

CURRICULUM VITAE FOR LIA BRONSARD

*Dept. of Mathematics & Statistics
McMaster University
Hamilton, Ont. L8S 4K1, Canada
bronsardmcmaster.ca*

EDUCATIONAL BACKGROUND:

Ph.D. New York University, Courant Inst. of Math. Sci., 1988.

M.S. New York University, Courant Inst. of Math. Sci., 1986.

Bacc. Univ. de Montréal, Mathématiques, 1983.

PERSONAL DATA Date of birth: March 14, 1963

Citizenship: Canadian. I am totally fluent (reading-writing-speaking) in both french and english.

RESEARCH INTERESTS:

Nonlinear partial differential equations, Calculus of Variation, phase boundary dynamics, singular perturbations, superconductivity.

POSITIONS:

McMaster University, Department of Mathematics and Statistics

Full Professor, 7/01-present.

Associate Professor, 7/95-6/2001.

Assistant Professor, 7/92-6/95.

Member: Brockhouse Institute for Materials Research, 1997-present.

Carnegie-Mellon University, Center for Nonlinear Analysis, Dept. of Math.

Postdoctoral Fellow, 8/91-6/92.

Institute for Advanced Study, School of Mathematics.

NSERC Postdoc, 9/89-6/91.

Brown University, Dept. of Applied Mathematics.

Visiting Assistant Professor, 9/88-8/89

RESEARCH GRANTS

NSERC (Canada) research grants:

- 2004-2011, \$200,000;
- 2000-2004, \$92,000;
- 1995-2000, \$85,500;
- 1992-95, \$71,300;

SERB (McMaster University) grant: 1993-1994, \$10,000. 1992-1993, \$15,000.

PUBLICATIONS:**Accepted preprints**

[1] “On the structure of fractional degree vortices in a spinor Ginzburg–Landau model,” with S. Alama and P. Mironescu. Preprint accepted in *J. Func. Anal* (Oct 2008.)

Published articles and book

[2] Alama, Stan; Bronsard, Lia; Sternberg, Peter, (ed.). ”Singularities in PDE and the Calculus of Variations.” Proceedings of the CRM workshop, July 17-21, 2006. CRM PROCEEDINGS AND LECTURE NOTES, AMS, 44, 2008, ISBN 978-0-8218-4350-5.

[3] “ Vortices for a rotating toroidal Bose- Einstein condensate,” with S. Alama and J. Alberto Montero. *ARCH. RATION. MECH. ANAL.* 187 (2008), no. 3, 481–522.

[4] “ On the shape of interlayer vortices in the Lawrence-Doniach model,” with S. Alama and E. Sandier. *TRANS. AMER. MATH. SOC.* 360 (2008), no. 1, 1–34 (electronic).

[5] “Fractional degree vortices for a spinor Ginzburg-Landau model,” with S. Alama. *COMMUN. CONTEMP. MATH.* 8 (2006), no. 3, 355–380.

[6] “On the Ginzburg-Landau model of a superconducting ball in a uniform field,” with S. Alama and J. Alberto Montero. *ANN. INST. H. POINCARÉ ANAL. NON LINÉAIRE* 23 (2006), no. 2, 237–267.

[7] “Vortices and pinning effects for the Ginzburg-Landau model in multiply connected domains,” with S. Alama. *COMM. PURE APPL. MATH.* 59 (2006), no. 1, 36–70.

[8] “ Giant vortex and the breakdown of strong pinning in a rotating Bose-Einstein condensate,” with A. Aftalion and S. Alama. *ARCH. RATION. MECH. ANAL.* 178 (2005), no. 2, 247–286.

[9] “ Pinning effects and their breakdown for a Ginzburg-Landau model with normal inclusions”, with S. Alama. *J. MATH. PHYS.* 46 (2005), no. 9, 095102, 39 pp.

[10] “ Long-time behavior for competition-diffusion systems via viscosity comparison,” with Seong-A Shim. *DISCRETE CONTIN. DYN. SYST.* 13 (2005), no. 3, 561–581.

[11] “ Vortices and the lower critical field for a Ginzburg-Landau model of superconductors with ferromagnetic interactions,” with S. Alama. *PROC. ROY. SOC. EDINBURGH SECT. A*, 135 (2005), no. 2, 223–252.

