Curriculum Vitae

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Assistant Professor,
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New Jersey Institute of Technology,
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Education

- **Doctor of Philosophy (PhD)**. Interdisciplinary Committee of Applied Mathematics, **TECHNION - Israel Institute of Technology**, Haifa, Israel, 1998.
  Thesis: Phase transition dynamics with memory.
- **Master of Science (MSc) in Applied Mathematics**. Interdisciplinary Committee of Applied Mathematics, **TECHNION - Israel Institute of Technology**, Haifa, Israel, 1994. Thesis: Coagulation equations with cluster-wall interactions.
- **Licenciado en Química** (5 years program). Departamento de Química e Ingenieria Química, **UNS - Universidad Nacional del Sur**, Bahía Blanca, Argentina, 1989. Thesis: evaluation of an AgI electrochemical cell as a I_2(g) sensor.
- **Químico**. Departamento de Química en Ingenieria Química, **UNS - Universidad Nacional del Sur**, Bahía Blanca, Argentina, 1988.

Languages: Spanish (mother tongue). Hebrew and English (languages of instruction). French, Italian and Portuguese (not fluent).

Professional Experience

2006-	**Assistant Professor**, Department of Mathematical Sciences, **New Jersey Institute of Technology**, Newark, NJ, USA.
2004-2006	**Research Assistant Professor**, Center for Biodynamics and Department of Mathematics, **Boston University**, Boston, MA, USA.
2001-2004	**Research Associate and Lecturer**, Center for Biodynamics and Department of Mathematics, **Boston University**, Boston, MA, USA.
2000-2001	**Lecturer**, Department of Mathematics, **Brandeis University**, Waltham, MA, USA.
1999-2001	**Postdoctoral fellow**, Department of Chemistry and Volen Center for Complex Systems, **Brandeis University**, Waltham, MA, USA.
1998-1999	**Postdoctoral Teaching Associate (Lecturer)**, Department of Mathematics, **TECHNION** - Israel Institute of Technology, Haifa, Israel.
1998-1999	**Lecturer (Adjunct)**, School of Mathematical Sciences, **Tel Aviv University**, Israel.
1991-1998	**Teaching Assistant**, Department of Mathematics, **TECHNION** - Israel Institute of Technology, Haifa, Israel.
1990-1991	**Instructor**, Department of Chemistry, **TECHNION** - Israel Institute of Technology, Haifa, Israel.
1989-1990	**Full-Time Teaching Assistant**, Department of Chemistry and Chemical Engineering, **UNS** - Universidad Nacional del Sur, Bahía Blanca Argentina.
1988-1989	**Teaching Assistant**, Department of Mathematics, **UNS** - Universidad Nacional del Sur, Bahía Blanca, Argentina.

Publications

Theses

[1] **Horacio G. Rotstein**, Phase transition dynamics with memory. **TECHNION** - Israel Institute of Technology, 1998.

PhD thesis. Supervisors: Alexander A. Nepomnyashchy and Simon Brandon.

[2] **Horacio G. Rotstein**, Coagulation Equations with Cluster-Wall Interactions, **TECHNION** - Israel Institute of Technology, 1994.

M.Sc. thesis. Supervisors: Amy Novick-Cohen and Rina Tannenbaum.

[3] **Horacio G. Rotstein**, Evaluacion de una Pila de $AgI(s)$ como Sensor de $I_2(g)$, Undergraduate Final Work (Advanced Laboratory of Chemistry), **UNS** - Universidad Nacional del Sur, 1988.

Fifth year Undergraduate Final Work. Supervisor: Julio C. Bazan.

Book Chapters

[1] **Horacio G. Rotstein, Rina Tannenbaum**, Polymer-metal nanocluster composites (2002). Invited contribution to "Advances in Nanophase Materials and Nanotechnology (Vol. Functionalization and Surface Treatment of Nanoparticles) edited by Marie-Isabelle Baraton, American Scientific Publishers.

Peer Reviewed Journals

[1] **Horacio G. Rotstein, Amy Novick-Cohen, Rina Tannenbaum**, Gelation and cluster growth with cluster-wall interactions (1998). *J. Stat. Phys.* **90 (1/2)**:119-143.

