

ROBERT J. BUCKINGHAM

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Employment

University of Cincinnati

Professor of Mathematics (2020–Present).
Graduate Program Director (2020–Present).

Associate Professor of Mathematics (2014–2020).

Assistant Professor of Mathematics (2009–2014).

Centre de Recherches Mathématiques, Université de Montréal

Postdoctoral Fellow, theme year on Probabilistic Methods in Mathematical Physics
(2008–2009).

University of Michigan, Ann Arbor

Postdoctoral Assistant Professor of Mathematics (2005–2008).

Education

Duke University, Durham, NC.

Ph.D. in Mathematics, May 2005.

Advisor: Professor Stephanos Venakides

M.A. in Mathematics, December 2001.

Massachusetts Institute of Technology, Cambridge, MA.

S.B. in Mathematics, June 2000.

S.B. in Physics, June 2000.

Publications

Published or In-Press:

“**On the algebraic solutions of the Painlevé-III (D7) equation**” with Peter Miller. *Physica D* **441**, 133493 (22 pages) (2022).

“**Large-degree asymptotics of rational Painlevé-IV solutions by the isomonodromy method**” with Peter Miller. *Constructive Approximation* **56**, 233–443 (2022).

“**Large-order asymptotics for multiple-pole solitons of the focusing nonlinear Schrödinger equation II: far-field behavior**,” with Deniz Bilman and Deng-Shan Wang. *Journal of Differential Equations* **297**, 320–369 (2021).

“**Large-degree asymptotics of rational Painlevé-IV functions associated to generalized Hermite polynomials**,” *International Mathematics Research Notices* **2020**, 5534–5577 (2020).

“**A representation of joint moments of CUE characteristic polynomials in terms of Painlevé functions**,” with Estelle Basor, Pavel Bleher, Tamara Grava, Alexander Its, Elizabeth Its, and Jonathan Keating. *Nonlinearity* **32**, 4033–4078 (2019).

- “Large-order asymptotics for multiple-pole solitons of the focusing nonlinear Schrödinger equation,”** with Deniz Bilman. *Journal of Nonlinear Science* **29**, 2185–2229 (2019).
- “Nonintersecting Brownian bridges on the unit circle with drift,”** with Karl Liechty. *Journal of Functional Analysis* **276**, 1717–1772 (2019).
- “The k -tacnode process,”** with Karl Liechty. *Probability Theory and Related Fields* **175**, 341–395 (2019).
- “Large deformations of the Tracy-Widom distribution I. Non-oscillatory asymptotics,”** with Thomas Bothner. *Communications in Mathematical Physics* **359**, 223–263 (2018).
- “Semiclassical soliton ensembles for the three-wave resonant interaction equations,”** with Robert Jenkins and Peter Miller. *Communications in Mathematical Physics* **354**, 1015–1100 (2017).
- “Large-degree asymptotics of rational Painlevé-II functions: critical behaviour,”** with Peter D. Miller. *Nonlinearity* **28**, 1539–1596 (2015).
- “Large-degree asymptotics of rational Painlevé-II functions: noncritical behaviour,”** with Peter D. Miller, *Nonlinearity* **27**, 2489–2577 (2014).
- “Spectra of random Hermitian matrices with a small-rank external source: supercritical and subcritical regimes,”** with Marco Bertola, Seung-Yeop Lee, and Virgil Pierce, *Journal of Statistical Physics* **153**, 654–697 (2013).
- “The sine-Gordon equation in the semiclassical limit: dynamics of fluxon condensates,”** with Peter D. Miller, *Memoirs of the American Mathematical Society* **225**, number 1059, 1–136 (2013).
- “The sine-Gordon equation in the semiclassical limit: critical behavior near a separatrix,”** with Peter D. Miller, *Journal d’Analyse Mathématique* **118**, 397–492 (2012).
- “Spectra of random Hermitian matrices with a small-rank external source: The critical and near-critical regimes,”** with Marco Bertola, Seung-Yeop Lee, and Virgil Pierce, *Journal of Statistical Physics* **146**, 475–518 (2012).
- “Semiclassical spectral confinement for the sine-Gordon equation,”** *Mathematics and Computers in Simulation* **82**, 1030–1037 (2012).
- “Total integrals of Painlevé II solutions,”** with Jinho Baik, Jeffery DiFranco, and Alexander Its, *Nonlinearity* **22**, 1021–1061 (2009).
- “Asymptotics of Tracy-Widom distributions and the total integral of a Painlevé II function,”** with Jinho Baik and Jeffery DiFranco, *Communications in Mathematical Physics* **280**, 463–497 (2008).
- “Exact solutions of semiclassical non-characteristic Cauchy problems for the sine-Gordon equation,”** with Peter D. Miller, *Physica D* **237**, 2296–2341 (2008).
- “Long-time asymptotics of the nonlinear Schrödinger equation shock problem,”** with Stephanos Venakides, *Communications on Pure and Applied Mathematics* **60**, 1349–1414 (2007).
- “Volume determination for bulk material in bunkers,”** with Suhail Ahmed, Pierre Gremaud, Cory Hauck, Christopher Kuster, Masa Prodanovic, Tony Royal,

