JASON L. METCALFE

CURRICULUM VITAE

Professor
Department of Mathematics
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Education.

Johns Hopkins University, Ph.D., Mathematics. Dissertation: *Global Strichartz Estimates for Solutions to the Wave Equation Exterior to a Convex Obstacle* Advisor: Prof. Christopher Sogge	May 2003
University of Washington, B.S., Mathematics with distinction	June 1998
University of Washington, B.S., Computer Science	June 1998

Professional Experience.

Professor, Department of Mathematics, University of North Carolina, Chapel Hill	2017 - present
Associate Professor, Department of Mathematics, University of North Carolina, Chapel Hill	2012 - 2017
Assistant Professor, Department of Mathematics, University of North Carolina, Chapel Hill	2007 - 2012
NSF Postdoctoral Instructor / Charles B. Morrey Assistant Professor, Department of Mathematics, University of California, Berkeley	2006 - 2007
NSF Postdoctoral Fellow, Department of Mathematics, University of California, Berkeley	2005 - 2006
Visiting Postdoctoral Member, Mathematical Sciences Research Institute (MSRI)	Fall 2005
VIGRE Visiting Assistant Professor, School of Mathematics, Georgia Institute of Technology	2003 - 2005

Honors.

Faculty Award for Excellence in Doctoral Mentoring, The Graduate School, University of North Carolina	2019
Board of Governors' Award for Excellence in Teaching, University of North Carolina	2018
Sue Goodman Award for Excellence in Undergraduate Education, inaugural award from the Department of Mathematics, University of North Carolina	2017

Date: May 20, 2020.

Finalist for the nomination for the Board of Governors' Award for Excellence in Teaching, University of North Carolina	2017
"Of the Month" nomination, National Residence Hall Honorary	2016, 2017
AMS Sectional Meeting Invited Address	2016
W.N. Reynolds Senior Faculty Research and Scholarly Leave, Competitive Leave, University of North Carolina	2015
National Science Foundation Faculty Early Career Development Award (CAREER)	2011
National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship	2005
Dean's Teaching Fellowship, Krieger School of Arts and Sciences, Johns Hopkins University	2001
William Kelso Morrill Award for Excellence in the Teaching of Mathematics, Department of Mathematics, Johns Hopkins University	2000
William Kelso Morrill Award for Excellence in the Teaching of Mathematics (Honorable Mention), Department of Mathematics, Johns Hopkins University	1999

Refereed Research Publications. [1]

Jason Metcalfe, Jacob Sterbenz, and Daniel Tataru: *Local energy decay for scalar fields on time dependent non-trapping backgrounds.* Amer. J. Math. **142** (2020), 821–883.

Jason Metcalfe and Katrina Morgan: *Global existence for systems of quasilinear wave equations in* $(1+4)$*-dimensions.* J. Differential Equations **268** (2020), 2309–2331.

Robert Booth, Hans Christianson, Jason Metcalfe, and Jacob Perry: *Localized energy for wave equations with degenerate trapping.* Math. Res. Lett. **26** (2019), 991–1025.

Jason Metcalfe and David Spencer: *Global existence for a coupled wave system related to the Strauss conjecture.* Commun. Pure Appl. Anal. **17** (2018), 593–604.

Jason Metcalfe and Chengbo Wang: *The Strauss conjecture on asymptotically flat space-times.* SIAM J. Math. Anal. **49** (2017), 4579–4594.

Jason Metcalfe, Daniel Tataru, and Mihai Tohaneanu: *Pointwise decay for the Maxwell field on black hole space-times.* Adv. Math. **316** (2017), 53–93.

Parul Laul, Jason Metcalfe, Shreyas Tikare, and Mihai Tohaneanu: *Localized energy estimates on Myers-Perry space-times.* SIAM J. Math. Anal. **47** (2015), 1933-1957.

John Helms and Jason Metcalfe: *The lifespan for 3-dimensional quasilinear wave equations in exterior domains.* Forum Math. **26** (2014), 1883–1918.

Hans Christianson and Jason Metcalfe: *Sharp local smoothing for manifolds with smooth inflection transmission.* Indiana Univ. Math. J. **63** (2014), 969–992.

Hans Lindblad, Jason Metcalfe, Christopher D. Sogge, Mihai Tohaneanu, and Chengbo Wang: *The Strauss conjecture on Kerr black hole backgrounds.* Math. Ann. **359** (2014), 637–661.

