

Contact Information

Michigan State University
Department of Mathematics
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Academic Positions

NSF Mathematical Sciences Postdoctoral Research Fellow
Michigan State University, June 2017 – July 2019.

NSF Mathematical Sciences Postdoctoral Research Fellow
Washington University in St. Louis, June 2016 – May 2017.

Hale Postdoctoral Fellow
Georgia Institute of Technology, School of Mathematics, August 2014 – May 2016.

Education

2008 - 2014	PhD	Mathematics	Louisiana State University
2008 - 2010	MS	Mathematics	Louisiana State University
2004 - 2008	BS	Mathematics	Louisiana State University (Summa cum Laude)

Publications

1. Irina Holmes, Paata Ivanisvili, and Alexander Volberg, *The Sharp Constant in the Weak (1,1) Inequality for the Square Function: A New Proof*, Preprint <https://arxiv.org/abs/1710.01346>
2. Irina Holmes, Stefanie Petermichl, and Brett D. Wick, *Weighted little bmo and two-weight inequalities for Journé commutators*, To appear in *Analysis & PDE*. <https://arxiv.org/abs/1701.06526>
3. Xuan Thinh Duong, Irina Holmes, Ji Li, Brett D. Wick, and Dongyong Yang, *Two weight Commutators in the Dirichlet and Neumann Laplacian settings*, Submitted. <https://arxiv.org/abs/1705.06858>
4. Irina Holmes, Robert Rahm, and Scott Spencer, *Two-Weight Inequalities for Commutators with Fractional Integral Operators*, *Studia Math*, Volume 233, Number 3, 2016. <http://arxiv.org/abs/1510.05331>.
5. Irina Holmes and Brett D. Wick, *Two Weight Inequalities for Iterated Commutators with Calderón-Zygmund Operators*, To appear in *Journal of Operator Theory*. <http://arxiv.org/abs/1509.03769>.
6. Irina Holmes, Michael T. Lacey, and Brett D. Wick, *Commutators in the Two-Weight Setting*, *Mathematische Annalen*, Volume 367, Issue 1–2, 2017. <http://arxiv.org/abs/1506.05747>.
7. Irina Holmes, Michael T. Lacey, and Brett D. Wick, *Bloom's Inequality: Commutators in a Two-Weight Setting*, *Archiv der Mathematik*, Volume 106, Issue 1, 2016. <http://arxiv.org/abs/1505.07947>.
8. Irina Holmes and Ambar N. Sengupta, *The Gaussian Radon Transform in Classical Wiener Space*, *Communications on Stochastic Analysis*, Volume 8, Number 2, 2014. [https://www.math.lsu.edu/cosa/8-2-07\[444\].pdf](https://www.math.lsu.edu/cosa/8-2-07[444].pdf).
9. Irina Holmes and Ambar N. Sengupta, *The Gaussian Radon Transform and Machine Learning*, *Infinite Dimensional Analysis, Quantum Probability and Related Topics*, Volume 18, No. 3, 2015. <http://arxiv.org/abs/1310.4794>.
10. Irina Holmes, *An Inversion Formula for the Gaussian Radon Transform for Banach Spaces*, *Infinite Dimensional Analysis, Quantum Probability and Related Topics*, Volume 16, No. 4, 2013. <http://arxiv.org/abs/1308.1392>.
11. Irina Holmes and Ambar N. Sengupta, *A Gaussian Radon transform for Banach spaces*, *Journal of Functional Analysis*, Volume 263, Issue 11, 2012. <http://arxiv.org/abs/1208.5743>.

12. Horst R. Beyer and Irina Holmes, *On a new symmetry of the solutions of the wave equation in the background of a Kerr black hole*, Classical and Quantum Gravity, Volume 25, Issue 13, 2008. <http://arxiv.org/abs/gr-qc/0607070>.
13. Irina Holmes, *On a Problem in the Stability Discussion of Rotating Black Holes*, Proceedings of the National Conference for Undergraduate Research, 2006.

Grants Awarded

AMS-Simons Travel Grant (July 1, 2015 – June 30, 2017; \$4,000)

NSF Mathematical Sciences Postdoctoral Research Fellowship
Award No. 1606270 (June 2016 – July 2018, \$150,000)

Teaching Experience

<i>MTH 133 - Calculus II</i> (Section 60: AP)	MSU, Fall 2017
<i>MATH 2551 - Calculus III</i> (Sections L1 – L3)	Georgia Tech, Spring 2016
<i>MATH 2552 - Differential Equations</i> (Sections F1 – F4; L1 – L4)	Georgia Tech, Fall 2015
<i>MATH 2401 - Calculus III</i> (Sections K1 – K3)	Georgia Tech, Spring 2015
<i>MATH 2401 - Calculus III</i> (Sections D1 – D3)	Georgia Tech, Fall 2014
<i>MATH 1552 - Calculus II</i> (Section 18)	LSU, Fall 2012
<i>MATH 1550 - Calculus I</i> (Section 21)	LSU, Fall 2011
<i>MATH 1550 - Calculus I</i> (Section 30)	LSU, Fall 2010
<i>MATH 1022 - Trigonometry</i> (Sections 4, 13)	LSU, Spring 2010
<i>MATH 1021 - College Algebra</i> (Sections 14, 33)	LSU, Fall 2009

Honors and Awards

CETL “Thank a Teacher” Certificate (Georgia Tech) January 2016 and May 2016.

