

## CURRICULUM VITAE OF RUSSELL M. BROWN

### ADDRESS

Russell M. Brown  
Department of Mathematics  
University of Kentucky  
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### BIOGRAPHICAL INFORMATION

#### EDUCATION

Ph.D. University of Minnesota, 1987  
Thesis Advisor: Eugene B. Fabes  
Thesis Title: Layer potentials and boundary value problems for  
the heat equation on Lipschitz cylinders  
M.S., University of Minnesota, 1987  
B.A., Rice University, 1980

#### EMPLOYMENT

Professor, University of Kentucky, Lexington, Kentucky, 1999–  
Visiting Associate Professor, University of Minnesota,  
Minneapolis, Minnesota, 1996–1997.  
Associate Professor, University of Kentucky, Lexington,  
Kentucky, 1993–1999  
Assistant Professor, University of Kentucky, Lexington,  
Kentucky, 1990–1993  
Dickson Instructor, University of Chicago, Chicago, Illinois,  
1987–1990

Member, Mathematical Sciences Research Institute, Berkeley, California, 1987–1988.

Teaching Assistant, University of Minnesota, Minneapolis, Minnesota, 1983–1986

Mathematics and science teacher, Cana High School, Mankayane, Swaziland, 1981–1982

#### GRANTS AND FELLOWSHIPS

1. Simons Foundation, Simons Collaborative Grants for Mathematicians, “Analysis and partial differential equations”, 2016-2021, \$35,000.
2. National Science Foundation, Collaborative research: Ohio River Analysis Meetings, 2014-16, \$31,452. Principal Investigator: Peter Hislop.
3. National Science Foundation, Graduate Scholars in Mathematics, \$559,626 to support fellowships for graduate students, 2014–2019. Principal investigator, Peter Perry, Co-PI with David Royster.
4. Simons Foundation, Simons Collaborative Grants for Mathematicians, “Analysis and partial differential equations”, 2011-2016, \$35,000.
5. National Science Foundation, Division of Mathematical Sciences, DMS 0099921, “Some questions in inverse problems and the mixed problem for Laplace’s equation in Lipschitz domains”, \$96,303, 2001–2004.
6. National Science Foundation research grant, “Minimal smoothness questions for inverse problems and boundary value problems”, \$78,477, 1998–2001.
7. (with Peter Hislop), Co-Principal Investigator for National Science Foundation-Conference Board on the Mathematical Sciences regional conference in the mathematical sciences “Nondestructive evaluation and inverse problems”, \$25,000, 1995.
8. National Science Foundation Research Grant, “Partial differential equations under minimal smoothness conditions” \$53,166 1993-1996.

9. Participant in National Science Foundation-Kentucky Experimental Project to Stimulate Competitive Research group on quantitative nondestructive evaluation, 1992-1994. The project budget was \$836,000 over 4 years.
10. National Science Foundation Research Grant, "Parabolic partial differential equations in nonsmooth domains" \$40,992, 1991-1993.
11. Participant in National Science Foundation-Kentucky Experimental Project to Stimulate Competitive Research group in partial differential equations, 1991. The project budget was approximately \$900,000 over 5 years.
12. Participant in National Science Foundation Research Grant, 1990-1991, PI-Carlos Kenig, University of Chicago.
13. National Science Foundation Postdoctoral Fellowship, 1987–1990.
14. A.P. Sloan Dissertation Fellowship, 1986–1987.

#### PUBLICATIONS

1. The method of layer potentials for the heat equation in Lipschitz cylinders. *Amer. J. Math.* **111** (1989), 339–379.
2. Area integral estimates for caloric functions. *Trans. Amer. Math. Soc.* **315** (1989), 565–589.
3. The oblique derivative problem for the heat equation in Lipschitz cylinders. *Proc. Amer. Math. Soc.* **107** (1989), 237–250.
4. The initial-Neumann problem for the heat equation in nonsmooth domains. *Trans. Amer. Math. Soc.* **320** (1990), 1–52.
5. (with Z. Shen), The initial-Dirichlet problem for a fourth order parabolic equation in Lipschitz cylinders. *Ind. Univ. Math. J.* **39** (1990), 1313–1353.
6. (with Z. Shen), Boundary value problems in Lipschitz cylinders for three-dimensional parabolic systems. *Rev. Mat. Iberoamericana* **8** (1992), 271–304.