[12] “On the second critical field for a Ginzburg–Landau model with ferromagnetic interactions,” with S. Alama. *REV. MATH. PHYS.*, vol. 16, No. 2 (2004), 147-174.

[13] “Half Degree Vortices for a Spin–Coupled Ginzburg–Landau Model / Des vortex fractionnaires pour un modèle Ginzburg–Landau spineur”, with S. Alama. *C. R. ACAD. SCI. PARIS, série I*, vol. 337 (2003), 243–247.

[14] “Minimizers of the Lawrence–Doniach energy in the small-coupling limit: finite width samples in a parallel field”, with S. Alama and J. Berlinsky. *ANNALES IHP-ANALYSE NONLINÉAIRE*, vol. 19 (2002), 281–312.

[15] “Symmetric Vortex solutions in the $U(1)$ and $SO(5)$ Ginzburg–Landau Models of Superconductivity,” with S. Alama. In *Nonlinear PDE’s in Condensed Matter and Reactive Flows*, H. Berestycki et Y. Pomeau (eds.), pp. 323–337, Kluwer Academic Publishers, 2002.

- [16] “Periodic vortex lattices for the Lawrence–Doniach model of layered superconductors in a parallel field”, with S. Alama and J. Berlinsky. *COMMUN. CONTEMP. MATH.*, vol. 3 (2001), no. 3, 457–494.
- [17] “Vortices with antiferromagnetic cores in the $SO(5)$ theory of superconductivity”, with S. Alama, J. Berlinsky, and T. Giorgi. *PHYS. REV. B.* vol. 60, no. 9, pp. 6901–6906, 1999.
- [18] “Analysis of some macroscopic models of high- T_c superconductivity,” with S. Alama. *CRM Proceedings and Lecture Notes*, AMS, vol. 27, pp.1–16, 2001.
- [19] “Vortex Structures for an $SO(5)$ Model of High- T_C Superconductivity and Antiferromagnetism”, with S. Alama and T. Giorgi. *PROC. ROY. SOC. EDIN., SER. A.* vol. 130 (2000), no. 6, 1183–1215.
- [20] “Uniqueness of Symmetric Vortex Solutions in the Ginzburg–Landau Model of Superconductivity,” with S. Alama and T. Giorgi. *JOURNAL OF FUNCTIONAL ANALYSIS*, vol. 167, pp. 399–424, 1999.
- [21] “A multi-phase Mullins-Sekerka system: matched asymptotic expansions and an implicit time discretization for the geometric evolution problem”, with H. Garcke and B. Stoth, *PROC. OF THE ROYAL SOC. OF EDINBOROUGH*, Vol 128A, pp. 481–506, 1998.
- [22] “The Singular Limit of a Vector-Valued Reaction-Diffusion Process”, with B. Stoth, *TRANS. AMS*, Vol 350, no. 12, pp. 4931–4953, 1998.
- [23] “A Singular Limit of the Ginzburg-Landau Equations for Superconductivity and the one-phase Stefan problem”, with B. Stoth, *ANNALES IHP-ANALYSE NONLINÉAIRE*, Vol 15, no. 3, pp. 371–397, 1998.
- [24] “Slow motion in the gradient theory of phase transitions via energy and spectrum,” with N. Alikakos and G. Fusco, *CALC. OF VARIATION AND PDE*, Vol 6, pp. 39–66, 1998.
- [25] “Volume Preserving Mean Curvature Flow as a Limit of a Nonlocal Ginzburg-Landau Equation”, with B. Stoth, *SIAM J. MATH. ANAL.*, Vol 28, no 4, pp.769-807, July 1997.
- [26] “Stationary layered solutions in \mathbf{R}^2 for an Allen-Cahn system with multiple well potential” with S. Alama and C. Gui, *CALC. OF VARIATION AND PDE*, vol. 5, pp 359-390, 1997.
- [27] “A Three Layered Minimizer in \mathbf{R}^2 for a Variational Problem with a Symmetric Three Well Potential”, with C. Gui and M. Schatzman, *COMM. PURE APPLD. MATH.*, vol 49, pp 677- 715, 1996.
- [28] “On the Existence of High Multiplicity Interfaces”, with B. Stoth, *MATH. RES. LETT.*, vol 3, pp 41-50, 1996.
- [29] “A Numerical Method for Tracking Curve Networks Moving with Curvature Motion”, with B. Wetton, *JOUR. COMP. PHYS.*, vol 120, pp 66-87, 1995.
- [30] “On Three-Phase Boundary Motion and the Singular Limit of a Vector-Valued Ginzburg-Landau Equation,” with F. Reitich, *ARCH RAT. MECH. AND ANALYSIS*, vol 124, no 4, pp 355- 379, 1993
- [31] “Front Propagation for Reaction-Diffusion Equations of Bistable Type”, with G. Barles and P. E. Souganidis, *ANN. I. H. P.-NON LINÉAIRE*, vol 9 no 5, pp 479-496, 1992
- [32] “On the Slow Dynamics for the Cahn-Hilliard Equation in One Space Dimension”, with D. Hilhorst, *PROC. ROY. SOC. LON.-SERIES A (MATH. PHYS. SCI.)*, vol 439 no 1907, pp 669- 682, 1992.