[2] **Horacio G. Rotstein, Alexander I. Domoshnitsky, Alexander A. Nepomnyashchy**, Phase transition dynamics with memory (1998). *Funct. Differ. Eqs.(International Conference on Functional Differential Equations)* **5 (3-4)**: 439-451.

[3] **Horacio G. Rotstein, Alexander A. Nepomnyashchy, Amy Novick-Cohen**, Hyperbolic non-conserved phase field equations (1999). *J. Crystal Growth (Proceedings of the ICaCG12)* **198-199**:1262-1266.

[4] **Horacio G. Rotstein, Simon Brandon, Amy Novick-Cohen**, Hyperbolic flow by mean curvature (1999). *J. Crystal Growth (Proceedings of the ICCG12)* **198-199**:1256-1261.

[5] **Horacio G. Rotstein, Alexander A. Nepomnyashchy**, Dynamics of kinks in two dimensional hyperbolic models (2000). *Physica D* **136**: 245-265.

[6] **Boris Malomed, Horacio G. Rotstein**, A quasicrystallic domain wall in nonlinear dissipative systems (2000). *Physica Scripta* **62**: 164-168.

[7] **Horacio G. Rotstein, Alexander I. Domoshnitsky, Alexander A. Nepomnyashchy**, Front motion for phase transitions in systems with memory (2000). *Physica D* **146**: 137-149.

[8] **Boris Malomed, Horacio G. Rotstein**, Ramped-induced states in the parametrically driven Ginzburg-Landau model (2001). *Phys. Lett. A* **283**: 327-334.

[9] **Horacio G. Rotstein, Igor Mitkov, Anatol M. Zhabotinsky, Irving R. Epstein**, Dynamics of Kinks in One- and Two- Dimensional Hyperbolic Models with Quasi-discrete Nonlinearities (2001). *Phys. Rev. E.* **63**:066613.

[10] **Maurizio Graselli, Horacio G. Rotstein**, Hyperbolic phase-field dynamics with memory (2001). *J. Math. Anal. Appl.* **261**: 205-230.

[11] **Horacio G. Rotstein, Simon Brandon, Amy Novick-Cohen, Alexander Nepomnyashchy**, Phase Field Equations with Memory: the Hyperbolic Case (2001). *SIAM J. Appl. Math.* **62**: 264-282.

[12] **Mariela Sola, Horacio G. Rotstein, Julio C. Bazan**, The $Ag/AgI/Graphite$ solid cell as iodine sensor: speed of response and use of Cs-doped AgI as electrolyte (2002). *J. Solid State Electrochem. (JOSSEC)* **6**:279-283.

[13] **Horacio G. Rotstein, Anatol M. Zhabotinsky, Irving R. Epstein**, Dynamics of one- and two- dimensional kinks in bistable reaction diffusion equations with quasi-discrete sources of reaction. *Chaos* **11**:833-842, 2001.

[14] **Horacio G. Rotstein, Rina Tannenbaum** Cluster coagulation and growth limited by surface interactions with polymers (2002). *J. Phys. Chem. B* **106**: 146-151.

[15] **Horacio G. Rotstein, Nancy Kopell, Anatol M. Zhabotinsky, Irving R. Epstein**, A canard mechanism for localization in systems of globally coupled oscillators (2003). *SIAM J. Appl. Math.* **63**:1998-2019.

[16] **Vicenç Méndez, Joaquim Fort, Horacio G. Rotstein, Sergei Fedotov**, Speed of reaction-diffusion fronts in spatially heterogeneous media (2003). *Phys.Rev. E.* **68**:041105.

[17] **Horacio G. Rotstein, Nancy Kopell, Anatol M. Zhabotinsky, Irving R. Epstein**, Canard phenomenon and localization of oscillations in the Belousov-Zhabotinsky reaction with global feedback (2003). *J. Chem. Phys.* **119**:8824-8832.

[18] **Horacio G. Rotstein, Rina Tannenbaum**, Distribution patterns due to diffusion in a coagulation-fragmentation process with cluster-wall interactions (2004). *Chem. Eng. Comm.* **191 (9)**:1234-1257.