and Valentin Silantsev, *International Journal for Numerical Methods in Engineering* **61**, 2239–2249 (2004).

“**Thin film traveling waves and the Navier slip condition,**” with Michael Shearer and Andrea Bertozzi, *SIAM Journal on Applied Mathematics* **63**, 722–744 (2003).

Refereed Conference Proceedings:

“**The semiclassical focusing nonlinear Schrödinger equation,**” with Alexander Tovbis, Stephanos Venakides, and Xin Zhou, in *Proceedings of Recent Advances in Nonlinear Partial Differential Equations and Applications: a Workshop in Honor of Peter Lax and Louis Nirenberg*, AMS Proceedings of Symposia in Applied Mathematics **65** (2007).

Experimental Results:

“**Fluid polygons,**” with John W. M. Bush, *Gallery of Fluid Motion, Physics of Fluids* **13**, S10 (2001).

Submitted Manuscripts:

“**Differential equations for approximate solutions of Painlevé equations: Application to the algebraic solutions of the Painlevé-III (D_7) equation,**” with Peter Miller, arXiv:2308.16051 (2023).

Editorial

Communicating Editor, *Journal of Nonlinear Science* (2021–present).

Grants and Fellowships

External Research Grants:

- National Science Foundation Grant DMS–2108019, *Frontiers in Dispersive Wave Equations*, August 1, 2021–July 31, 2024.
- National Science Foundation Grant DMS–1615718, *New Directions in the Asymptotics of Nonlinear Waves*, August 1, 2016–July 31, 2020.
- National Science Foundation Grant DMS–1312458, *Nonlinear Wave Dynamics: Emergent Methods and Phenomena*, August 1, 2013–July 31, 2016.
- Simons Foundation Collaboration Grant for Mathematicians Award #245775, *Universality in Stochastic Processes and Differential Equations*, September 1, 2012–July 31, 2013.

External Conference Grants:

- National Science Foundation Grant DMS–1832863, *Cincinnati Symposium on Probability Theory and Applications 2018*, September 1, 2018–August 31, 2019.
- National Science Foundation Grant DMS–1441641, *Cincinnati Symposium on Probability Theory and Applications 2014*, July 1, 2014–June 30, 2015.

Fellowships:

- Charles Phelps Taft Research Center Faculty Release Fellowship, University of Cincinnati, 2017.

- University Research Council Faculty Research Grant, University of Cincinnati, Summer 2012.
- Charles Phelps Taft Research Center Summer Research Fellowship, University of Cincinnati, 2010.
- Department of Mathematics Spring/Summer Fellowship, University of Michigan, 2007.
- VIGRE Fellowship, Duke University, 2000–2005.

Postdoctoral Mentoring

Mentor for Rajinder Mavi (University of Cincinnati), 2019–2021.

Mentor for David A. Smith (University of Cincinnati), 2013–2015.

Invited Presentations

Invited Talks:

- 2023 Midwest Workshop on Asymptotic Analysis, October 2023, Indianapolis, IN.
- AMS Fall Central Section Meeting, Special Session on Progress in Nonlinear Waves, October 2023, Omaha, NE.
- Conference on Differential Equations and Dynamical Systems, September 2023, Miami, OH.
- AMS Fall Eastern Section Meeting, Special Session on Nonlinear Waves and Integrable Systems, September 2023, Buffalo, NY.
- International Congress for Industrial and Applied Mathematics, Minisymposium on Painlevé Equations, Applications, and Related Topics, August 2023, Tokyo, Japan.
- University of Michigan, Differential Equations Seminar, March 2023, Ann Arbor, MI.
- University of Kansas, Colloquium, March 2023, Lawrence, KS.
- UCLA, Analysis and PDE Seminar, February 2023, Los Angeles, CA.
- International Workshop on Rogue Waves, December 2022, Burlington, VT.
- Isaac Newton Institute Workshop on Analysis of Dispersive Systems, September 2022, Cambridge, United Kingdom.
- International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on Integrable Systems, Orthogonal Polynomials, and Special Functions, June 2022 (online).
- IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Session on Discrete Painlevé Equations and Related Topics, March–April 2022, Athens, GA.
- AMS Fall Central Section Meeting, Special Session on Progress on Nonlinear Waves, October 2021, Omaha, NE.
- Isaac Newton Institute Programme on Applicable Resurgent Asymptotics, Focus Week on Painlevé Equations and Related Conformal Theories, May 2021 (online seminar).

- Centre de Recherches Mathématiques, Université de Montréal, Séminaire Physique Mathématique, April 2021 (online seminar).
- Orthogonal Polynomials, Special Functions, Operator Theory and Applications, International Centre for Mathematical Sciences, August 2020 (online seminar).
- Joint Mathematics Meetings, AMS Special Session on Random Combinatorial Structures, Complex Analysis, and Integrable Systems, January 2020, Denver, CO.
- CIRM Workshop on Nonlinear Dispersive Waves, June 2019, Marseille, France.
- Fields Institute, Workshop on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering, May 2019, Toronto, ON.
- IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Session on Random Matrices, Painlevé Equations, and Integrable Systems, April 2019, Athens, GA.
- AMS Fall Central Section Meeting, Special Session on Modern Trends in Integrable Systems, October 2018, Ann Arbor, MI.
- ICTS Program on Integrable Systems in Mathematics, Condensed Matter, and Statistical Physics, July 2018, Bangalore, India.
- AIMS Conference on Dynamical Systems, Differential Equations, and Applications, Special Session on Water Waves and Other Dispersive Phenomena, July 2018, Taipei, Taiwan.
- AIMS Conference on Dynamical Systems, Differential Equations, and Applications, Special Session on Integrable Systems and Their Applications, July 2018, Taipei, Taiwan.
- AMS Spring Central Section Meeting, Special Session on Coherent Structures in Interfacial Flows, March 2018, Columbus, OH.
- Joint Mathematics Meetings, AMS Special Session on Algebraic, Analytic, and Geometric Aspects of Integrable Systems, Painlevé Equations, and Random Matrices, January 2018, San Diego, CA.
- Painlevé Equations and Applications: A Workshop in Memory of A. A. Kapaev, August 2017, Ann Arbor, MI.
- Fields Institute, Workshop on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering, August 2017, Toronto, ON.
- International Linear Algebra Society Meeting, Minisymposium on Toeplitz Matrices and Riemann-Hilbert Problems, July 2017, Ames, IA.
- IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Session on Painlevé Equations, Integrable Systems, and Random Matrices, March–April 2017, Athens, GA.
- AMS Spring Southeastern Section Meeting, Special Session on Riemann-Hilbert Problem Approach to Asymptotic Problems in Integrable Systems, Orthogonal Polynomials and Other Areas, March 2017, Charleston, SC.
- AIM, Workshop on Painlevé Equations and Their Applications, February 2017, San Jose, CA.
- University of Michigan, Integrable Systems Seminar, January 2017, Ann Arbor, MI.
- AMS Fall Central Section Meeting, Special Session on Integrable Systems and

Related Areas, October 2016, Minneapolis, MN.