7. (with M. Ash) Uniqueness and non uniqueness for harmonic functions with zero nontangential limits. In *Harmonic analysis: Proceedings of a conference held in Sendai Japan August 14–18, 1990*. ICM-90 Satellite conference proceedings. Springer-Verlag, 1991.
8. The trace of the heat kernel in Lipschitz domains, *Trans. Amer. Math. Soc.*, **339** (1993), 889–900.
9. (with Z. Shen) A note on boundary value problems for the heat equation in Lipschitz cylinders, *Proc. Amer. Math. Soc.*, **119** (1993), 585–594.
10. (with P. Hislop and A. Martinez) Lower bounds on eigenfunctions and the first eigenvalue gap, *Differential equations with applications to mathematical physics*, edited by W.F. Ames, J.V. Herod and E.M. Harrell, II, (1993), 33–50.
11. (with P. Hislop and A. Martinez) Lower bounds on the interaction between cavities connected by a thin tube, *Duke Math. J.*, **73** (1994), 163–176.
12. The mixed problem for Laplace’s equation in a class of Lipschitz domains, *Comm. Partial Diff. Eqns.*, **19** (1994), 1217–1233.
13. The Neumann problem on Lipschitz domains in Hardy spaces of order less than one, *Pac. J. Math.* **171** (1995), 389–407.
14. (with P. Hislop and A. Martinez) Eigenvalues and resonances in domains with thin tubes: Neumann boundary conditions, *J. Diff. Equations* **115** (1995), 458–476.
15. (with Zhongwei Shen) Estimates for the Stokes Operator in Lipschitz Domains, *Ind. U. Math. J.* **44** (1995), 1183–1206.
16. Global uniqueness in the impedance imaging problem for less regular conductivities, *SIAM J. Math. Anal.* **27** (1996), 1049–1056.
17. (with Wei Hu and Gary M. Lieberman) Weak solutions of parabolic equations in non-cylindrical domains, *Proc. Amer. Math. Soc.* **125** (1997), 1785–1792.

18. (with G. Uhlmann) Uniqueness in the inverse conductivity problem for nonsmooth conductivities in two dimensions, *Comm. Partial Diff. Eqns.* **22** (1997), 1009–1027.
19. (with Zhongwei Shen and Peter Shi) Regularity of solutions to a contact problem, *Trans. Amer. Math. Soc.*, **350** (1998), 4053–4063.
20. (with Peter Perry and Zhongwei Shen) The additive turbulent decomposition for the two-dimensional incompressible Navier-Stokes equations: convergence theorems and error estimates, *SIAM J. Appl. Math.*, **59** (1999), 139–155.
21. (with Peter Perry and Zhongwei Shen) On the dimension of the attractor for the non-homogeneous Navier-Stokes equations in non-smooth domains, *Ind. U. Math. J.*, **49** (2000), 81–112.
22. (with Scott A. Yost and Prasada Rao) Absorbing boundary technique for open channel flows, *Int. J. Numer. Meth. in Fluids*, **33** (2000), 641–656.
23. (with Wei Hu) Boundary value problems for higher order parabolic equations, *Trans. Amer. Math. Soc.*, **353** (2001), 809–838.
24. Recovering the conductivity at the boundary from the Dirichlet to Neumann map: a pointwise result, *J. Inverse and Ill-posed problems*, **9** (2001), 567–574.
25. Estimates for a scattering map associated to a two-dimensional first order system, *J. non-linear science*, **11** (2001), no. 6, 459–471.
26. (with Rodolfo Torres) Uniqueness in the inverse conductivity problem for conductivities with  $3/2$  derivatives in  $L^p$ ,  $p > 2n$ , *J. Fourier Analysis and Applications.*, **9** (2003), 563–574.
27. (with Mikko Salo) Identifiability at the boundary for first-order terms, *Appl. Analysis*, **85** (2006), 735–749.
28. (with Loredana Lanzani and Luca Capogna) The mixed problem in  $L^p$  for some two-dimensional Lipschitz domains *Math. Ann.*, **342** (2008), 91–124.