[19] **Horacio G. Rotstein, Dmitri Pervouchine, Martin J. Gillies, Corey D. Acker, John A. White, Eberhardt H. Buhl, Miles A. Whittington, Nancy Kopell** Slow and fast inhibition and an h-current interact to create a theta rhythm in a model of CA1 interneuron networks (2005). *J. Neurophysiol.* **94**:1509-1518.

[20] **Tengis Gloveli, Tamar Dugladze, Horacio G. Rotstein, Roger D. Traub, Hannah Monyer, Uwe Heinemann, Miles A. Whittington, Nancy Kopell**. Orthogonal arrangement of rhythm generating microcircuits in the hippocampus (2005). *Proc. Nat. Acad. Science. U S A.* **102**:13295-13300.

[21] **Robert Clewley, Horacio G. Rotstein, Nancy Kopell**. A computational tool for the reduction of nonlinear ODE systems possessing multiple scales (2005). *SIAM Journal of Multiscale modelling and simulations* **4**:732-759.

[22] **Horacio G. Rotstein, Rachel Kuske.**. Localized and asynchronous patterns via canards in coupled calcium oscillators (2006). *Physica D* **215**:46-61.

[23] **Dmitri D. Pervouchine, Theoden I. Netoff, Horacio G. Rotstein, John A. White, Mark O. Cunningham, Miles A. Whittington, Nancy Kopell.** Low-dimensional maps encoding dynamics in the entorhinal cortex and hippocampus (2006). *Neural Computation* **18**: 2617-2650.

[24] **Horacio G. Rotstein, Anatol A. Zhabotinsky, Irving R. Epstein.**, Localized structures in a nonlinear wave equation: Propagation failure of one-dimensional and quasi-two-dimensional kinks (2006). *Phys. Rev. E* **74**: 016612.

[25] **Horacio G. Rotstein, Tim Oppermann, John A. White, Nancy Kopell.** The dynamic structure underlying subthreshold oscillatory activity and the onset of spikes in a model of medial entorhinal cortex stellate cells (2006). *J. Comp. Neurosci.* **21**: 271-292.

[26] **Nancy Kopell, Dmitri Pervouchine, Horacio G. Rotstein, Teoden Netoff, Miles Whittington, Tengis Gloveli.** Multiple rhythms and switches in the nervous system (2006). *Proceedings of the Second International Symposium on the Frontier of Applied Mathematics, in honor of Prof. C.C. Lin*.

[27] **Adriano B. L. Tort, Horacio G. Rotstein, Tamar Dugladze, Tengis Gloveli, Nancy Kopell** Formation of gamma coherent cell assemblies by oriens lacunosum-moleculare interneurons in the hippocampus: a modeling study (2007). *Proc. Nat. Acad. Science. U S A.* **104**:13490-13495.

[28] **Horacio G. Rotstein, Farzan Nadim** Neurons and neural networks: Computational models (2007). In: Encyclopedia of Life Sciences. John Wiley & Sons, Ltd: Chichester http://www.els.net/ [DOI: 10.1002/9780470015902.a0000089.pub2]

[29] **Morten Brøns, Tasso J. Kaper, Horacio G. Rotstein** Introduction to focus issue: Mixed mode oscillations: Experiment, Computation, and analysis (2008). *Chaos* **18**:015101.

[30] **Martin Krupa, Nikola, Popović, Nancy Kopell, Horacio G. Rotstein** Mixed-mode oscillations in a three time-scale model for the dopaminergic neuron (2008). *Chaos* **18**:015106.

[31] **Horacio G. Rotstein, Martin Wechselberger.** Rhythmic activity in the medial entorhinal cortex: dynamical systems and biophysical modeling (2008). *Actas de la Academia Nacional de Ciencias, Córdoba - Argentina* **14**:23-37

[32] **Horacio G. Rotstein, Martin Wechselberger, Nancy Kopell.** Canard induced mixed-mode oscillations in a medial entorhinal cortex layer II stellate cell model (2008). SIAM J. Appl. Dyn. Sys. (SIADS), 7:1582-1611

Submitted to Journals

[1] **Jozsi Jalics, Martin Krupa, Horacio G. Rotstein** Mixed-mode oscillations in a three time scale system of ODEs motivated by a neural model.