[33] “Motion by Mean Curvature as the Singular Limit of Ginzburg-Landau Dynamics”, with R. V. Kohn, *JOUR. OF DIFF. EQ.*, vol. 90, pp. 211-237, 1991.

[34] “On the Slowness of Phase Boundary Motion in One Space Dimension”, with R. V. Kohn, *COMM. PURE APPL. MATH.*, vol. XLIII, pp. 983-997, 1990.

Book review:

[35] SIAM review, *Vortices in the Magnetic Ginzburg-Landau Model*. By Etienne Sandier and Sylvia Serfaty. Birkhauser, 2007. \$119.00. xii+304 pp., hardcover. ISBN 978-0- 8176-4316-4., *SIAM Rev.* 50, issue 1, 149 (2008)

HONORS and SCOLARSHIPS:

- Member of the NSERC committee GSC-337 starting in the fall 2008.
- Since 2005, I am an Associate Editor for the *Canadian Applied Math Quarterly*.
- Invited to be on the jury and participate at two Ph. D. Defense at the Univ. of Paris 6, Dec. 14, 2004 and July 9, 2007, and at one Ph. D. Defense at the Univ. of Paris 12 on Dec. 17, 2004.
- NSF Division of Mathematical Sciences, grant Review Panel (materials and mechanics), Washington, Feb 9-11, 2005. I reviewed 11 proposals and participated in discussions/write up and gave recommendations during the meeting.
- Clifford Lecturer, Tulane Univ (USA), Feb 15-17, 1997.
- Women’s Faculty Award, NSERC, 1992-97.
- NSERC Postdoctoral Fellowship, 1989-91.
- NSERC Graduate Fellowship, 1983-87.
- Courant Institute Assistantship, 1987-88.
- FCAR (Québec), 1988 (summer).
- Assistant Research Scientist (Courant Inst.), summers of 1987 and 1988
- NSERC, 1982 and 1983 (summers).

VISITING POSITIONS:

- Laboratoire Jacques-Louis Lions, Paris VI, Paris, France. January–July 2003 and January–July 2006.
- Centre pour Mathématiques et leurs Applications, Ecole Normale Supérieure de Cachan, France. January–July, 2000.
- Courant Institute of Mathematical Sciences, New York University, New York City, September–December, 1999.
- Université Claude-Bernard Lyon I, August 1998.
- IAM-SFB 256 (Institute for Applied Mathematics, Bonn), May 1-May 21, 1997, June 15- July 15, 1996 and May 15-July 2, 1995;
- IMA (Institute for Mathematics and its Applications, Univ of Minnesota), Sept 1-Dec 21, 1995;

INVITED LECTURES at Conferences:

- “The Gross-Pitaevskii equation and related topics”, IGESA center, Porquerolles, France, Oct 12–18, 2008.