29. (with Irina Mitrea, Marius Mitrea and Matt Wright), Mixed boundary value problems for the Stokes system, *Trans. Amer. Math. Soc.*, **362** (2010), 1211-1230.
30. (with Irina Mitrea) The mixed problem for the Lamé system in a class of Lipschitz domains, *J. Differential Equations*, **246** (2009), no. 7, 2577–2589.
31. (with Zhongyi Nie), Estimates for a family of multi-linear forms, *J. Math. Analysis and App.*, **377** (2011), 79-87.
32. (with Katharine Ott), The mixed problem for the Laplacian in Lipschitz domains, published online November 2012, *Potential Analysis*, **38** (2013), 1333-1364.
33. (with Justin Taylor and Katharine Ott) The mixed problem in Lipschitz domains with general decompositions of the boundary, *Trans. Amer. Math. Soc.*, **365** (2013), 2893–2930.
34. (with Seick Kim and Justin Taylor), The Green function for elliptic systems in two dimensions, arXiv:1205.1089, *Comm. Partial Diff. Equations*, **38** (2013), 1574-1600.
35. (with Katharine Ott) The mixed problem for the Lamé system in two dimensions, arXiv:1211.3655 [math.AP], *J. Diff. Equations*, **254** (2013), 4373–4400.
36. (with Andoni Garcia and Guo Zhang) Appendix: Recovering the gradient of  $C^1$ -conductivity at the boundary. arXiv:1212.0727
37. (with S. Kim and J. Taylor) Heat kernel for the linear system of elasticity with mixed boundary conditions, *J. Diff. Equations*, **257** (2014), 2485–2519.
38. (with K.A. Ott and S. Kim) The Green function for the mixed problem for the linear Stokes system in domains in the plane, arXiv:1310.1987, *Math. Nachr.*, **288** (2015), 452–464.
39. (with K.A. Ott and P.A. Perry) Action of a scattering map on weighted Sobolev spaces in the plane, with an appendix co-authored by N. Serpico, arXiv:1501.04669, *J. Funct. Anal.* **271** (2016), 85–106.

40. (with P.A. Perry) Appendix to Soliton solutions and their (in)stability for the focusing Davey-Stewartson II equation, *Nonlinearity* **31** (2018), 4290-4325
41. (with C.W. Lee and K.A. Ott) Estimate for Brascamp-Lieb forms in  $L^p$ -spaces with power weights, arXiv:1807.07040v1 [math.CA].

#### CONFERENCE PROCEEDINGS

1. (with Z. Shen), A note on  $L^p$  estimates for parabolic systems in Lipschitz cylinders, in *Partial differential equations with minimal smoothness and applications*, edited by B. Dahlberg, E. Fabes, R. Fefferman, D. Jerison, C. Kenig and J. Pipher, volume 42 of “IMA volumes in mathematics and its applications”, Springer Verlag, 1992.
2. The trace of the heat kernel in domains with nonsmooth boundaries, in *Partial differential equations with minimal smoothness and applications*, edited by B. Dahlberg, E. Fabes, R. Fefferman, D. Jerison, C. Kenig and J. Pipher, volume 42 of “IMA volumes in mathematics and its applications”, Springer Verlag, 1992.
3. (with Jeffrey Sykes) The Mixed Boundary Problem in  $L^p$  and Hardy spaces for Laplace’s Equation on a Lipschitz Domain, *Contemporary Math.*, **277** (2001), 1–18.

#### POSTDOCTORAL SCHOLAR SUPERVISED

Katharine A. Ott, 2008–2010, supported by a National Science Foundation mathematical sciences post-doctoral fellowship.

#### VISITING STUDENT

Patrick Tolksdorf, visiting from Technische Universität Darmstadt, February 2015–June 2015, supported by Studienstiftung des deutschen Volkes.

#### STUDENTS SUPERVISED

#### PH.D. COMMITTEES CHAIRED

Wei Hu, PhD 1997, currently at Houghton College, Houghton, NY. Thesis title: “The initial-boundary value problem for higher order differential operators on Lipschitz cylinders”

Jeff Sykes, PhD 1999, currently at Ouachita Baptist University, Arkadelphia, Arkansas. Thesis title: “The mixed problem for Laplace’s equation in a class of Lipschitz domains”.

Michael Dobranski, Ph.D. 2004, currently at Morehead State University, Thesis title: “Construction of exponentially growing solutions to first-order systems with non-local potentials”

Zhongyi Nie, PhD 2009, currently at USAA, San Antonio, Texas, Thesis title: “Estimates for a class of multi-linear forms”

Justin Taylor, PhD 2011, currently at Murray State University, Murray, Kentucky. Thesis Title: “Convergence of Eigenvalues for Elliptic Systems on Domains with Thin Tubes and the Green Function for the Mixed Problem”

Yaowei Zhang, chair, Ph.D., August 2016, first position at ASML, San Jose, CA, Thesis Title: “The Bourgain spaces and recovery of magnetic and electric potentials of Schrodinger operators”

Laura Croyle, chair, Ph.D. August 2016, first position at Salve Regina University, Thesis Title: “Solutions to the  $L^p$  Mixed Boundary Value Problem in  $C^{1,1}$ -Domains”

Morgan Schreffler, chair, Ph.D., May 2017, first position at Bethel College, Kansas. Thesis Title: “Approximation of Solutions to the Mixed Dirichlet-Neumann Boundary Value Problem on Lipschitz Domains.”

