GA, (contributing talk)
Northwestern University, Seminar on Dynamical Systems
University of North Carolina, Chapel Hill, 2 seminars
Dixieland Analysis Seminar, Emory University
Weizmann Institute of Sciences, Israel
Hebrew University, Jerusalem, Israel
Tel-Aviv University, Israel
Technion, Haifa, Israel

1991

Plenary Lecture at International Congress on Mathematical Physics, Leipzig
Plenary Lecture at “Dynamics Days,” Berlin
Invited Lecture, Conference “Geometry and Physics,” ZIF, Bielefeld
Colloquium, University of Houston, Center for Nonlinear Studies
Seminar on Analysis, Emory University

Colloquium, Institute for Scientific Interchanges, Turin
Colloquium, Erlangen University, Germany
Mathematical Physics Seminar, Rutgers University
Colloquium, Georgia Institute of Technology, School of Mathematics
Colloquium, Wissenschaftskolleg zu Berlin
Colloquium, Institute of Statistical Mechanics of Turbulence, Marseille

1990

Invited Lecture at the NATO Summer School “Chaos, Order and Patterns,” Como USSR-USA Conference on Chaos, Tarussa
Colloquium, Weizmann Institute of Science, Mathematical Department
Invited Lecture on the Conference “Ergodic Theory and Related Topics,” Guestrow, Germany
Chaos Seminar, Space Research Inst-te Ac. of Sci. USSR, Moscow
Colloquium, Institute for Scientific Interchanges, Turin
Mathematical Physics Seminar, University of Rome 1
Mathematical Department Seminar, University of Modena, Italy
Mathematical Physics Seminar, Rutgers University
Invited Speaker, “Dynamics Days,” Austin
Colloquium, University of Arizona, Department of Mathematics

1989

Plenary Lecture, “Dynamics Days,” Dusseldorf, Germany
Invited Speaker - Conference on Statistical Physics, Rutgers University
Colloquium, Mathematical Institute of ETH, Zurich
Mathematical Physics Seminar, Courant Institute
4Mathematical Physics Seminar, Rutgers University Dynamical Systems Seminar, University of Maryland
Sinergetics Seminar, Moscow University
Moscow Seminar on Geophysical Hydrodynamics
Chaos Seminar, Space Research Institute of Ac. Sci. USSR, Moscow

1988

Invited Lecture at the Winter School “Probabilistic Methods in Physics,” Karpacz, Poland
Invited Speaker, NATO Summer School “New Trends in Nonlinear Dynamics and Pattern Forming Phenomena,” Cargese, France
Invited Speaker - International Conference “Nonlinear and Turbulent Processes in Physics,” Kiev
Colloquium, Institut des Hautes Etudes Scientifiques
Colloquium, University of Paris VI
Colloquium, University d'Orsay
Seminar, Institute of Statistical Mechanics of Turbulence, Marseille, France
3 Lectures in Centre de Physique Theorique, Marseille, France

COMMITTEES - GEORGIA TECH:

2010-	Junior P&T Committee
2008 - 2010	Senior P&T Committee
2007- 2008	Shared Postdocs Committee, Int-ve Biol-I Systems Inst., Chair
2006 -	Seminar on Mathematical Biology&Ecology, Organizer
2009 -	CoS Regents Prof-s Committee

2005	Postdocs Search Committee
2005 - 2007	Salary & Awards Committee
2004- 2006	Junior P&T Committee
2002	GaTech Faculty Research Awards Committee
2002-	PhD in Bioinformatics Search Committee
2002-	PhD in Bioinformatics Coordinating Committee
2002-	Center of Bioinformatics&Comp-I Biology, Exec. Committee
2002- 2003	Faculty Advisory Committee, Chair
2002 - 2004	Hiring Committee
2001 - 2003	Undergraduate Committee
2001 - 2003	Salary & Awards Committee
2001 -	Dean's Bioinformatics Advisory Committee
2001 - 2002	GRA Scholar in Bioinformatics Search Committee
2000-	Center of Nonlinear Sci-s Executive Comm.
2000 -	College of Sciences Steering Committee
2000 - 2002	Chair Prof. Search Committee in ISyE
1998 - 2000	Senior Promotion and Tenure Committee
1998 – 2000	Post-tenure Review Committee
1997	Chair Evaluation Committee
1996 - 1998	CDSNS Advisory Board, Chairman
1996	Senior Tenure and Promotion Committee, Chairman
1995 - 1996	Colloquium Chairman for CDSNS
1994 - 1996	Graduate Committee
1993 - 1995	Senior Tenure and Promotion Committee
1992 - 1995	Organizer and Co-Chair of Interdisciplinary Seminar, "Nonlinear Dynamics in Science and Technology"
1992 - 1993	Colloquium Chairman, Center for Dynamical Systems and Nonlinear Studies

Numerous Ph.D. Committees at the Schools of Mathematics, Physics, Biology, Biomedical Engineering, Industrial & Systems Engineering, Mechanical Engineering, Aerospace Engineering, Electrical Engineering

Numerous Sub-committees for SPTC and JPTC.