[2] **Yassine Boubendir, Vicenç Méndez, Horacio G. Rotstein.** Dynamics of one- and two-dimensional fronts in a bistable equation with delayed global coupling: localization and control

In Preparation

[1] **Tilman Kispersky, John A White, Horacio G. Rotstein** The transition from theta to hyper-excitable activity in a medial entorhinal cortex layer II stellate cell model.

Teaching Material

[1] **Tipheret Saadon, Horacio G. Rotstein**, Exercise notes in partial differential equations. Exercises and solutions for the course partial differential equations. **TECHNION** - *Israel Institute of Technology.*

Research Grants

- **National Science Foundation (NSF) Grant, DMS-0817241**. Principal Investigator, "Rhythmic oscillations in the entorhino-hippocampal system: biophysics and dynamics". Mathematical Biology Program, Division of Mathematical Sciences (DMS) and Division of Integrative Organismal Systems (IOS), 07/01/08 to 06/30/10.

Editorial Activity

[1] Chaos (An Interdisciplinary Journal of Nonlinear Science). Focus Issue on Mixed-Mode Oscillations (2007). Joint work with Tasso Kaper and Mörten Brons.

Teaching

- **Elements of Algebra**, **Analytical Geometry**, **Mathematical Analysis**. Served as a **Undergraduate Student Teaching Assistant** at the Department of Mathematics, **UNS** - Universidad Nacional del Sur, Bahía Blanca, Argentina. 1988-1989.
- **Physical Chemistry**. Served as a **Teaching Assistant** at the Department of Chemistry and Chemical Engineering, **UNS** - Universidad Nacional del Sur, Bahía Blanca, Argentina. 1989-1990.
- **Chemistry**. Served as a **Instructor** at the Department of Chemistry, **TECHNION**, Israel Institute of Technology, Haifa, Israel. 1990-91.

- **Differential Equations**, **Ordinary Differential Equations**, **Partial Differential Equations**, **Linear Algebra**, **Fourier Series and Integral Transforms**, **Differential and Integral Calculus**. Served as a **Teaching Assistant** at the Department of Mathematics, **TECHNION**, Israel Institute of Technology, Haifa, Israel. 1991-1998.

- **Ordinary Differential Equations**, **Differential and Integral Calculus** and **Topics in Mathematics for Students of Medicine II**. Served as a **Lecturer** at the Department of Mathematics, **TECHNION**, Israel Institute of Technology, Haifa, Israel. 1998-1999.

- **Harmonic Analysis** (for engineering students). Served as a **Lecturer** at the School of Mathematical Sciences, **Tel Aviv University**, Israel. 1998-1999.

- **Introduction to Applied Mathematics** (**Graduate course**). Served as **Invited Lecturer** at the Department of Mathematics, **UNS** - Universidad Nacional del Sur, Bahía Blanca, Argentina. 1999

- **Applied Linear Algebra**, **Techniques of Calculus**. Served as a **Lecturer** at the Department of Mathematics, **Brandeis University**, Waltham, MA, USA. 2000-2001.

- **Canard Phenomena in Oscillatory Systems and Some Applications (Special Seminar)**. Served as coordinator, overseer and lecturer. Center for Biodynamics, **Boston University**, Boston, MA, USA. 2001-2002.

- **Pattern Formation in Chemistry and Bioloby (Special Seminar)** Served as coordinator, overseer and lecturer. Center for Biodynamics, **Boston University**, Boston, MA, USA. 2001-2002.

- **Stochastic Differential Equations and Applications (Cross-disciplinary Special Seminar)**. Served as coordinator and overseer. Center for Biodynamics, **Boston University**, Boston, MA, USA. 2002.

- **Discrete Math 2**, **(Graph theory)**. Served as a **Lecturer** at the Department of Mathematics, **Boston University**, Boston, MA, USA. 2002-2003

- **fMRI (Cross-disciplinary Special Seminar on functional magnetic resonance imaging)** Served as coordinator and overseer. Center for Biodynamics, **Boston University**, Boston, MA, USA. 2003

- **Multivariate Calculus**. Served as a **Lecturer** at the Department of Mathematics, **Boston University**, Boston, MA, USA. 2004

- **Canard Phenomena in Oscillatory Systems and Some Applications (Special Seminar)**. Served as lecturer. Center for Biodynamics, **Boston University**, Boston, MA, USA. 2005.

