Rebecca C. McKay

Contact Information:

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Citizenship: Canadian

Education:

- Dalhousie University, Halifax, Nova Scotia — Doctor of Philosophy in Mathematics

  Thesis: *Instability Thresholds and Dynamics of Mesa Patterns in Reaction–Diffusion Systems*

  Supervisor: Dr. Theodore Kolokolnikov

  Completed: August 2011

- Dalhousie University, Halifax, Nova Scotia — Master of Science in Mathematics

  Thesis: *The Generalized Minimal Residual Method applied to the Inverse Problem of Electrocardiography*

  Supervisors: Dr. John Clements and Dr. B. Milan Horáček

  Completed: August 2006

- Memorial University of Newfoundland, St. John's, Newfoundland — Bachelor of Science (Honours) in applied mathematics with minor in physics

  Honours thesis: *Blow-up in Reaction-Diffusion Equations*

  Supervisor: Dr. Hermann Brunner

  Completed: April 2005

Research/Teaching Interests:

- Research Interests: applied analysis, asymptotic analysis, numerical analysis, ordinary and partial differential equations, perturbation methods, pattern formation, mathematical biology and mathematical modelling.

- Teaching Interests: Introductory mathematics courses, calculus, quantitative methods (mathematics/finance for business students), real analysis, mathematical modeling, differential equations, numerical analysis and other applied mathematics courses.

Relevant Teaching Experience:

- Assistant Professor, Mount Allison University, Sackville, New Brunswick

  I taught Math 1151: *Applied Calculus* and Math/Comp 3411: *Numerical Analysis* in the Department of Mathematics and Computer Science at Mount Allison University. I taught Math 2121: *Differential Equations I* and Math 3151: *Introduction to Mathematical Modelling* this past winter semester. — September 2011 to April 2012

- Instructor, Dalhousie University, Halifax, Nova Scotia

  I taught Math/Stat 2300: *Mathematical Modelling* in the Department of Mathematics of Statistics at Dalhousie University. This included teaching the computer algebra system Maple. — January to April 2010

- Instructor, Saint Mary's University, Halifax, Nova Scotia

  I taught MGSC 1205 and 1206: *Quantitative Methods I* and *II* in the Department of Finance, Information Systems and Management Science at Saint Mary's University. These courses included a variety of mathematical topics related to applications in business, including linear programming, probability, calculus, and financial math. — January 2009 to April 2010

- Instructor, Dalhousie University, Halifax, Nova Scotia

  I taught Math 1000: *Differential and Integral Calculus I* in the Department of Mathematics and Statistics at Dalhousie University in a six-week summer session. — July to August 2008

- Teaching Assistant, Dalhousie University, Halifax, Nova Scotia

  I worked as a teaching assistant in the Department of Mathematics and Statistics at Dalhousie University running calculus tutorials. I also have worked in the Learning Centre (helping undergraduate students), invigilated exams and marked assignments, quizzes and exams. — September 2005 to April 2011

- Teaching Assistant, Memorial University of Newfoundland, St. John's, Newfoundland

  I worked in the Department of Mathematics and Statistics at Memorial University of Newfoundland marking assignments and quizzes. Additionally, I was a teaching assistant for a technical writing in mathematics course where I helped students with the use of LaTeX and various graphing utilities. — September 2002 to April 2005

Publications/Preprints:

R.C. McKay and T. Kolokolnikov. Stability transitions and dynamics of localized patterns near the shadow limit of reaction-diffusion systems. *Discrete and Continuous Dynamical Systems -B*, Vol. 17, No. 1, January 2012.

R.C. McKay, T. Kolokolnikov, and P. Muir. Oscillation of interface patterns in reaction-diffusion systems beyond the Hopf bifurcation. Preprint, 2011.

R.C. McKay, J.C. Clements, and B.M. Horáček. The Inverse Problem of Electrocardiography for Endocardial and Epicardial Pacing Sites. Preprint, 2011.

Talks:

- *Stability thresholds and dynamics of mesa patterns in reaction-diffusion systems*

  31st Annual Meeting of the Canadian Applied and Industrial Mathematics Society (CAIMS) held in St. John's, Newfoundland — July 2010

- *Mesa-type patterns in reaction-diffusion systems*

  Bluenose Numerical Analysis Day held at Acadia University in Wolfville, Nova Scotia — July 2009

- *Stability of a reaction-diffusion model with mesa-type patterns*

  Canada-France Congress held at Université du Québec à Montréal in Montreal, Quebec in the CAIMS minisymposium "Asymptotic analysis of localized patterns in PDEs" — June 2008

- *Gershgorin and his circles*

  Dalhousie Mathematics and Statistics Graduate Society graduate seminar — March 2007

- LaTeX *Basics*

  Dalhousie Mathematics and Statistics Graduate Society graduate seminar — October 2006

- *The Generalized Minimal Residual (GMRES) Method Applied to the Inverse Problem of Electrocardiography*

  Atlantic Provinces Council on the Sciences (APICS) 30th Annual Conference at Cape Breton University in Cape Breton, Nova Scotia in the AARMS symposium on Mathematical Modelling and Simulation — October 2006

- *Some* LaTeX *fun*

  Dalhousie Mathematics and Statistics Graduate Society graduate seminar — March 2006

- *Blow up in reaction-diffusion equations*

  Canadian Undergraduate Mathematics Conference (CUMC) at Queen's University in Kingston, Ontario — July 2005

- *Korteweg-de Vries equation and soliton solutions*

  Canadian Undergraduate Mathematics Conference (CUMC) at Dalhousie University in Halifax, Nova Scotia — June 2004

Workshops and Summer Schools:

- Joint CAMBAM-MBI Summer School under the theme of "Nonlinear Dynamics in Biological Networks" at McGill University in Montreal, Quebec — May 2010

- Atlantic Association for Research in the Mathematical Sciences (AARMS) graduate summer school at Memorial University in St. John's, Newfoundland — August 2004

Committees and Volunteer Activities:

- Nova Scotia Math League (NSML)

  I volunteered with the NSML. — November 2010 to June 2011

- Atlantic Provinces Council on the Sciences (APICS) Math, Stats, and CS Conference

  I volunteered and helped with registration packages and fees. — October 2009

- Department Liaison — Graduate Student Society — September 2006 to September 2007

- Department of Mathematics and Statistics — Undergraduate Studies Committee (MUN)

  I was the student representative on the Department's Undergraduate Studies where issues relating to undergraduate mathematics are discussed. — October 2002 to September 2004

- Chief Returning Officer for the Math and Stats Society (MUN)

  For six elections, I was the C.R.O. where I organized the elections of officers. — September 2002 to April 2005

- Volunteer for Newfoundland and Labrador Math League — September 2001 to April 2004

<u>Other Information:</u>

- Proficient in: Fortran, C, Matlab, Maple, LaTeX

- Involved in maintaining Dalhousie LaTeX thesis class file

- Professional membership: Canadian Applied and Industrial Mathematics Society (CAIMS) member

- Completed Dalhousie University's course CLT 5000: Learning and Teaching in Higher Education as well as over 30 hours of professional development in learning and teaching