#### PHD COMMITTEES

Scott Dillery, mathematics, PhD 1994, committee member

Lee Li, mechanical engineering, PhD 1994?, outside examiner

George Mihalache Leca, physics, committee member

Robert Robertson, mathematics, PhD 1996, committee member

Albert Schueller, mathematics, PhD 1996, committee member

John Tolle, mathematics, PhD 1996, committee member



Ron van den Houten, mathematics, PhD 1996, committee member

Doug Denger, mechanical engineering, PhD 1996, outside examiner

David Weatherly, mechanical engineering, PhD 1997, committee member

Zhiqiang Wu, mathematics, PhD 1997, committee member

Mark Fahey, mathematics, PhD 1998, committee member

Stephen Aldrich, mathematics, PhD 1999, committee member

Carl Lutzer, mathematics, PhD 2000, committee member

Ivana Mihalek, physics, PhD 2000, outside examiner

Sharon Faulkner, mathematics, PhD 2001, committee member

Kim Knudsen, mathematics, Aalborg University, Denmark, PhD 2003

Ping Ping Qu, statistics, PhD 2004, committee member

Leonard Hoffnung, mathematics, Ph.D. 2004, committee member.

Katherine Lybarger, mathematics, committee member, 2001–

Alina Iacob, mathematics, Ph.D. 2005, committee member, 2001–2005.

Yu Xiang, chemical and materials engineering, committee member, 2002–2004.

Todorka Nedeva, mathematics, committee member, 2001–2005

Jingyu Luan, statistics, outside examiner, September 2004

James Money, mathematics, Ph.D. 2006, committee member, August 2004–May 2006.

Aekyoung Shin-Kim, mathematics, committee member, March 2005–July 2007

Pat Quillen, mathematics, committee member, September 2005.

Earnest Seagraves, electrical engineering, outside examiner, November 2005.

Yuho Shin, Ph.D. 2006, mathematics, committee member, November 2006.

Joel Kilty, committee member, April 2007–2009

Yingcui Jia, Physics, outside examiner, October 2007

Julie Miker, committee member, November 2007–November 2009

Ping Zhang, committee member, November 2007–November

2009

Weifeng Zhi, committee member, January 2009–July 2011

Chiranjib Dutta, Physics, outside examiner, May 2010

Megan Gier, Mathematics, committee member, October 2011–April 2014

Ryan Walker, Mathematics, committee member, April 2010–April 2013

Aaron Saxton, Mathematics, committee member, April 2012–June 2014

Michael Music, Mathematics, committee member, November 2012–July 2016

Gu Shu, Mathematics, committee member, December 2012–July 2016

Emily Bittle, Physics, outside examiner, March 2013

Gururaj Wagle, Physics, outside examiner, May 2014

Qiao Liang, Mathematics, committee member, June 2013–September 2015

Joseph Lindgren, Mathematics, committee member, 2015–April 2017

Nima Nouri, Physics, outside examiner, August 2016

Maryam Al Ghaffi, committee member, March 2017

Ding Zhao, Mathematics, committee member October 2017–May 2018

Huan Jin, Toxicology, committee member, November 2017

Sang, Yucong, Mathematics, committee member, June 2017–June 2017

#### MASTERS STUDENTS

Marsha Moyer, mathematics, chair, supervised preparation for oral exam, 1997

Steve Elliott, mathematics, chair, supervised reading for oral exam, 2000

Lisa Dobson, mathematics, chair of Master's committee, MA spring 2003

Wendy Martin, mathematics, chair of Master's committee, MA spring 2003

Mary Neu, mathematics, chair of Master's committee, fall 2003

Charles Feldhaus, mathematics, member of Master's committee,

spring 2004,  
Phuoc Ho, member of Master's committee, Spring 2006.  
Julie Miker, member of Master's examination committee, Spring 2006.  
Joel Kilty, member of Master's examination committee, Spring 2006.  
Nicholas Kirby, member of Master's examination committee, November 2006,  
Jennifer Ferguson, member of Masters examination committee, April 2007.  
Daniel Harrison, member of Masters examination committee, April 2007.  
Zhongyi Nie, chair of Masters examination committee, April 2007.  
Justin Taylor, chair of Masters committee, January 2008.  
Chris Mattingly, Megan Dailey, member of Masters examination committee, April 2008.  
Fengtao Fan, member of Masters examination committee, December 2008.  
Ashlee Matney, member of Master's examination committee, June 2009.  
Megan Gier, member of Masters examination committee, May 2011.  
Daniel Corral, member of Masters examination committee, July 2011.  
George Tiser, member of Masters examination committee, December 2011.  
Michael Music, member of Masters examination committee, February 2012.  
Yaowei Zhang, chair of Masters examination committee, April 2012  
Rachel May, member of Masters examination committee, July 2012.  
Gu Shu, member of Masters examination committee, October 2012.  
Morgan Schreffler, chair of Masters examination committee, September 2013.  
Brad Schwer, member of Masters examination committee, April