John Helms and Jason Metcalfe: *Almost global existence for 4-dimensional quasilinear wave equations in exterior domains.* Differential Integral Equations **27** (2014), 837–878.

Jeremy Marzuola, Jason Metcalfe, and Daniel Tataru: *Quasilinear Schrödinger equations II: Small data and cubic nonlinearities.* Kyoto J. Math. **54** (2014), 529–546.

[1] As is standard in pure mathematics (and required for many of the journals below), the authors on all of the papers are listed alphabetically. The role of the authors is not indicated in the ordering, and all authors are assumed to have contributed equally.

Hans Christianson, Jeremy Marzuola, Jason Metcalfe, and Michael Taylor: *Nonlinear bound states on weakly homogeneous spaces.* Comm. Partial Differential Equations. **39** (2014), 34–97.

Jeremy Marzuola, Jason Metcalfe, and Daniel Tataru: *Quasilinear Schrödinger equations I: Small data and quadratic interactions.* Adv. Math. **231** (2012), 1151–1172.

Jason Metcalfe, Daniel Tataru, and Mihai Tohaneanu: *Price's law on nonstationary spacetimes.* Adv. Math. **230** (2012), 995–1028.

Jason Metcalfe and Michael Taylor: *Dispersive wave estimates on 3D hyperbolic space.* Proc. Amer. Math. Soc. **140** (2012), 3861–3866.

Parul Laul and Jason Metcalfe: *Localized energy estimates for wave equations on high dimensional Schwarzschild space-times.* Proc. Amer. Math. Soc. **140** (2012), 3247–3262.

Jason Metcalfe and Daniel Tataru: *Global parametrices and dispersive estimates for variable coefficient wave equations.* Math. Ann. **353** (2012), 1183–1237.

Jason Metcalfe and Jacob Perry: *Global solutions to quasilinear wave equations in homogeneous waveguides with Neumann boundary conditions.* Commun. Pure Appl. Anal. **11** (2012), 547–556.

Jason Metcalfe and Michael Taylor: *Nonlinear waves on 3D hyperbolic space.* Trans. Amer. Math. Soc. **363** (2011), 3489–3529.

Jason Metcalfe and Christopher D. Sogge: *Global existence for high dimensional quasilinear wave equations exterior to star-shaped obstacles.* Discrete Contin. Dyn. Sys. **28** (2010), 1589–1601.

Kunio Hidano, Jason Metcalfe, Hart F. Smith, Christopher D. Sogge, and Yi Zhou: *On abstract Strichartz estimates and the Strauss conjecture for nontrapping obstacles.* Trans. Amer. Math. Soc. **362** (2010), 2789–2809.

Jeremy Marzuola, Jason Metcalfe, Daniel Tataru, and Mihai Tohaneanu: *Strichartz estimates on Schwarzschild black hole backgrounds.* Comm. Math. Phys. **293** (2010), 37–83.

Jeremy Marzuola, Jason Metcalfe, and Daniel Tataru: *Strichartz estimates and local smoothing estimates for asymptotically flat Schrödinger equations.* J. Funct. Anal. **255** (2008), 1497–1553.

Yi Du, Jason Metcalfe, Christopher D. Sogge, and Yi Zhou: *Concerning the Strauss conjecture and almost global existence for nonlinear Dirichlet-wave equations in 4-dimensions.* Comm. Partial Differential Equations **33** (2008), 1487–1506.

Jeremy Marzuola, Jason Metcalfe, and Daniel Tataru: *Wave packet parametrices for evolutions governed by PDO's with rough symbols.* Proc. Amer. Math. Soc. **136** (2008), 597–604.

Jason Metcalfe and Ann Stewart: *Almost global existence for quasilinear wave equations in waveguides with Neumann boundary conditions.* Trans. Amer. Math. Soc. **360** (2008), 171–188.

Jason Metcalfe and Becca Thomases: *Elastic waves in exterior domains, Part II: Global existence with a null structure.* Int. Math. Res. Not. **2007**, 1–43.

Jason Metcalfe and Christopher D. Sogge: *Global existence of null-form wave equations in exterior domains.* Math. Z. **256** (2007), 521–549.

Jason Metcalfe and Makoto Nakamura: *General quasilinear wave equations with localized dissipation in exterior domains.* J. Differential Equations **233** (2007), 313–344.