- **Topics in Biomathematics** (A dynamical systems approach to the study of chemical, biochemical and neural processes) (**Graduate course**). Served as **Invited Lecturer** at the Department of Mathematics, **UNS** - Universidad Nacional del Sur, Bahía Blanca, Argentina. 2006.

- **Differential Equations, Calculus I, Calculus II, Calculus III**. Served as **Lecturer** at the Department of Mathematical Sciences, **NJIT**, New Jersey Institute of Technology, Newark, NJ, USA. 2006-2008.

- **Quantitative Neuroscience Core Course** (Graduate). Served as **Lecturer**, Quantitative Neuroscience joint program New Jersey Institute of Technology / Rutgers University / University of Medicine and Dentistry of New Jersey, 2007-2008.

- **Analytical and Computational Neuroscience** (Graduate). Served as **Lecturer** at the Department of Mathematical Sciences, **NJIT**, New Jersey Institute of Technology, Newark, NJ, USA.

Mentoring

- Kim, Dongwook. **PhD student**. Department of Mathematical Sciences, New Jersey Institute of Technology.

- Wu, Hui. **PhD student**. Department of Mathematical Sciences, New Jersey Institute of Technology.

- Federico Contiggiani. **PhD student**. Universidad Nacional del Sur, Bahía Blanca, Buenos Aires, Argentina.

- Tim Oppermann. **PhD thesis: Rhythmic activity in medial entorhinal cortex stellate cells: The underlying dynamical structure and its analysis.** (Official PhD student of Prof. Andreas Herz at the Humboldt University zu Berlin.)

- Malena Español. **Undergraduate thesis: Dynamical study of oscillatory chemical reactions: control using periodic external forcing.** (Official student of Prof. Gabriel Acosta at the Universidad de Buenos Aires.)

International Conferences

Organization

[1] **SIAM Conference on Applications of Dynamical Systems, May 27 - 31, 2003, Snowbird, UT, USA**. Organization of the Minisymposium on **Localized and Synchronized Patterns Via Local and Nonlocal Interactions, parts I and II**. Joint work with Rachel Kuske.

[2] **SIAM Conference on the Life Sciences, July 10 - 14, 2004, Portland, OR, USA**. Organization of the Minisymposium on **Canards in the Life Sciences I: Oscillation Patterns via a Canard Phenomenon**. Joint work with Martin Wechselberger.

[3] **SIAM Conference on the Life Sciences, July 10 - 14, 2004, Portland, OR, USA** Organization of the Minisymposium on **Canards in the Life Sciences II: Neuronal Patterns and Dynamics**. Joint work with Martin Wechselberger.

[4] **SIAM Conference on Applications of Dynamical Systems, May 22-26, 2005, Snowbird, UT, USA**. Organization of the Minisymposium on **The Canard Phenomenon: Mechanisms in Chemical, Biochemical and Biological Systems, parts I and II**. Joint work with Martin Wechselberger.

[5] **Computational Neuroscience Meeting, Jul 16-20, 2006, Edinburgh, UK.** Organization of the Workshop on **Phase Response Curves: Where Theory and Experiments Intersect.** Joint work with Theoden Netoff.

[6] **NEUROMATH 06 - Conference on Mathematical Neuroscience** (a satellite activity of the International Congress of Mathematicians 2006), **Sep 1-4, 2006, Sant Juliá de Loriá, Andorra.** Member of the Scientific Committee.

[7] **SIAM Conference on Applications of Dynamical Systems, May 28 - Jun 1, 2007, Snowbird, UT, USA**. Organization of the Minisymposium on **Mixed-Mode Oscillations: Dynamics and Mechanistics, parts I and II**. Joint work with Martin Wechselberger and Nicola Popović.

[8] **SIAM Conference on Applications of Dynamical Systems, May 28 - Jun 1, 2007, Snowbird, UT, USA**. Organization of the Minisymposium on **Rhythms in Neural Dynamics, parts I and II**. Joint work with Jozsi Jalics and Stefanos Folias.