2014

Robert Wolf, member of Masters examination committee, July

2014

Andrew Rast, member of Masters examination committee, July

2014

Joseph Lindgren, chair of Masters examination committee,

September 2014

Qiao Liang, member of Masters examination committee, April

2013

#### CONFERENCES AND SEMINAR TALKS

1. “The method of layer potentials for the heat equation in Lipschitz cylinders”, Partial differential equations seminar, Massachusetts Institute of Technology, May 1987.
2. “The initial-Neumann problem for the heat equation in Lipschitz cylinders”, Special session on potential theory and partial differential equations in nonsmooth domains, Regional AMS meeting, Lawrence Kansas, October 27–28, 1988.
3. “The initial-Neumann problem with data in  $L^p$ ”, Partial differential equations seminar, Northwestern University, Evanston, Illinois, April 1989.
4. “The trace of the heat kernel in nonsmooth domains”, Conference on partial differential equations under minimal smoothness conditions, University of Chicago, Chicago Illinois, March 25–30, 1990
5. “The trace of the heat kernel in nonsmooth domains”, Partial differential equations seminar, Massachusetts Institute of Technology, January 1990.
6. “Boundary value problems for parabolic systems in three space dimensions”, Brown University, March 6, 1991.
7. “The trace of the heat kernel in nonsmooth domains: Neumann boundary conditions”, CBMS regional conference on harmonic analysis and partial differential equations, St. Louis, Missouri, June 1991.

8. "Eigenvalues and resonances in domains with thin tubes", Partial differential equations seminar, Purdue University, April 1992.
9. "Boundary value problems for parabolic equations in nonsmooth domains", Colloquium, Department of Mathematics, Wright State University, Dayton Ohio, May 1992.
10. "The trace of the heat kernel for operators with continuous coefficients", 20 minute talk in Midwest Southeastern-Atlantic second joint regional conference on differential equations, November 1992.
11. "Mixed boundary value problems for Laplace's equation in Lipschitz domains", 20 minute talk at AMS regional meeting in Syracuse NY, September 1993.
12. "Global uniqueness in the impedance imaging problem with less regular conductivities", 20 minute contributed talk at the Midwest differential equations conference, Norman OK, October 1994.
13. "Global uniqueness in the impedance imaging problem with less regular conductivities", 30 minute talk at the AMS summer research conference on the inverse conductivity problem, Seattle Washington, 22-27 July, 1995.
14. "Uniqueness in the impedance imaging problem for less regular conductivities", 20 minute talk at AMS regional meeting in Kent, Ohio, 3-4 November, 1995.
15. "The inverse conductivity problem in two dimensions", Midwest PDE Seminar, Minneapolis, Minnesota, April 1997.
16. "Boundary value problems in Lipschitz domains and applications", Colloquium, Oakland University, Rochester, Michigan, March 17, 1998.
17. "The inverse conductivity problem in two dimensions", Workshop on harmonic analysis and potential theory, Mathematical Sciences Research Institute, October 1997.
18. "The dimension of the attractor for the non-homogeneous Navier-Stokes equation", presented at a conference titled Equations

de Navier-Stokes et analyse microlocal, 9-13 November 1998, CIRM, Luminy, France.