Michael Lacey and Jason Metcalfe: *Paraproducts in one and several parameters.* Forum Math. **19** (2007), 325–351.

Jason Metcalfe and Christopher D. Sogge: *Global existence for Dirichlet-wave equations with quadratic nonlinearities in high dimensions.* Math. Ann. **336** (2006), 391–420.

Jason Metcalfe: *Elastic waves in exterior domains, Part I: Almost global existence.* Int. Math. Res. Not. **2006**, 1–41.

Jason Metcalfe and Christopher D. Sogge: *Long time existence of quasilinear wave equations exterior to star-shaped obstacles via energy methods.* SIAM J. Math. Anal. **38** (2006), 188-209.

Jason Metcalfe, Makoto Nakamura, and Christopher D. Sogge: *Global existence of quasilinear, nonrelativistic wave equations satisfying the null condition.* Japan. J. Math. **31** (2005), 391–472.

Jason Metcalfe, Christopher D. Sogge, and Ann Stewart: *Nonlinear hyperbolic equations in infinite homogeneous waveguides.* Comm. Partial Differential Equations **30** (2005), 643–661.

Jason Metcalfe, Makoto Nakamura, and Christopher D. Sogge: *Global existence of solutions to multiple speed systems of quasilinear wave equations in exterior domains.* Forum Math. **17** (2005), 133–168.

Jason Metcalfe and Christopher D. Sogge: *Hyperbolic trapped rays and global existence of quasilinear wave equations.* Invent. Math. **159** (2005), 75–117.

Jason Metcalfe: *Global existence for semilinear wave equations exterior to nontrapping obstacles.* Houston J. Math. **30** (2004), 259–281.

Jason Metcalfe: *Global Strichartz estimates for solutions to the wave equation exterior to a convex obstacle.* Trans. Amer. Math. Soc. **356** (2004), 4839–4855.

Submitted (to Peer Reviewed Journals) Research Publications.

Jeremy Marzuola, Jason Metcalfe, and Daniel Tataru: *Quasilinear Schrödinger equations III: Large data and short time.* Submitted, 2020. (arXiv: 2001.01014)

Research Articles - Unrefereed.

Jason Metcalfe and Daniel Tataru: *Decay estimates for variable coefficient wave equations in exterior domains.* Advances in Phase Space Analysis of Partial Differential Equations, In Honor of Ferruccio Colombini's 60th Birthday. Progress in Nonlinear Differential Equations and Their Applications, Vol. 78, 2009. p. 201–217.

Jason Metcalfe: *Global Strichartz estimates for solutions to the wave equation exterior to a convex obstacle.* Ph.D. thesis, Johns Hopkins University, 2003, 37 pages.

Extended Abstracts.

Jason Metcalfe: *Local energy decay for the wave equation.* Notices Amer. Math. Soc. **63** (2016), 1158–1159.

Jason Metcalfe: *Low regularity local well-posedness for quasilinear Schrödinger equations.* Oberwolfach Reports **41** (2013), 2352–2354.

Jason Metcalfe: *Long time existence for nonlinear wave equations in exterior domains.* Oberwolfach Reports **41** (2010), 59–62.

Jason Metcalfe: *Strichartz estimates on Schwarzschild space-times.* Oberwolfach Reports **44** (2007), 8–11.

Talks.

AMS 2019 Fall Central Sectional Meeting: Special Session on Nonlinear Dispersive Equations and Water Waves, Madison, WI	September 2019
Partial Differential Equations Seminar, Institute of Applied Physics and Computational Mathematics, Beijing, China	June 2019