- Invited plenary speaker to the conference "Non-linear Phenomena in Mathematical Physics: A dedication to Cathleen Synge Morawetz on her 85th birthday", Fields Institute, Toronto, September 18 -20, 2008.
- "Partial Differential Equations", minisymposium at the *Second congrès Canada–France des sciences mathématiques*, Montreal, June 1–6, 2008.
- "Workshop on Variational Methods for Nonlinear PDE and their Applications", Technion, Haifa, Israel, March 5-10, 2008.
- "Variational Problems in Condensed Matter", AMS-Albuquerque meeting (October 13-14, 2007).
- "Workshop on Analysis and its Applications," University of Athens, Greece, June 18, 2007.
- "International Conference on Mathematical Theory of Superconductivity and Liquid Crystals", East China Normal University, Shanghai, China, May 14–18, 2007.
- "Modern Applications of Gross-Pitaevskii Equations: Bose-Einstein Condensation," workshop at the Wolfgang Pauli Institut in Vienna (Austria), November 6-10, 2006.
- "Variational Methods in PDE," special session in the Joint CMS-SMM Meeting, September 21-23, 2006 in Guanajuato, Mexico.
- "Superconductivity, Ginzburg-Landau Theory, and Related Topics," minisymposium at the SIAM Conference on Analysis of Partial Differential Equations, July 10-12, 2006, in Boston MA.
- "Journée Ginzburg–Landau," one-day workshop at Univ. Paris-Sud (Orsay), France, February 14, 2006.
- Advances in PDEs from Materials Science, invited talk in the minisymposium at the First SIAM Conference on Partial Differential Equations, Houston (TX), December 58, 2004.
- "Singularities in Materials", workshop at the IMA, Minneapolis (MN), October 25-29, 2004.
- "Seventh New Mexico Analysis Seminar," October 14-15, 2004, Albuquerque (NM). Invited Speaker.
- AMS Sectional Meeting, Albuquerque (NM), October 16-17, 2004. In the special session, "Nonlinear Partial Differential Equations Applied to Materials Science".
- "Premier congrès Canada–France des sciences mathématiques," Toulouse (France), July 12-16, 2004. In the Special session on Partial Differential Equations.
- AIMS conference on Dynamical Systems, June 16-19, 2004, Los Angeles (CA). In the special session, "Analysis and Simulations of Magnetic and Superconducting Materials".
- AIMS conference on Dynamical Systems, June 16-19, 2004, Los Angeles (CA). In the special session, "Free Boundary problems and applications".
- PIMS–Banff workshop on "Defects and their dynamics", Banff, Canada, August 9–16, 2003.
- ISM Pan-Québécois Conference, Université Laval, Québec, May 23–25, 2003. Plenary lecture.

- SIAM 50th Anniversary and 2002 Annual Meeting, minisymposium on “Superconductivity, Ginzburg-Landau theory and related topics”, Philadelphia, July 8–12, 2002.
- First SIAM-EMS conference “Applied Mathematics in our Changing World”, minisymposium on “recent progress in superconductivity”, Berlin, Sept. 2-6, 2001.
- “Singular Variational Problems”, Isaac Newton Institute for Mathematical Sciences, Cambridge University, GB, June 25–30, 2001.
- “Partial Differential Equations in Mathematical Physics”, workshop at the Fields Institute, Univ. of Toronto, April 16–21, 2001.
- “Fields Institute Applied Math Colloquium”, invited, October 12, 2000.
- “Singularities in Ginzburg–Landau systems”, Workshop at the Leiden Center, University of Leiden, the Netherlands. March 27–April 6, 2000.
- “Equations aux Dérivées Partielles Non Linéaires Frontières libres, Interfaces et Singularités”, workshop at ORSAY, Université de Paris-Sud, France. March 22-23, 2000.
- Workshop on “Nonlinear Dynamics and the Renormalization Group” Centre de Recherche Mathématique, Montréal, August 22–27, 1999. “Vortex lattices for the Lawrence-Doniach model of layered superconductors in parallel magnetic fields”.
- “PDE’s in models of superfluidity, superconductivity and reactive flows,” NATO Advanced Study Institute, Institut d’Etudes Scientifiques de Cargèse, Corsica, June 21–July 2, 1999.
- Workshop on Singularities Arising in Nonlinear Problems, Kyoto, Japan, November 30–December 2, 1998. “Vortex structure for an $SO(5)$ model of high-Tc superconductivity and antiferromagnetism”, invited main speaker.
- SIAM Annual Meeting, Toronto, July 13–17, 1998. “On a Multi-phase Mullins–Sekerka System”, invited talk in the special session MS75 on Nonlinear Partial Differential Equations.
- Dynamical systems and differential equations, Univ of Waterloo, Aug. 1-4, 1997, Special session on Capillarity problems: “On multi-phase dynamics”.
- BIMR workshop: “Mathematics and Materials”, McMaster Univ., April 23, 1997. “On a multi-phase Mullins-Sekerka System”
- 1997 Spring Clifford Conference on PDE, Tulane Univ., Feb 15–17, 1997. “On vector-valued Ginzburg-Landau dynamics”.
- AMS regional meeting in Chattanooga, Oct. 11-12, 1996. “A multi-phase Mullins-Sekerka system as the singular limit of a Cahn-Hilliard system”.
- ESF/FBP-Workshop at the IAM-SFB256 (Univ of Bonn) on “Lower Dimensional Interfaces: Ginzburg-Landau Equations and the Evolution of Point and Line Singularities”, May 26-30, 1996. “A multi-phase Mullins-Sekerka system as the singular limit of a Cahn- Hilliard system”.
- AMS regional meeting at New York University, April 13-14, 1996. “The Singular Limit of a Vector- Valued Reaction-Diffusion Process”.
- AMS regional meeting at Kent State Univ., Nov. 3-4, 1995. “A Singular Limit of the Ginzburg- Landau Equations for Superconductivity and the one-phase Stefan problem”.
- TMS Minerals, Metals, Materials: “Materials week ’95”, Oct. 30-Nov 2, 1995, Cleveland, OH. “A multi- phase Mullins-Sekerka system as the singular limit of a Cahn-Hilliard system”.