19. “The inverse conductivity problem for less regular conductivities, seminar”, Universidad del Pais Vasco, Bilbao, Spain, May 14 1998.
20. “The inverse conductivity problem for less regular conductivities, seminar”, Universidad Autónoma de Madrid, Madrid, Spain, May 19, 1998.
21. “The initial-Dirichlet problem for higher order parabolic equations in Lipschitz cylinders”, 20 minute presentation at the American Mathematical Society sectional meeting at Temple University, Philadelphia, Pennsylvania, 4–6 April 1998.
22. “The inverse conductivity problem”, November 1999, Colloquium, University of Missouri, Columbia, Missouri.
23. “The mixed problem for Laplace’s equation”, March 2000, Fayetteville, Arkansas.
24. “The inverse conductivity problem in two dimensions and a related scattering problem”, June 2000, Fabes Lectures, Firenze, Italy.
25. “The mixed problem for Laplace’s equation”, June 2000, Analysis Seminar, Universidad del Pais Vasco, Bilbao, Spain.
26. “The mixed problem for Laplace’s equation”, November 2000, Analysis Seminar, University of Arkansas, Fayetteville, Arkansas.
27. “The inverse conductivity problem with less regular conductivities”, November 2000, Colloquium, University of Arkansas, Fayetteville, Arkansas.
28. “Estimates for a scattering map in two dimensions”, Special session in harmonic analysis at a regional meeting of the AMS in Lawrence, KS, 30–31 March 2001.
29. “ $L^2$  estimates for a scattering transform in two dimensions”, Workshop in inverse problems and applications at the Mathematical Sciences Research Institute, Berkeley, CA, 12 November 2001.

30. “The inverse conductivity problem for conductivities with  $3/2$  derivatives in  $L^p$ ,  $p > 3n/2$  in a special session on Partial differential equations at the 974th sectional meeting of the American Mathematical Society, Ann Arbor, Michigan, 1–3 March 2002.
31. “The inverse conductivity problem for less regular conductivities,” MaPhySto Workshop on Inverse Problems Aalborg, Denmark, 13 September 2002.
32. “The mixed problem for Laplace’s equation in a class of two-dimensional Lipschitz domains”, with Luca Capogna and Loredana Lanzani, in a special session on Function Spaces, Singular Integrals and Applications to PDEs at the 982nd sectional meeting of the American Mathematical Society, Orlando, Florida, 9–10 November 2002.
33. “Regularity for the coefficient in the inverse conductivity problem”, special session on “Recent developments in the mathematical theory of inverse problems” at the First joint international meeting of the Real Sociedad Matemática Española and the American Mathematical Society, Sevilla, Spain, 18–21 June 2003.
34. “The graduate program in mathematics at the University of Kentucky”, recruitment talk at the Michigan Undergraduate Mathematics Conference, Grand Valley State University, Grand Rapids, Michigan, 25 October 2003.
35. “Continuity of a scattering transform for a first-order system”, AMS Special session on inverse problems, Nashville, Tennessee, 16–17 October 2004.
36. “Continuity of a scattering transform for a first-order system”, Universidad del Pais Vasco, Bilbao, Spain, 8 February 2005.
37. “Continuity of a scattering transform for a first-order system”, Inverse Problems Seminar, Department of Mathematics, University of Washington, Seattle, Washington, 1 March 2005.
38. “The mixed problem in two-dimensional Lipschitz domains,” with Luca Capogna and Loredana Lanzani, in a special session on Partial

Differential Equations at the 1004th sectional meeting of the American Mathematical Society, Bowling Green, Kentucky, March 2005.

39. “Boundary identifiability of a vector potential for a magnetic Schrödinger operator”, Southeastern sectional meeting of the American Mathematical Society, April 2005.
40. “Uniqueness in the inverse conductivity problem and the regularity of the conductivity”, Colloquium, University of Arkansas, 22 April 2005.
41. “Boundary identifiability of a vector potential for a magnetic Schrödinger operator”, Fabes Lectures, Trieste, Italy, 9 September 2005.
42. “Boundary identifiability of a vector potential for a magnetic Schrödinger operator”, Centre Recerca Matemàtica, Madrid, Spain, May 2006.
43. “The mixed problem for the Lamé system in a class of Lipschitz domains”, Southeastern sectional meeting of the American Mathematical Society, Fayetteville, Arkansas, 3 November 2006.
44. “The mixed problem”, Southeastern sectional meeting of the American Mathematical Society, Baton Rouge, Louisiana, 29 March 2008.
45. “What is a high school math day?”, Kentucky Section of the Mathematics Association of America, 28 March 2009.
46. “The mixed problem”, Recent advances in harmonic analysis and elliptic pde’s, University of Virginia, Charlottesville, Virginia, 10 May 2009.
47. “The mixed problem in Lipschitz domains”, Southeastern sectional meeting of the American Mathematical Society, Lexington, Kentucky, March 2010.
48. “Estimates for a family of multi-linear forms and the continuity of a scattering map in two dimensions, Inverse problems seminar, MSRI, 8 December 2012.