- AMS Fall Central Section Meeting, Special Session on Multi-Scale Phenomena in Linear and Nonlinear PDE, October 2016, Minneapolis, MN.
- DePaul University, Colloquium, October 2016, Chicago, IL.
- AMS Fall Western Section Meeting, Special Session on Integrable Systems and Soliton Equations, October 2016, Denver, CO.
- University of Illinois Chicago, Analysis and Applied Mathematics Seminar, September 2016, Chicago, IL.
- AIMS Conference on Dynamical Systems, Differential Equations, and Applications, Special Session on Evolution Equations and Integrable Systems, July 2016, Orlando, FL.
- Fourth International Conference: Nonlinear Waves – Theory and Applications, Minisymposium on Integrable Systems and Nonlinear Waves, June 2016, Beijing, China.
- Fourth International Conference: Nonlinear Waves – Theory and Applications, Minisymposium on Asymptotic Problems in Integrable Systems and Random Matrix Theory, June 2016, Beijing, China.
- Simons Center for Geometry and Physics, Workshop on Six-Vertex Models, Dimers, Shapes, and All That, March 2016, Stony Brook, NY.
- Joint Mathematics Meetings, AMS Special Session on Integrable Systems, Painlevé Equations, and Random Matrices, January 2016, Seattle, WA.
- SIAM Conference on Analysis of PDEs, Minisymposium on Inverse Scattering and Dispersive Nonlinear Equations, December 2015, Scottsdale, AZ.
- Air Force Institute of Technology, Department of Mathematics and Statistics Seminar, October 2015, Wright-Patterson AFB, OH.
- International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on Riemann-Hilbert Problems: Analysis and Applications, June 2015, Gaithersburg, MD.
- International Symposium on Orthogonal Polynomials, Special Functions and Applications, Minisymposium on Aspects of Painlevé Equations, June 2015, Gaithersburg, MD.
- Nonlinear Evolution Equations and Dynamical Systems (NEEDS), May 2015, Santa Margherita di Pula, Sardinia, Italy.
- IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Session on Discrete and Ultra-discrete Integrable Systems and Painlevé Equations, April 2015, Athens, GA.
- BIRS Workshop on Modern Applications of Complex Variables: Modeling, Theory and Computation, January 2015, Banff, AB.
- SIAM Conference on Nonlinear Waves and Coherent Structures, Minisymposium on Inverse Scattering and Riemann-Hilbert Problems, August 2014, Cambridge, United Kingdom.
- Drexel University, Partial Differential Equations and Applied Mathematics Seminar, April 2014, Philadelphia, PA.
- University of South Florida, Colloquium, February 2014, Tampa, FL.

- Integrable Systems, Random Matrix Theory, and Combinatorics (Conference in honor of Nicholas Ercolani's 60th birthday), October 2013, Tucson, AZ.
- University of Colorado Colorado Springs, Colloquium, September 2013, Colorado Springs, CO.
- SIAM Annual Meeting, Minisymposium on Painlevé Equations, July 2013, San Diego, CA.
- Third International Conference: Nonlinear Waves – Theory and Applications, Minisymposium on Universality of Nonlinear Behaviour, June 2013, Beijing, China.
- 71st Midwest PDE Seminar, May 2013, Ann Arbor, MI.
- IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Session on Inverse Scattering and Riemann-Hilbert Problems: Theory and Applications, March 2013, Athens, GA.
- Northeastern University, Analysis-Geometry Seminar, January 2013, Boston, MA.
- Rice University, Analysis-Geometry Seminar, November 2012, Houston, TX.
- AMS Fall Western Section Meeting, Special Session on Asymptotic Analysis of Random Matrices, Integrable Systems, and Applications, October 2012, Tucson, AZ.
- AMS Fall Central Section Meeting, Special Session on Spectral, Scattering, and Inverse Scattering Theory, October 2012, Akron, OH.
- SIAM Conference on Nonlinear Waves and Coherent Structures, Minisymposium on Riemann-Hilbert Problems: Analysis and Computation, June 2012, Seattle, WA.
- AMS Spring Southeastern Section Meeting, Special Session on Applications of Complex Analysis in Mathematical Physics, March 2012, Tampa, FL.
- AMS Spring Western Section Meeting, Special Session on New Techniques and Results in Integrable and Near-Integrable Nonlinear Waves, March 2012, Honolulu, HI.
- University of Michigan, Applied and Interdisciplinary Mathematics Seminar, February 2012, Ann Arbor, MI.
- Joint Mathematics Meetings, AMS Special Session on Algebraic and Geometric Aspects of Integrable Systems and Random Matrices, January 2012, Boston, MA.
- University of Washington, Nonlinear Waves Seminar, May 2011, Seattle, WA.
- University of Kentucky, Analysis and PDE Seminar, April 2011, Lexington, KY.
- Rensselaer Polytechnic Institute, Colloquium, November 2010, Troy, NY.
- Case Western Reserve University, Colloquium, October 2010, Cleveland, OH.
- University of Illinois Chicago, Mathematics and its Applications Seminar, August 2010, Chicago, IL.
- Symmetry Plus Integrability 2010 (Conference in honor of Yuji Kodama's 60th birthday), June 2010, San Padre Island, TX.
- IUPUI, Colloquium, October 2009, Indianapolis, IN.
- University of Colorado, Probability Seminar, April 2009, Boulder, CO.
- IMACS International Conference on Nonlinear Evolution Equations and Wave

Phenomena, Session on Asymptotics of Nonlinear Waves and Related Problems, March 2009, Athens, GA.