Distinguished Dissertation Award (LSU College of Science) April 2015.

LSU Dissertation Year Fellowship (LSU Graduate School) Academic Year 2013 – 2014.

GAANN Doctoral Fellowship (LSU Mathematics Department) Academic Years 2010 – 2013.

David Oxley Graduate Teaching Award (LSU Mathematics Department) Fall 2011.

Certificate of Teaching Excellence (LSU Mathematics Department) Fall 2010 and Fall 2012.

Robert and Betti Giles Senior Mathematics Award In Recognition of Outstanding Academic Achievement by an Undergraduate Student in the Department of Mathematics (LSU Mathematics Department) April 2008.

Academic Excellence Award (LSU College of Arts and Sciences) April 2007 and 2008.

Herbert Huey McElveen Scholarship (LSU College of Arts and Sciences) May 2007.

Invited Talks

Workshop in Fourier Analysis;
May 16 – 18, 2018; University of Wisconsin-Madison; Madison, WI.

Nonsmooth Analysis: a Workshop for Postdocs;
November 9 – 11, 2017; University of Connecticut; Storrs, CT.

Midwestern Workshop on Asymptotic Analysis;
October 6 – 8, 2017; Indiana University – Purdue University Indianapolis; Indianapolis, IN.

Colloquium – Kent State Math;
September 14, 2017; Kent State University; Kent, OH.

SUMIRFAS 2017;
July 21 – 23, 2017; Texas A&M University; College Station, TX.

Analysis Seminar – UConn;
April 14, 2017; University of Connecticut; Storrs, CT.

MSRI Workshop – Connections for Women: Harmonic Analysis;
January 19 – 20, 2017; MSRI; Berkeley, CA.

Joint Mathematics Meetings of the AMS; AMS Special Session on Operator Theory, Function Theory, and Models; January 4 – 7, 2017; Atlanta, GA.

Harmonic Analysis: Learning Seminar – WUSTL Math;
December 1 and December 8, 2016; Washington University in St. Louis; St. Louis, MO.

Machine Learning Seminar – WUSTL Math;
December 1, 2016; Washington University in St. Louis; St. Louis, MO.

VOTCAM 2016;
October 8, 2016; University of Richmond; Richmond, VA.

Analysis Seminar – University of Alabama;
April 15, 2016; University of Alabama; Tuscaloosa, AL.

Spring Southeastern AMS Sectional Meeting; Special Session on Sharp Estimates and Bellman Functions in Harmonic Analysis; March 5 – 6, 2016; University of Georgia; Athens, GA.

Joint Mathematics Meetings of the AMS;
January 6-9, 2016; Washington State Convention Center; Seattle, WA.

Analysis Seminar at University of Toulouse;
December 14, 2015; Institut de Mathématiques de Toulouse, Toulouse, France.

Analysis Seminar at Clemson;
October 30, 2015; Clemson University; Clemson, SC.

Analysis Seminar at WUSTL;
September 21, 2015; Washington University in St. Louis; St. Louis, MO.

Analysis Seminar at KSU;
September 15, 2015; Kansas State University; Manhattan, KS.

High-Dimensional Phenomena in Statistics and Machine Learning Seminar;
September 2014; Georgia Institute of Technology; Atlanta GA.

Stochastics Seminar;
April 2014; Georgia Institute of Technology; Atlanta GA.

AMS Fall Southeastern Section Meeting;
October 2012; Tulane University; New Orleans LA.

Probability Seminar at LSU;
October 2012; Louisiana State University, Baton Rouge LA.

National Conference for Undergraduate Research;
April 2006; UNC Asheville, Asheville NC.

Workshop Participation

MSRI Workshop - Introductory Workshop: Harmonic Analysis;
January 23 – 27, 2017; MSRI; Berkeley, CA.

Summer School: Paraproducts and Analysis of Rough Paths;
September 11 – 16, 2016; Hausdorff Center for Mathematics, Germany.

Completeness problems, Carleson measures and spaces of analytic functions;
June 29 – July 3, 2015; Institut Mittag-Leffler; Djursholm, Sweden.

Conference on Harmonic Analysis, Function Theory, Operator Theory and Applications;
June 1 – 4, 2015; IMB, University of Bordeaux; Bordeaux, France.

Cornell Summer School in Probability;
July 2013; Cornell University; Ithaca NY.

LSU Workshop in Analysis and Geometry;
January 2011; Louisiana State University, Baton Rouge, LA.

Random Matrix Theory Graduate Workshop at MSRI;
July 2009; MSRI, Berkeley, CA.

Refereeing Service

Advances in Mathematics

Transactions of the AMS

Proceedings of the AMS

Journal of Geometric Analysis

Analysis and Mathematical Physics

Applied and Computational Harmonic Analysis