49. “The inverse conductivity problem”, Colloquium, University of Cincinnati, 3 March 2011.
50. “Estimates for a family of multi-linear forms” (work with Z. Nie), AMS southeastern sectional meeting, Statesboro, Georgia, Special session on harmonic analysis and partial differential equations, 12-13 March 2011.
51. “Central Kentucky Math Circles” (with Ben Braun and Jakayla Robbins), 2011 UK METS Symposium, 29 April 2011.
52. “The American Mathematics Competition”, KCTM Annual Meeting, Bowling Green, Kentucky, October 2011.
53. “The inverse conductivity problem for less regular conductivities” and “Estimates for a scattering map in two dimensions”, a course of 5 lectures given as part of the trimester “Theoretical and numerical aspects of inverse problems, 23 May–3 June 2011, Instituto Ciencias Matemáticas, Madrid, Spain.
54. “Estimates for a family of multi-linear forms and the continuity of a scattering map in two dimensions”, Inverse problems seminar, University of Delaware, 2 November 2011.
55. “Central Kentucky Mathematics Circles” Kentucky Section of the MAA, Louisville, Kentucky, 30–31 March 2012.
56. “The Green function for the mixed boundary value problem for Stokes”, Special session on harmonic analysis and nonlinear partial differential equations at the Spring Southeastern Sectional Meeting, University of Tennessee, Knoxville, TN, 21-23 March 2014.
57. “The mixed problem”, Analysis seminar, Temple University, 31 March 2014
58. “A scattering map in two dimensions”, Three days on analysis and PDEs, ICMAT, Madrid, Spain, 3-5 June 2014.
59. “A scattering map in two dimensions”, 10th AIMS conference on dynamical systems, differential equations, and applications, 7-11 July 2014, Madrid, Spain.

60. “A scattering map in two dimensions”, Analysis Seminar, Universidad Autónoma de Madrid, May 2017.

#### WORKSHOPS AND RESEARCH VISITS

1. 3–5 March 2010, Circle on the Road.
2. Analysis and boundary value problems on real and complex domains, Banff International Research Station, August 2010
3. University of Minnesota, IMA, October 2010, host Irina Mitrea.
4. Inverse problems and applications, MSRI, November 2010.
5. Trimester on inverse problems, 23 May–3 June 2011. Instituto Ciencias Matemáticas, Madrid, Spain.
6. Focused research group: Mixed boundary value problems, Banff International Research Station, June 2011.
7. AIM workshop titled “Finding and keeping graduate students”, August 2012.
8. Institut Henri Poincaré, Program on Inverse problems, June 22–July 3, 2015.

#### PROFESSIONAL ACTIVITIES

- Referee for: Acta Mathematica, Advances in Diff. Eqns., Analysis and PDE, Applicable Analysis, Bulletin Iranian Mathematical Society, Bulletin of the London Math. Soc., Comm. in Partial Diff. Equations, Comm. Pure and App. Analysis, Complex Variables and Elliptic Equations, Duke Math. Journal, Ind. U. Math. J., International Math. Research Letters, Inverse Problems., Inverse Problems and Imaging, J. Math. Analysis and Applications, J. Zhejiang University Science, J. Fourier Analysis and Appl., J. Fun. Analysis, J. Diff. Eqns., Math. Ann., Phys. Measurement, Proceedings of the American Mathematical Society, Rocky Mountain Math. J., Soochow J. Math., SIAM J. Appl. Math., SIAM J. Math. Anal., SIAM J. Numer. Analysis, Trans. of the Amer. Math. Soc., Physiological Measurement, Publicationes Mathematicae, Royal Society of Edinburgh Proceedings A (Mathematics).

- Reviewer for Math Reviews. 1990-2000.
- Reviewer for NSF proposals, Division of Math. Sciences.
- Member of the American Mathematical Society, MAA

#### CONFERENCES AND SESSIONS ORGANIZED

- (with Irina Mitrea) co-organized a special session titled “Special session on Harmonic Analysis, Partial Differential Equations, and Applications”, at the Joint Mathematics Meetings in Baltimore, Maryland, 18 January 2019.
- (with Katharine Ott) co-organized a special session at the AMS Southeastern Sectional meeting in Louisville, Kentucky, 5–6 October 2013.
- (with Alberto Corso) co-organized a joint meeting of the Kentucky Section of the Mathematical Association of America and a Southeastern Regional meeting of the American Mathematical Society to be held in Lexington, Kentucky, March 2010.
- (with Peter Hislop, Changyou Wang, John Lewis), co-organizer of the 59th Midwest Partial Differential Equations Seminar. Lexington, Kentucky, March 2007.
- (with Alberto Ruiz and Gunther Uhlmann) Co-organized a special session titled “Recent developments in the mathematical theory of inverse problems” at the first joint meeting of the American Mathematical Society and the Real Sociedad Matematica Española, Sevilla, Spain, June 2003.
- (with Peter Hislop, Zhongwei Shen, Chair) Organizing committee for the Forty-ninth Midwest Partial Differential Equations Seminar held at the University of Kentucky in March 2002.
- Co-organized Midwest PDE seminar at the University of Kentucky, Lexington, Kentucky, September 1997.
- Co-organized mini-symposium on inverse problems at the 1996 SIAM annual meeting, July 1996.