- University of Louisville, Colloquium, February 2009, Louisville, KY.
- Central Michigan University, Colloquium, February 2009, Mount Pleasant, MI.
- Baylor University, Colloquium, February 2009, Waco, TX.
- Mississippi State University, Colloquium, February 2009, Starkville, MS.
- University of Cincinnati, Research Seminar, January 2009, Cincinnati, OH.
- Drexel University, Colloquium, January 2009, Philadelphia, PA.
- Lehigh University, Colloquium, January 2009, Bethlehem, PA.
- CRM, Séminaire Physique Mathématique, October 2008, Montreal, QC.
- BIRS Workshop on Random Matrices, Inverse Spectral Methods and Asymptotics, October 2008, Banff, AB.
- Random Matrices, Related Topics, and Applications, August 2008, Montreal, QC.
- International Workshop on Operator Theory and Applications, Special Session on Direct and Inverse Scattering Transforms for Integrable Systems and Their Semi-classical Limits, July 2008, Williamsburg, VA.
- AIMS International Conference on Dynamical Systems and Differential Equations, Special Session on Recent Developments of Analytic and Algebraic Methods in Integrable Systems and Applications, May 2008, Arlington, TX.
- University of Michigan at Flint, Mathematics Seminar, April 2008, Flint, MI.
- SIAM Southeastern-Atlantic Section Conference, Special Session on Integrable Equations, Their Special Limits, and the Riemann-Hilbert Problem Approach, March 2008, Orlando, FL.
- College of Charleston, Colloquium, February 2008, Charleston, SC.
- University of Texas - Pan American, Colloquium, February 2008, Edinburg, TX.
- SIAM Conference on Analysis of PDEs, Minisymposium on Asymptotic Behavior of Solutions to PDEs, December 2007, Mesa, AZ.
- Wayne State University, PDE Seminar, November 2007, Detroit, MI.
- Courant Institute of Mathematical Sciences, Integrable Systems and Random Matrices Working Seminar, March 2007, New York, NY.
- University of Michigan, Differential Equations Seminar, February 2007, Ann Arbor, MI.
- The Ohio State University, Applied Mathematics Seminar, October 2006, Columbus, OH.
- University of Illinois Urbana-Champaign, Joint Differential Equations and Stochastic Analysis Seminar, August 2006, Urbana-Champaign, IL.

Invited Posters:

- Recent Advances in Nonlinear Partial Differential Equations and Applications: A Workshop in Honor of Peter Lax and Louis Nirenberg, June 2006, Toledo, Spain.
- Integrable Systems, Random Matrices and Applications Conference in Honor of Percy Deift's 60th birthday, May 2006, New York, NY.

- Conference Organization** **AMS Spring 2023 Central Section Meeting** (local organizing committee), April 2023, Cincinnati, OH.
- Cincinnati Symposium on Probability Theory and Applications, 2018** (co-organizer), November 2018, Cincinnati, OH.
- 77th Midwest PDE Seminar** (co-organizer), April 2016, Cincinnati, OH.
- Cincinnati Symposium on Probability Theory and Applications, 2014** (co-organizer), September 2014, Cincinnati, OH.
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- Minisymposia Organized** **“Recent Trends in Integrable Systems and Applications”** (co-organizer), AMS Spring Central Section Meeting, April 2023, Cincinnati, OH.
- “Asymptotics and Integrable Systems”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, April 2022, Athens, GA.
- “Modern Methods for Dispersive Wave Equations”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, April 2019, Athens, GA.
- “Probabilistic Methods in Mathematical Physics”** (co-organizer), AMS Spring Southeastern Section Meeting, April 2018, Nashville, TN.
- “Asymptotics and Applied Analysis”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, March–April 2017, Athens, GA.
- “Advances in Dispersive Nonlinear Equations and Integrable Equations”** (co-organizer), SIAM Conference on Nonlinear Waves and Coherent Structures, August 2016, Philadelphia, PA.
- “Advances in Integrable Systems and Nonlinear Wave Theory”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, April 2015, Athens, GA.
- “Completely Integrable Systems and Nonlinear Dispersive Equations”** (co-organizer), AMS Spring Southeastern Section Meeting, March 2014, Knoxville, TN.
- “Randomness in Integrable Systems”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, March 2013, Athens, GA.
- “Recent Advances in Nonlinear Integrable Systems”** (co-organizer), SIAM Conference on Nonlinear Waves and Coherent Structures, August 2010, Philadelphia, PA.
- “Non-Self-Adjoint Spectral Problems”** (co-organizer), IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, April 2007, Athens, GA.
- “Semiclassical and Continuum Limits”** (co-organizer), SIAM Conference on Nonlinear Waves and Coherent Structures, September 2006, Seattle, WA.
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- Courses Taught** *University of Cincinnati (Semesters):*