International Workshop on the Bourgain-Demeter Decoupling Method, Chern Institute of Mathematics, Nankai University, Tianjin, China	June 2019
Partial Differential Equations Seminar, Department of Mathematics, Zhejiang University, Hangzhou, China	May 2019
Carolina Math Club seminar, University of North Carolina, Chapel Hill, NC	March 2019
Joint Mathematics Meetings: AMS Special Session on Analysis and Geometry of Nonlinear Evolution Equations, Baltimore, MD	January 2019
Spectral and Scattering Theory Seminar, Purdue University, Department of Mathematics	February 2018
Analysis Seminar, University of California - San Diego, Department of Mathematics	March 2017
AMS 2017 Spring Southeastern Sectional Meeting: Special Session on Advances in long-term behavior of nonlinear dispersive equations, Charleston, SC	March 2017
AMS 2016 Fall Southeastern Section Meeting, Invited Address, Raleigh, NC	November 2016
International Conference on Evolution Equations: in conjunction with the $31st$ *annual Shanks Lecture. Special Session on Nonlinear waves.* Vanderbilt University, Nashville, TN	May 2016
Singularity formation and long-time behavior in dispersive PDEs, Mathematical Institute, University of Bonn, Bonn, Germany	March 2016
Analysis and PDE Seminar, University of Kentucky, Department of Mathematics	December 2015
Differential Equations Seminar, North Carolina State University, Department of Mathematics	November 2015
Analysis and PDE Seminar, University of North Carolina, Department of Mathematics	September 2015
Focus Week: Nonlinear wave equations and their numerical study, Focus Program on 100 Years of General Relativity, Fields Institute, Toronto, Canada	June 2015
Nonlinear Analysis Seminar, Rutgers University, Department of Mathematics	April 2015
AMS 2015 Spring Central Sectional Meeting: Special Session on Harmonic Analysis and Applications, East Lansing, MI	March 2015
AMS 2014 Fall Western Sectional Meeting: Special Session on Hamiltonian Partial Differential Equations I, San Francisco, CA	October 2014
Partial Differential Equations Graduate Seminar, Department of Mathematics, Zhejiang University, Hangzhou, China	June 2014
Partial Differential Equations Seminar, Department of Mathematics, Zhejiang University, Hangzhou, China	May 2014
Dynamics of Geometric Dispersive Equations and the Effects of Trapping, Scattering and Weak Turbulence, Banff International Research Station, Banff, Canada	May 2014
AMS 2014 Spring Southeastern Sectional Meeting: Special Session on Completely Integrable Systems and Dispersive Nonlinear Equations, Knoxville, TN	March 2014
Applied Math and PDE Seminar, University of Sydney, Australia, School of Mathematics and Statistics	March 2014
Nonlinear Waves and Dispersive Equations, Mathematisches Forschungsinstitut Oberwolfach, Germany	August 2013
The Eighth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory. Special Session on Quasilinear and Dispersive Partial Differential Equations, Athens, GA	March 2013

Differential Equations Seminar, University of Michigan, Department of Mathematics	March 2013
Analysis Seminar, Binghamton University, Department of Mathematical Sciences	November 2012
Analysis/PDE Seminar, University of North Carolina, Department of Mathematics	October 2012
AMS 2012 Spring Eastern Section Meeting: Special Session on Nonlinear Dispersive Equations, Washington, DC	March 2012
SIAM Conference on Analysis of Partial Differential Equations: Session on Recent Progress on Dispersive Partial Differential Equations, San Diego, CA	November 2011
Colloquium, University of New Mexico, Department of Mathematics	November 2011
Geometric Analysis and Partial Differential Equations Seminar, University of Cambridge, England	October 2011
Analysis/PDE Seminar, University of North Carolina, Department of Mathematics	August 2011
The 7th International Congress on Industrial and Applied Mathematics: Special Session on Dispersive Equations in Mathematical Physics, Vancouver, BC, Canada	July 2011
Analysis/PDE Summer Seminar (4 lectures), University of North Carolina, Department of Mathematics	June-July 2011
Hangzhou Conference on Harmonic Analysis and PDEs, Zhejiang University, Hangzhou, China.	June 2011
JAMI Conference 2011, Analysis of PDEs, Johns Hopkins University.	March 2011
AMS 2011 Spring Southern Section Meeting: Special Session on Harmonic Analysis and Partial Differential Equations, Statesboro, GA	March 2011
Nonlinear Waves and Dispersive Equations, Mathematisches Forschungsinstitut Oberwolfach, Germany	September 2010
SIAM Conference on Nonlinear Waves and Coherent Structures: Special Session on Modulation of Nonlinear Solutions in Dispersive Partial Differential Equations, Philadelphia, PA	August 2010
Ondes nonlinéaires et dispersion, Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France	June 2010
Beijing Conference in Harmonic Analysis and Partial Differential Equations, Institute of Applied Physics and Computational Mathematics, Beijing, China	May 2010
Partial Differential Equations Seminar, Institute of Applied Physics and Computational Mathematics, Beijing, China	May 2010
AMS 2010 Spring Western Section Meeting: Special Session on Harmonic Analysis and Partial Differential Equations, Albuquerque, NM	April 2010
PDE/Analysis Seminar, Massachusetts Institute of Technology, Department of Mathematics	April 2010
PDE Seminar, Fudan University, Department of Mathematics, Shanghai, China	January 2010
Analysis/PDE Seminar, University of North Carolina, Department of Mathematics	December 2009
Analysis and PDE Seminar, Johns Hopkins University, Department of Mathematics	November 2009
Spectral and Scattering Theory Seminar, Purdue University, Department of Mathematics	November 2009