- Oberwolfach: “Mathematical models in phase transitions”, May 14-20, 1995. “On the existence of high multiplicity interfaces”.
- École d’été du CRM (Banff): “Frontière, Interfaces et transitions”, August 6-18, 1995. Two lectures on “Interfaces motion for Ginzburg-Landau Dynamics”.
- ICIAM, International congress in industrial and applied mathematics, Hamburg, Germany, July 3-7, 1995. “The Singular Limit of a Vector-Valued Reaction-Diffusion Process”.
- Telluride Summer Research Center: Interface Motion in Multicomponent Media, August 7- 15, 1994. “On three-phase boundary motion and the singular limit of a vector-valued Ginzburg-Landau equation”.
- Oberwolfach: “Freie Randwertprobleme”, July 10-16, 1994. “A Three layered minimizer in R^2 for a variational problem with a symmetric three well potential”.
- The Mathematical Theory of Phase Transitions: A Summer Workshop, Univ. of Sussex, July 5-10, 1994. “A Three layered minimizer in R^2 for a variational problem with a symmetric three well potential”.
- AMS regional meeting, special session on PDE, Brooklyn, April 8-10, 1994. “On the asymptotic limit of a nonlocal Ginzburg-Landau equation”.
- Workshop on “Nonlinear Partial Differential Equations, Pattern Formation, Singularities and Related Topics” (March 29-April 1) and Conference on Nonlinear Elliptic and Parabolic PDE and Applications, American-Japanese meeting, Johns-Hopkins Univ., April 1-4, 1994. “On the asymptotic limit of a nonlocal Ginzburg-Landau equation”.

Workshops and sessions organized:

- Co-organizer (with S. Alama) of the CAIMS minisymposium “Singular Perturbations and the Ginzburg-Landau Model,” at the *Second congrès Canada–France des sciences mathématiques*, Montreal, June 1–6, 2008.
- Co-organizer (with E. Cances and M. Esteban) of the minisymposium “Variational and Numerical Methods in Geometry, Physics and Chemistry,” workshop at the *Second congrès Canada–France des sciences mathématiques*, Montreal, June 1–6, 2008.
- Co-organizer (with T. Giorgi, New Mexico State Univ.) of the minisymposium Variational Problems in Condensed Matter, for AMS-Albuquerque meeting (October 13-14, 2007).
- Co-organized (with S. Alama (McMaster) and P. Sternberg (Univ of Indiana)) a 1-week workshop at the CRM (Montral) on Workshop on Singularities in PDE and the Calculus of Variations, July 17-21, 2006.
- Co-organized (with P. Padilla (UNAM)) a special session Variational Methods for PDE at the joint CMS-SMM meeting in Guanajuato, Mexico, Sept. 21-23, 2006.
- Workshop on “Defects and their dynamics”, Banff, August 9–16, 2003. (Joint with P. Bates and C. Gui.)
- Workshop on “Calculus of Variations: Geometric problems, Superconductivity and Material Microstructures”, The Fields Institute for Mathematical Sciences, Toronto, August 25–29, 2003. (Joint with S. Alama, R. Choksi, R. McCann and R. Jerrard.)
- “Phase transitions in materials,” minisymposium at the CAIMS/SCMAI-99 meeting, Québec, June 10–13, 1999.
- “Concentration phenomena in differential equations” Special session, AMS regional meeting, Milwaukee, Oct. 23-24, 1997. (Joint with Wei-Ming Ni.)