- Co-organized an NSF-CBMS conference entitled “Inverse problems and nondestructive evaluation” Lexington, Kentucky, June 1995.
- Co-organized a special session entitled: “Partial differential equations under minimal smoothness conditions”, as part of an AMS regional meeting in Lexington, Kentucky, March 1994.
- Organizing committee for MWSEAC, a conference on differential equations held at the University of Kentucky, 13–15 November, 1992.

#### DEPARTMENTAL DUTIES

- Course coordinator for Finite mathematics and its applications (MA162), 1993–1996, 1998–1999.
- Recruiting committee, 1990–1991, 1994–1995, 1995–1996, 2005–06.
- Partial differential equations preliminary examination committee, 1991–1996, June 2000, January 2007, January 2008 (chair), January 2013 (chair), June 2013, January 2014, June 2014.
- Undergraduate advisory committee, 1993–1994, 1994–1995, 1995–1996.
- Analysis preliminary examination committee, 1997–1998, May 2001, January 2002 (chair), May 2002, January 2003, May 2007, May 2008, May 2011 (chair), January 2012, (chair), June 2012 (chair).
- Search committee for mathematics department chair, 1996
- Course coordinator for Calculus II (MA114), Spring 1998.
- Departmental planning committee, 1997–1998.
- Departmental executive committee, 1997–1998.
- Course coordinator, MA162, Spring 1999.
- Edited departmental newsletter, 1998–2002.
- Course coordinator for Calculus I (MA113), fall 1999–spring 2002, fall 2013–
- Course coordinator for Calculus II (MA114), spring 2000–spring 2002.

- Combinatorics preliminary examination committee, June 2000.
- Departmental self-study committee, June 1999-February 2000.
- Math club advisor, fall 1999-spring 2002
- Dean's advisory committee for natural sciences, 1999-2001, Chair for 2000-2001.
- Graduate advisory committee, 1999-2002
- Departmental salary committee, 2001-2003, chair for 2002-2003.
- Director of Graduate Studies, Department of mathematics, May 2002-July 2004.
- Departmental executive committee, 1997-1998, May 2002-July 2004 (as DGS), August 2007- (as DUS).
- Course coordinator for Calculus I, Fall 2005-May 2007
- IMA representative, January 2005-May 2007
- Chair of the committee to recommend a candidate for the Royster chair, September 2006.
- Member of the committee to recommend a candidate for the Edwards chair, September 2006, October 2010.
- Temporary member of Dean's advisory committee for the natural sciences, December 2006.
- Director of Undergraduate Studies, Department of Mathematics, July 2007-June 2010
- Member of the departmental salary committee, 2007-2009
- Member of service course committee, October 2007-June 2010
- Member lecturer hiring committee, April 2008
- Member of College of Arts and Sciences Educational Policy Committee, September 2008-May 2010

- Member of Central Advising Service Faculty Advisory Board, April 2008–May 2010
- Helped to organize UK High School Mathematics Day, 2008, 2009 and 2010.
- Chair, Educational Policy Committee, College of Arts and Sciences, University of Kentucky, 2009–2010.
- Member of the numerical analysis preliminary examination committee, June 2009.
- Member Central Kentucky Mathematics Circles, helped to organize the High School Mathematics Circle, 2010–16. 2018–
- State coordinator for the American Mathematics Competition, May 2010–August 2014
- Chair of post-doctoral scholar hiring committee, spring 2012.
- Director of MathExcel, fall 2011–spring 2014
- Member of the graduate advisory committee, 2011–12, 2012–13.
- Member of the Academic Area Advisory Committee for the Physical and Engineering Sciences, 2012-2014.
- UKCEC, August 2013–August 2014.
- Departmental executive committee, 2013–14.
- Chair, Department of Mathematics, 2014–18.
- Member of the partial differential equations prelim committee, June 2018.
- Coordinator of MA 114, Fall 2018.
- Faculty advisor for the University of Kentucky Skateboard Club. 2018–

December 12, 2018