AMS 2009 Fall Southeastern Section Meeting: Special Session on General Relativity and Related Partial Differential Equations, Boca Raton, FL	October 2009
GMA Visions Seminar (with J. Hawkins on academic job searches), University of North Carolina, Department of Mathematics	October 2009
Partial Differential Equations Seminar, Mathematisches Institut, Universität Bonn, Bonn, Germany	July 2009
AMS 2009 Spring Western Section Meeting: Special Session on Nonlinear Partial Differential Equations, San Francisco, CA	April 2009
AMS 2009 Spring Western Section Meeting: Special Session on Nonlinear Dispersive Equations, San Francisco, CA	April 2009
Calderón-Zygmund Analysis Seminar, University of Chicago, Department of Mathematics	March 2009
GMA Visions Seminar (with J. Hawkins on academic job searches), University of North Carolina, Department of Mathematics	October 2008
Applied Math/Analysis Seminar, Duke University, Department of Mathematics	September 2008
Analysis/PDE Summer Seminar (4 lectures), University of North Carolina, Department of Mathematics	July 2008
Differential Equations Seminar, North Carolina State University, Department of Mathematics	April 2008
Analysis and PDE Seminar, Johns Hopkins University, Department of Mathematics	March 2008
Analysis/PDE Seminar, University of North Carolina, Department of Mathematics	December 2007
PDE Seminar, University of California, Davis, Department of Mathematics	November 2007
GMA Visions Seminar, University of North Carolina, Department of Mathematics	October 2007
Nonlinear Waves and Dispersive Equations, Mathematisches Forschungsinstitut Oberwolfach, Germany	September 2007
Summer Microprogram on Nonlinear Partial Differential Equations, Mathematical Sciences Research Institute	August 2007
VII Joint Meetings of AMS-SMM: Mathematical Physics Special Session, Zacatecas, Mexico	May 2007
JAMI Conference: Nonlinear Dispersive Equations, Johns Hopkins University	March 2007
Analysis Seminar, McGill University (Montreal, Canada), Department of Mathematics	January 2007
PDE/Analysis Seminar, University of California, Berkeley, Department of Mathematics	December 2006
Mathematical Physics and Probability Seminar, University of California, Davis, Department of Mathematics	November 2006
Applied Mathematics Seminar, Tohoku University (Sendai, Japan), Department of Mathematics	June 2006
The 4th COE Symposium, Exploring New Science by Bridging the Particle-Matter Hierarchy, Sendai, Japan	June 2006
Special Seminar, University of North Carolina at Chapel Hill, Department of Mathematics	February 2006
Colloquium, Virginia Tech, Department of Mathematics	February 2006
Candidate Talk, University of Rochester, Department of Mathematics	January 2006

Geometric and Analytical Aspects of Nonlinear Dispersive Equations, Mathematical Sciences Research Institute	December 2005
Postdoc Seminar, Mathematical Sciences Research Institute	September 2005
FRG: Eigenfunctions of the Laplacian - Workshop I, University of Washington	July 2005
Research Horizons Seminar, Georgia Institute of Technology, School of Mathematics	April 2005
Analysis Seminar, Georgia Institute of Technology, School of Mathematics	November 2004
Analysis Seminar, Princeton University, Department of Mathematics	November 2004
NLW-HYKE: Summer School and Workshop on Nonlinear Wave Equations, Erwin Schrödinger Institute, Vienna, Austria	July 2004
Analysis Seminar, University of California, Los Angeles, Department of Mathematics	October 2003
CDSNS Seminar, Georgia Institute of Technology, School of Mathematics	October 2003
Analysis Seminar, Johns Hopkins University, Department of Mathematics	March 2003
Research Seminar, Xavier University, Department of Mathematics and Computer Science	February 2003
Undergraduate Seminar, Xavier University, Department of Mathematics and Computer Science	February 2003
Research Seminar, Grand Valley State University, Department of Mathematics	January 2003
Analysis Seminar, Johns Hopkins University, Department of Mathematics	September 2002

Teaching.