- “Mathematics of superconductivity”, Brockhouse Institute for Materials Research (BIMR), McMaster University, Sept. 13, 1997. (Joint with S. Alama.)
- “Mathematics and materials”, Brockhouse Institute for Materials Research (BIMR), McMaster University, April 23, 1997. (Joint with G. Purdy.)
- “Singular Perturbation Problems and Interface Dynamics”, minisymposium at ICIAM, Hamburg, Germany, July 5, 1995.

SUPERVISION OF HIGHLY QUALIFIED PERSONEL

supervision and collaboration with post-doctorates:

Since I have been at McMaster, I have co-sponsored (with Stan Alama) and worked on research projects with:

- BERNARDO GALVO-SOUSA 2008-2010 (Co-supported with S. Alama.) We are working on thin-film models for Ginzburg-Landau models.
- JOSÉ ALBERTO MONTERO 2003-05 (Co-supported with S. Alama.) We have worked on three-dimensional Ginzburg-Landau models. We have produced two papers, [4], [7].
- SEONG-A SHIM 2001-03. (Co-supported with S. Alama.) We have a paper [11] on viscosity solutions for a singularly perturbed Lotka-Volterra system.
- ANA-MARIA MATEI 2001-03 (Co-supported with S. Alama and W. Craig) We are working on a project in reaction-diffusion systems involving the p -Laplacian.
- XUEFENG WANG 1998-2000 (Co-supported with S. Alama) Discussed problems in phase transitions.
- TIZIANA GIORGI 1997-1999 (Co-supported with S. Alama) Produced papers [18],[20] and [21].
- C. GUI 1993-1995. (Co-supported with S. Alama) Produced the papers ([27],[28].)

supervisor of students:

Diana-Marie Batista, M. Sc Student, thesis option (2008–)

Adam Dailey-Mc Ilrath, M. Sc Student (2004-06),

Title of Thesis: Some nice results about anisotropic mean curvature flow

D. Hender, M. Sc. student (1998-2000), co-supervised with Dr. N. Kevlahan,

Title of Thesis: Phase separation for the one dimensional Cahn-Hilliard equation: theory and computations

Undergraduate research project:

Summer 2008: Supervised a research assistant D.-M. Batista to work on travelling wave solutions to certain vector-valued non-linear PDE's. She was supported by an HRSDC grant from the 2008 Canada Summer Job Program from the Human resources and Social development Canada, as well as my NSERC discovery grant.

Summer 2007: Supervised an NSERC-USRA summer research project, S. Badbanchi, and hired another undergraduate, D.-M. Batista, to work on projects related to nonlinear PDE's whole title was: “Modelling Traffic flow”

Summer 1995: Supervised an NSERC summer research project for (an undergraduate student) J. Bernans. We proved the well-posedness of the nonlocal Allen-Cahn equation using a (discrete in time) variational method.

Invited Colloquiums and Seminars:

University of Georgia Tech, Atlanta, Jan 26, 2008, George Washington University, Washington, Nov. 9, 2007, Univ. Claude Bernard Lyon I, Lyon, France, May 8, 2006, Univ. di Napoli Federico II, April 7, 2006 (part of INdAM invited Visiting Professorship), McGill Univ. (2004), Univ. of Toronto (2004), Laboratoire J.-L. Lions, Univ. Paris-VI (2003), Universität Bonn (2003), Univ. Laval (2002), Univ. de Paris XII (2001), Univ of Wisconsin-Madison (2001), SFU (2001), Univ. de Tours (2000), Brown Univ. (1999), Rutgers Univ. (1999), Courant Institute (1999), UBC (1999), Univ. of Tokyo (1998), Univ. of Chile (1997, Dept de Ing. Mat.), Orsay (1996), Univ. di Roma “La Sapienza” (1996), Univ. of Minnesota (1995), Brockhouse Institute for Materials Research (1995), Univ. of Bonn- IAM SFB256 (1995 & 1993), Univ. Autonoma Nacional de Mexico (series of two lectures, 1994), Univ. di Roma “La Sapienza” (1994), Univ. di Roma “Tor Vergata” (1995, 1994 & 1993), Univ. of British Columbia (1994), Univ. of Wisconsin (1993), Bonn (1993), Suny at Buffalo (1992), Univ. de Lyons (1992 and 1991), ENS Paris (1991), Orsay (Paris, 1991), Indiana Univ. (1990 & 1991), Brigham Young Univ. (1991), Univ. of Cal. at Davis (1991), Arizona State Univ. (1991), Rutgers Univ. (1990), CRM (1990), Univ. de Montréal (1990), U.Q.A.M. (1990), Univ. dOttawa (1990), McMaster Univ. (1990), Univ. of Pennsylvania (1990 and 1989), Univ. of Tennessee (1989), Georgia Tech. (1989), Duke Univ. (1988), Univ. of Pittsburgh (1988).