Partial Differential Equations (Math 7006), Fall 2022.
Ordinary Differential Equations (Math 7005), Fall 2012, Fall 2020.
Topology (Math 7004), Fall 2017.
Rings, Fields, and Galois Theory (Math 7003), Spring 2018.
Complex Analysis (Math 7001), Spring 2013.
Applied Probability and Stochastic Processes (Math 6008), Fall 2014.
Advanced Calculus II (Math 6002), Spring 2022.
Mathematics of Games and Puzzles (Honors Seminar – Math 3096), Fall 2015, Fall 2017.
Introduction to Abstract Math (MATH 3001), Fall 2018, Spring 2021, Spring 2022.
Linear Algebra (Math 2076), Fall 2012, Spring 2013, Spring 2020 (two sections).
Dynamical Systems (Math 2074), Fall 2019.
Differential Equations (Math 2073), Fall 2013 (two sections), Fall 2019.
Multivariable Calculus (Math 2063, 2063H), Fall 2014 (two sections), Spring 2018, Fall 2018.
Calculus II (Math 1062), Fall 2015 (two sections), Fall 2020, Fall 2023 (two sections).
Calculus I with Pre-Calculus Review (Math 1060), Fall 2013.

University of Cincinnati (Quarters):

Probability Theory I, II, and III (Math 634-635-636), Fall 2009 – Spring 2010.
Ordinary Differential Equations II (Math 617), Spring 2011.
Abstract Algebra I, II, and III (Math 511-512-513), Fall 2010 – Spring 2011.
Honors Calculus IV (Math 264H), Winter 2011.
Honors Calculus III (Math 253H), Fall 2010, Fall 2011.
Calculus 0 (Math 250), Fall 2011.
Foundations of Applied Calculus (Math 224), Fall 2009.

University of Michigan:

Probability (Math 425), Winter 2008 (two sections), Spring 2008.
Boundary Value Problems for Partial Differential Equations (Math 454), Winter 2007.
Introduction to Numerical Methods (Math 471), Fall 2006.
Calculus III (Math 215), Fall 2007 (two sections).
Calculus I (Math 115), Fall 2005 (two sections).

Duke University (Instructor):

Linear Algebra and Differential Equations (Math 107), Summer 2005.
Laboratory Calculus II (Math 32L), Fall 2003.
Laboratory Calculus and Functions I (Math 25L), Fall 2002.

Duke University (Teaching Assistant):

Laboratory Calculus I (Math 31L), Fall 2001.

Referee

- Advances in Mathematics.
- Communications in Mathematical Physics.
- Constructive Approximation.
- Contemporary Mathematics (AMS).
- Duke Mathematical Journal.
- Electronic Journal of Probability.
- Indiana University Mathematics Journal.
- International Mathematics Research Notices.
- Journal of Differential Equations.
- Journal of Mathematical Analysis and Applications.
- Journal of Mathematical Physics.
- Journal of Nonlinear Science.
- Journal of Physics A.
- Journal of Statistical Physics.
- Journal of Theoretical Probability.
- Mathematical Methods in the Applied Sciences.
- Mathematical Physics, Analysis and Geometry.
- Mathematische Annalen. •Mediterranean Journal of Mathematics. •Memoirs of the American Mathematical Society.
- Nonlinear Analysis: Real World Applications.
- Nonlinearity.
- Physica D.
- Physics Letters A.
- Proceedings of the American Mathematical Society.
- Random Matrices: Theory and Applications.
- Reviews in Mathematical Physics.
- SIAM Journal of Mathematical Analysis.
- Studies in Applied Mathematics.
- Symmetry, Integrability, and Geometry: Methods and Applications.
- Transactions of the American Mathematical Society.