Math 590, Topics in Analysis: Geometry and Relativity (50 students), University of North Carolina	Spring 2020
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Spring 2020
Math 521, Advanced Calculus I (40 students), University of North Carolina	Fall 2019
Math 233H, Calculus of Functions of Several Variables (Honors) (20 students), University of North Carolina	Fall 2019
Math 296, Directed Exploration (1 student), University of North Carolina	Fall 2019
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Fall 2019
Math 521, Advanced Calculus I (38 students), University of North Carolina	Spring 2019
Math 692H, Honors Research in Mathematics (1 student), University of North Carolina	Spring 2019
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Spring 2019
Math 521H, Advanced Calculus I (Honors) (20 students), University of North Carolina	Fall 2018
Math 653, Introductory Analysis (15 students), University of North Carolina	Fall 2018
Math 691H, Honors Research in Mathematics (1 student), University of North Carolina	Fall 2018
Math 920, Seminar and Directed Reading (2 students), University of North Carolina	Fall 2018
Math 994, Doctoral Dissertation (1 student), University of North Carolina	Fall 2018
Math 994, Doctoral Dissertation (3 students), University of North Carolina	Spring 2018

Math 296, Directed Exploration (1 student), University of North Carolina	Spring 2018
Math 994, Doctoral Dissertation (3 students), University of North Carolina	Fall 2017
Math 653, Introductory Analysis (25 students), University of North Carolina[2]	Fall 2017
Math 521, Advanced Calculus I (42 students), University of North Carolina[2]	Fall 2017
Math 891, Topics in Analysis: Global existence for the energy critical wave equation (10 students), University of North Carolina	Spring 2017
Math 994, Doctoral Dissertation (3 students), University of North Carolina	Spring 2017
Math 692H, Honors Research in Mathematics (1 student), University of North Carolina	Spring 2017
Math 994, Doctoral Dissertation (3 students), University of North Carolina	Fall 2016
Math 296, Directed Exploration (2 student), University of North Carolina	Fall 2016
Math 691H, Honors Research in Mathematics (1 student), University of North Carolina	Fall 2016
Math 383, First Course in Differential Equations (2 sections, 56 and 41 students respectively), University of North Carolina	Fall 2016
Math 994, Doctoral Dissertation (3 students), University of North Carolina	Spring 2016
Math 290, Directed Exploration (1 student), University of North Carolina	Spring 2016
Math 521, Advanced Calculus I (33 students), University of North Carolina	Spring 2016
Math 381, Discrete Mathematics (39 students), University of North Carolina	Spring 2016
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Fall 2015
Math 290, Directed Exploration (1 student), University of North Carolina	Fall 2015
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Spring 2015
Math 521, Advanced Calculus I (22 students), University of North Carolina	Spring 2015
Math 653, Introductory Analysis (16 students), University of North Carolina	Fall 2014
Math 521, Advanced Calculus I (27 students), University of North Carolina	Spring 2014
Math 690, Topics in Mathematics (1 student), University of North Carolina	Spring 2014
Math 590, Topics in Analysis: Geometry and Relativity (9 students), University of North Carolina	Fall 2013
Math 690, Topics in Mathematics (1 student), University of North Carolina	Fall 2013
Math 89, FYS: Discrete Fourier and wavelet analysis (1 student), University of North Carolina	Spring 2013
Math 592, Topics in Geometry (1 student), University of North Carolina	Spring 2013
Math 699, Topics in Mathematics (1 student), University of North Carolina	Spring 2013
Math 521, Advanced Calculus I (25 students), University of North Carolina	Fall 2012
Math 920, Seminar and Directed Reading (1 student), University of North Carolina	Fall 2012
Math 296, Reading Research (1 student), University of North Carolin	Fall 2012
Math 232, Calculus of Functions of One Variable II (32 students), University of North Carolina	Spring 2012
Math 656, Complex Analysis (13 students), University of North Carolina	Spring 2012
Math 994, Doctoral Dissertation (1 students), University of North Carolina	Spring 2012

[2]Extended portions of these courses were taught by colleagues due to a medical absence.