PROFESSIONAL AFFILIATIONS:

- American Mathematical Society
- International Association of Mathematical Physics
- Society of Industrial and Applied Mathematics
- Moscow Mathematical Society

SERVICE TO THE MATHEMATICAL COMMUNITY:

2011-2012	'Chaos Focus Issue on Stat-I Mechanics and Billiards', Editor
2011-2012	"Nonlinear Dynamics in Physics and Biology", Org. Committee, Lavin, Svitzerland
2011	"Nonlinear Dynamics of Electronic Systems", Scientific. Comm., Klagenburg, Austria

2010-2011	"Billiards&Related Systems", Brasil, Org& Sci. committee
2009- 2010	Int. Conf. On Nonlinear Dynamics, Guanajuato, Mexico
2008-2009	Int. Conf. on "Chaos", Woods Hole, Scientific Committee
2008	Int. Conf. on Dynamical Networks, Austria, Scient-c Comm.
2007-2008	Int. Workshop on Nonlin. Dyn.&Statmech. of Complex Syst.", Switzerland, Scient-c Comm.
2006- 2007	"Intl. Conf. "Applied Mathematics and Computing", Plovdiv, Bulgaria, Scientific Comm.
2005-2006	"Dynamical Chaos: From Rigorous Results to Applications in Nanosystems", Semester (Int-l conf., School, workshop), Inst. of Math-s, Nat-l U. of Singapore, Org. & Scientific Comm.
2005 -2006	Int. Workshop "Dyn- Syst-s & Appl-s", Univ. of Maryland, Org-g Comm
2004- 2005	Int-l Conf. "Chaos and Disorder in Math-cs and Physics', Bressanone, Italy, Organizing Comm.
2004-2005	Int-l Conf. "Dinamics, Bifurcations and Chaos", Nizhny Novgorod, Russia, Scientific Comm.
2003-2004	Int-l Workshop on Coupled Map Lattices, In-t H.Poincare, Paris, Scientific Comm.
2000	International Conference on Dynamical Systems, Edinburgh, Advisory Committe
1999	Southeast Workshop on Industrial Math., Steering Committee
1999	Dynamics Days 99, Atlanta, Organizing Committee
1999	SIAM Conference on Dynamical Systems, Mini-symposium Organizer
1997	Advisory Committee, International Conference "Gene discovery in Silico," Georgia Tech, Atlanta
1995	Program Committee, Conference on Extended Systems, Paris
1995	Organizer, Mini-symposium, SIAM Conference on Nonlinear Dynamics

Scientific Referee: Comm. Math. Phys., Ergodic Theory & Dyn. System, Integers, Phys. Rev. Lett., Operations Research, Phys.Lett., Europhys. Lett., J. Mathem. Phys., Probability Theory and Related Fields, Russian Math. Surveys, Theor. Mathem. Phys., Function Analysis, J. Statistical Physics, J. Differential Equations, J. Math. Anal. Applications, Nonlinearity, Annals of Physics, Phys. Rev. NSF: Mathematics and Physics, DOE, Canadian Science Foundation, Swiss Science Foundation, NATO, European Science Foundation

CONSULTING:

1999	Bios Group
2001	United Technologies

EDITORIAL BOARDS:

2008 -	Editorial Board of "Stochastics and Dynamics"
1997 - 2009	Editorial Board of "SIAM J. of Applied Mathematics"
1995-	Editorial Board of "Nonlinearity"
2004-	Editorial Board of "Chaos"
2003-	Editorial Board of the series "Frontiers in Mathematics", Birkhauser
2008-	Editorial Board of "Int. J. Of Bifurcations and Chaos"
2010	Editorial Board of 'Chaos& Solitons, Fractals"
2003-	Editorial Board of "Int-l J. of Pure &Applied Mathematics"
2006 -	Editorial Board of Open Mathematics Journal
2002 -	Editorial Board of “Electronic J. of Physical&Math-l Sciences”
1999 – 2006	Editorial Board of “Discrete and Continuous Dynamical Systems”
1995 – 2004	Advisory Board of “Chaos”
1995	Editor, Advances of Soviet Mathematics, AMS publ.
1994 – 1997	Editor-in-Chief of the Journal, “Random and Computational Dynamics”
1992 – 1997	Editorial Board of the “Journal of Statistical Physics”
1989 – 1994	Editorial Board of the Series “Advances in Mathematics for Applied Sciences”
1989 – 1994	Editorial Board of the “Ergodic Theory and Dynamical Systems”

HONORS, AWARDS:

1998	Regents' Professor
1998	Exemplary Senior Faculty Award, Georgia Tech
1999	Fellow, Institute of Physics, UK

1999	Chartered Physicist, United Kingdom
2000	Outstanding Faculty Research Author Award, Georgia Tech
2002	Humboldt Prize
2004	Fellow, Institute of Physics
2011	Distinguished Lecturer, Int-l Centro de Ciencias, Mexico

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