Supervisory Committee for Ph.D. and M. Sc. students:

Qi Gao (M. Sc 2007-08)
 Qiuping Lu (PhD 2004-08)
 Feng Su (PhD 2006-07)
 Scott Rodney (M. Sc 2002-04, PhD 2004-07)
 Zhengbin Yan (Ph. D 2006-07)
 Jeff Mesaric (M.Sc. 2002-03)
 Silogini Somasundaram (M. Sc. 2001-02)
 Don Hender (M. Sc. 1998-2000)
 Robert Smith (Ph. D 1997-01)
 J. Bowen (M. Sc. 1997-99)
 D. Rusu (Ph. D. 1995-1997)

Written Comprehensive Exam committees (since 2000):

Analysis Exam: 2002, 2003-05 (chair) Applied Mathematics Exam: 2000-02, 2006

SHORT TERM VISITS invited at:

- Invited Visiting Professor, INdAM (Italy), Universita’ di Napoli Federico II, April 9-17, 2006.
- Univ. Autonoma Nacional de Mexico, Mexico City, June 24-July 3, 1994;
- IAM-SFB 256 (Bonn), May 25-June 10, 1993 and April 1-15, 1989;
- Roma ”Tor Vergata”, June 10-15, 1993;
- CNRS (Lyon, France), Feb. 15-23, 1992;
- CNRS (Orsay, France), Dec 15-21, 1996, June 2-8, 1991 and March 15-31, 1992;
- CRM (Montréal), June 15-July 15, 1991

TEACHING INNOVATION:

As part of the undergraduate curriculum committee, I have helped redesign our calculus/analysis sequence in 2005-06.

In the fall term 1998, I have entirely redesigned the course Math 2L03: Calculus for business and social sciences. As I found nothing appropriate being currently published, I combined several textbooks into a custom courseware intitled Mathematical methods for business and social sciences. This courseware has being used since then, and combines methods from Linear programming, Markov chains, ODE and calculus to resolve practical problems in business and economics.

ADMINISTRATIVE DUTIES

MCMASTER UNIVERSITY, DEPARTMENT OF MATHEMATICS & STATISTICS:

Departmental Committees:

2007-09: Undergraduate curriculum committee; Co-organiser of PDE/Analysis semina

2005-07: Undergraduate curriculum committee; Co-organiser of PDE/Analysis seminar

2004-05: Chair selection committee (Dept. of Physics and Astr.)

2004-05: Undergraduate curriculum committee; Co-organiser of PDE/Analysis seminar

2003-04: Undergraduate curriculum committee; Co-organiser of PDE/Analysis seminar

2001-02: Co-organiser of PDE/applied math seminar.

1999-00: Co-organiser of Applied Math seminar.

1998-99: Graduate curriculum committee; Co-organizer of Analysis Seminar.

1997-98: Undergraduate curriculum committee; Co-organizer of Analysis Seminar.

1996-97: Graduate curriculum committee; Co-organizer of Analysis Seminar.

1994-95: Appointments committee; Undergraduate curriculum committee; Co-organizer of Applied Analysis Seminar.

1993-94: Graduate Curriculum committee; Co-organizer of Applied Analysis Seminar.

University Committees:

1994-95: Health and safety committee.

1997: McMaster Univ. open house, mathematics and statistics representative.

1998-99: Library representative.