Participation

[1] **I International Conference on Functional Differential Equations, Israel, June 29 - July 2, 1998**, Phase field equations with memory. Joint work with Alexander Domoshnitsky and Alexander Nepomnyashchy.

[2] **12th International Congress of Crystal Growth - Workshop on Phase Field Models, Jerusalem, July 1998**. Hyperbolic non-conserved phase field equations. Joint work with Alexander Nepomnyashchy and Amy Novick-Cohen.

[3] **12th International Congress of Crystal Growth, - Workshop on Phase Field Models Jerusalem, July 1998**. Hyperbolic flow by mean curvature. Joint work with Simon Brandon and Amy Novick-Cohen.

[4] **Nonlinear Partial Differential Equations and Applications: Interfaces in Continuous Media, Lisboa, March 1-5, 1999**. Front motion for phase transitions in systems with memory (invited speaker), Joint work with Alexander I. Domoshnitsky and Alexander A. Nepomnyashchy.

[5] **III International Conference on Complex Systems, Nashua, NH, USA, May 21-26, 2000**. Distribution patterns due to diffusion in a coagulation fragmentation process with cluster-wall interactions. Joint work with Rina Tannenbaum.

[6] **International Workshop on Dissipative Solitons, Nonlinear Excitations (lattices) and High-T Super Conductivity, Instituto Pluridisciplinar, Universidad Complutense de Madrid, Madrid, Spain June 23-26, 2000**. Bistable reaction diffusion equations with quasi-discrete sources of reaction. Joint work with Anatol Zhabotinski and Irving Epstein.

[7] **Conference on Differential Equations and Dynamical Systems (in honor of Waldyr Oliva), Lisboa, Portugal, June 26-30, 2000**. Bistable reaction diffusion equations with quasi-discrete sources of reaction. Joint work with Anatol Zhabotinski and Irving Epstein.

[8] **Symposium on the Liquid Phase Synthesis of Nanoparticles, AIChE Fall 2000 National Meeting, November 12-16, 2000, San Francisco, California** . Poymer-Induced Metal Nanoparticle Aggregation. Joint work with Rina Tannenbaum and Erika Heitman.

[9] **Internation Conference on Emergence in Chemical Systems, Jun 20-22, 2002, Anchorage, Alaska, USA**. A Canard Mechanism of Oscillations in Chemical Systems. Joint work with Nancy Kopell, Anatol M. Zhabotinsky and Irving R. Epstein.

[10] **Gordon Conference on Oscillations and Dynamical Instabilities in Chemical Systems, July 28 - August 2, 2002, Oxford, UK**. A Canard Mechanism of Localization of Oscillations in Chemical Systems. Joint work with Nancy Kopell, Anatol M. Zhabotinsky and Irving R. Epstein.

[11] **2002 Annual Meeting of the Society for Neuroscience (SFN), November 2 - 7, 2002, Orlando, FL, USA**. A Model of an inhibition-based atropine-resistant theta frequency oscillation in CA1 in vitro. Joint work with Martin Gillies, Miles A. Whittington, Eberhardt H. Buhl and Nancy Kopell.

[12] **SIAM Conference on Applications of Dynamical Systems, May 27 - 31, 2003, Snowbird, UT, USA**. Slow and fast inhibition interact to create a theta rhythm in CA1. Joint work with Martin Gillies, Miles A. Whittington, Eberhardt H. Buhl, Corey D. Acker, John A. White and Nancy Kopell.

[13] **SIAM Conference on Applications of Dynamical Systems, May 27 - 31, 2003, Snowbird, UT, USA**. Localization of oscillations in a mathematical model of the BZ reaction. joint work with Nancy Kopell, Anatol M. Zhabotinsky and Irving R. Epstein.

[14] **Computational Neuroscience, Jul 5 - 9, 2003, Alicante, Spain**, A model of an inhibition-based atropine-resistant theta frequency oscillation in CA1 in vitro. Joint work with Martin Gillies, Corey D. Acker, John A. White, Miles A. Whittington, Eberhardt H. Buhl and Nancy Kopell.

[15] **Computational Neuroscience (CNS), Jul 5 - 9, 2003, Alicante, Spain**. Slow and fast inhibition and a h current interact to create a theta rhythm in CA1. Joint work with: Martin J. Gillies, Corey D. Acker, John A. White, Miles A. Whittington and Nancy Kopell.

[16] **2003 Annual Meeting of the Society for Neuroscience (SFN), November 7 - 12, 2003, New Orleans, LA, USA**. Slow and fast inhibition and a h current interact to create a theta rhythm in CA1. Joint work with: Martin J. Gillies, Corey D. Acker, John A. White, Miles A. Whittington and Nancy Kopell.

[17] **SIAM Conference on the Life Sciences, July 10 - 14, 2004, Portland, OR, USA**. Localized oscillations in chemical and biochemical systems. Joint work with Nancy Kopell, Anatol M. Zhabotinsky, Irving R. Epstein and Rachel Kuske.

[18] **Computational Neuroscience (CNS), Jul 18 - 22, 2004, Baltimore, MD, USA**, Spiking and subthreshold oscillations in a stellate cell: a geometric asymptotic analysis of a biophysical model. Workshop on Reduced models of Neuronal Excitability and Dynamics of Spike-Generation. Joint work with Nancy Kopell.

[19] **Computational Neuroscience (CNS), Jul 18 - 22, 2004, Baltimore, MD, USA**, Coherent activity at theta frequencies ((8-12 Hz) int hte hippocampal area CA1: synchronization properties of networks of interneurons involving H currents. Workshop on Nonlinear Spatio-temporal Neural Dynamics - Experiments and Theoretical Models. Joint work with: Martin J. Gillies, Corey D. Acker, John A. White, Miles A. Whittington and Nancy Kopell.

[20] **SIAM Conference on Applications of Dynamical Systems, May 22 - 26, 2005, Snowbird, UT, USA**. Subthreshold Oscillations and Spiking in a Medial Entorhinal Cortex Stellate Cell. Joint work with Tim Oppermann, John A. White and Nancy Kopell.

[21] **SIAM Conference on Applications of Dynamical Systems, May 22 - 26, 2005, Snowbird, UT, USA**. Synchronization Mechanisms of Minimal Networks of the Parahippocampal Region. Joint work with D. Pervouchine and Nancy Kopell.

[22] **2005 Annual Meeting of the Society for Neuroscience (SFN), November 12 - 16, 2005, Washington, DC, USA**. Subthreshold oscillations, spiking and synchronization in medial entorhinal cortex stellate cells: A reduced model. Joint work with: Tim Oppermann, John A. White and Nancy Kopell.

[23] **IV Taller Regional de Fisica Estadistica y Aplicaciones a la Materia Condensada, May 29 - 31, 2006, Bahia Blanca, Argentina**. Theta Rhythmic activity in the hippocampus: A modeling study.

[24] **Frontiers in Computational and Applied Mathematics (FACM-07), May 14 - 16, 2007, Newark, NJ, USA**. Rhythmic mixed-mode oscillatory activity in entorhinal cortex stellate cells. Joint work with Martin Wechselberger and Nancy Kopell.

[25] **SIAM Conference on Applications of Dynamical Systems, May 28 - June 1, 2007, Snowbird, UT, USA**. Rhythmic mixed-mode oscillatory activity in stellate cells of the entorhinal cortex. Joint work with Martin Wechselberger and Nancy Kopell.

[26] **Workshop on Synchronous Rhythms in the brain. University of British Columbia, June 18 - 20, 2007.** Mechanistic aspects of the creation of theta rhythmic activity in the hippocampal area CA1: A modeling study.

[27] **Second Argentine School of Mathematics and Biology (Segunda Escuela Argentina de Matemática y Biología), La Falda, Córdoba, Argentina**. Mechanistic aspects of the generation of subthreshold oscillations, the onset of spikes, and related phenomena in a medial entorhinal cortex stellate cell model. (Plenary speaker.)

[28] **Twelfth International Conference on Cognitive and Neural Systems (ICCNS) - Boston, MA, May 14 - 18, 2008**. Rhythmic oscillations in layer II of the medial entorhinal cortex. Joint work with Tilman Kispersky, Nancy Kopell, Martin Wechselberger and John A. White.

[29] **Twelfth International Conference on Cognitive and Neural Systems (ICCNS) - Boston, MA, May 14 - 18, 2008**. Decision-making in a cognitive/emotional system: A modeling approach. Joint work with Federico E. Contiggiani and Fernando Tohme.

[30] **Frontiers in Computational and Applied Mathematics (FACM) - Newark, NJ, May 19 - 21, 2008**. Dynamic aspects of a decision-making process in a hot/cool system. Joint work with Federico E. Contiggiani and Fernando Tohme.

[31] **Network Synchronization: from Dynamical Systems to Neuroscience - Leiden, The Netherlands, May 19 - 30, 2008**. The abrupt transition from theta to hyperexcitable spiking activity in stellate cells from layer II of the medial entorhinal cortex. Joint work with Tilman Kispersky and John A. White.

[32] **Encuentro Internacional de Ecuaciones Diferenciales (EIED) - Universidad de Buenos Aires, Buenos Aires, Argentina, July 28 - August 1, 2008 .** Lecturer: Mathematical Biology course.

[33] **2008 Annual Meeting of the Society for Neuroscience (SFN), November 14 - 18, 2008, Washington, DC, USA**. The transition to hyperexcitability in stellate cells from layer II of the medial entorhinal cortex during temporal lobe epilepsy: A modeling study. Joint work with Tilman Kispersky and John A. White.

[34] **2008 Annual Meeting of the Society for Neuroscience (SFN), November 14 - 18, 2008, Washington, DC, USA**. The role of Kv7 mediated potassium currents and recurrent excitation in stellate cells of the entorhinal cortex in a dynamic clamp based model of temporal lobe epilepsy. Joint work with Tilman Kispersky and John A. White.

Participation in International Courses

[1] **International School of Mathematics on "Free Boundary Problems in Mathematics and Industry", Santander, Spain,** $21-25$ **August, 1995.** *Fellowship by the European Science Foundation, Free Boundary Programme.*

[2] **International School on "Pattern Formation, Interfacial Dynamics and Crystal Growth", Toledo, Spain,** $3-7$ **June, 1996.** *Fellowship by the European Science Foundation, Free Boundary Programme.*

Scholarships, Fellowships, Honors and Awards

[1] **Increased Full Scholarship** for pursuing MSc studies. Awarded by the **Technion - Israel Institute of Technology**, Haifa, Israel, 10/91 - 07/94.

[2] **Increased Full Scholarship** for pursuing PhD studies. Awarded by the **Technion - Israel Institute of Technology**, Haifa, Israel, 08/94 - 07/98.

[3] **Excellence in Teaching Prize** awarded by the **Technion - Israel Institute of Technology**, Haifa, Israel.

[4] **Fischbach Fellowship** for pursuing postdoctoral research at Brandeis University, awarded by the **Technion - Israel Institute of Technology**, Haifa, Israel, 1999-2001.

[5] **Burroughs Welcome Fellowship for pursuing postdoctoral research in the Program in Mathematical and Computational Neuroscience (PMCN)** at **Boston University**, 2001-2004.

[6] **Dr. César Milstein Scholarship (Subsidio)**, July-August, 2007. Awarded by the *Secretaria de Ciencia, Tecnología e Innovación Productiva; Ministerio de Educación, Ciencia y Tecnología*, Argentina.

[7] **Dr. César Milstein Scholarship (Subsidio)**, July, 2008. Awarded by the *Ministerio de Ciencia, Tecnología e Innovación Productiva*, Argentina.

Memberships

- **Society for Industrial and Applied Mathematics (SIAM).**
- **American Mathematical Society (AMS).**
- **Society for Neuroscience (SFN).**
- **Society for Mathematical Biology (SMB).**

Additional Information

- **Programming skills**: C, XPP, Fortran (in the past) and Pascal (in the past).
- **Department of Chemistry Council, Universidad Nacional del Sur, Bahía Blanca, Argentina.** Served as **member** (student).
- **University Council, Universidad Nacional del Sur, Bahía Blanca, Argentina.** Served as **member** (student).
- **Teaching experience in Group Leadership.**

Further information about invited talks and courses taken as part of my graduate or undergraduate studies as well as courses not included in those programs, social, cultural and political interests and activities may be supplied or discussed personally.