Math 994, Doctoral Dissertation (1 students), University of North Carolina	Fall 2011
Math 656, Complex Analysis (5 students), University of North Carolina	Spring 2011
Math 383H, Linear Algebra and Differential Equations (Honors) (12 students), University of North Carolina	Spring 2011
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Spring 2011
Math 920, Seminar and Directed Reading (8+ students), University of North Carolina	Spring 2011
Math 992, Master's Project (2 students), University of North Carolina	Spring 2011
Math 381, Discrete Mathematics, University of North Carolina	Fall 2010
Math 994, Doctoral Dissertation (2 students), University of North Carolina	Fall 2010
Math 920, Seminar and Directed Reading (2 students), University of North Carolina	Fall 2010
Math 992, Master's Project (1 student), University of North Carolina	Fall 2010
Math 521, Advanced Calculus I, University of North Carolina	Spring 2010
Math 994, Doctoral Dissertation (1 student), University of North Carolina	Spring 2010
Math 920, Seminar and Directed Reading (2 students), University of North Carolina	Spring 2010
Math 296, Reading Research (1 student), University of North Carolina	Spring 2010
Math 653, Introductory Analysis, University of North Carolina	Fall 2009
Math 232, Calculus of Functions of One Variable II, University of North Carolina	Fall 2009
Math 994, Doctoral Dissertation (1 student), University of North Carolina	Fall 2009
Math 920, Seminar and Directed Reading (1 student), University of North Carolina	Fall 2009
Math 290, Directed Exploration (1 student), University of North Carolina	Fall 2009
Math 891, Topics in Analysis (Quasilinear Wave Equations), University of North Carolina	Spring 2009
Math 920, Seminar and Directed Reading (2 students), University of North Carolina	Spring 2009
Math 524, Elementary Differential Equations, University of North Carolina	Fall 2008
Math 920, Seminar and Directed Reading (1 student), University of North Carolina	Fall 2008
Math 383H, Linear Algebra and Differential Equations (Honors), University of North Carolina	Spring 2008
Math 920, Seminar and Directed Reading (Harmonic Analysis) (1 student), University of North Carolina	Spring 2008
Math 751, Introduction to Partial Differential Equations, University of North Carolina	Fall 2007
Math 121B, Mathematical Tools for the Physical Sciences, University of California, Berkeley	Spring 2007
Math 199, General Relativity (Reading course), University of California, Berkeley	Spring 2007
Math 185, Introduction to Complex Analysis, University of California, Berkeley	Fall 2006
Math 3770, Statistics and Applications, Georgia Institute of Technology	Spring 2005
Math 4581, Classical Mathematical Methods in Engineering, Georgia Institute of Technology	Fall 2004

Math 4581, Classical Mathematical Methods in Engineering, Georgia Institute of Technology	Spring 2004
Math 2403, Differential Equations, Georgia Institute of Technology	Fall 2003
110.302, Differential Equations with Applications, Johns Hopkins University	Summer 2003
110.105, Introduction to Calculus, Johns Hopkins University	Fall 2002
110.302, Differential Equations with Applications, Johns Hopkins University	Summer 2002
110.312, Introduction to Wavelets, Dean's Teaching Fellowship Course, Johns Hopkins University	Fall 2001
110.302, Differential Equations with Applications, Johns Hopkins University	Summer 2001
110.109, Calculus II for Physical Sciences and Engineers, Johns Hopkins University	Summer 2000

Research Supervision.

Doctoral Dissertation Advising:

Katrina Morgan, *Wave decay in the asymptotically flat setting*	2019
Robert Booth, *An investigation of non-trapping, asymptotically Euclidean wave equations*	2018
Jacob Perry, *Localized energy estimates for wave equations exterior to non-star-shaped obstacles*	2018
John Helms, *The sharp lifespan for quasilinear wave equations in exterior domains with polynomial local energy decay.*	2012
Parul Laul, *Localized energy estimates of the wave equation on higher dimensional hyperspherical Schwarzschild spacetimes.*	2011

Masters Project Advising:

Anna Geyer, *Localized energy estimates for solutions to the wave equation in Minkowski, Schwarzschild, and Reissner-Nördstrom space-times.*	2011
Robert Booth, *Energy estimates on asymptotically flat surfaces of revolution.*	2011

Undergraduate Honors Thesis Advising.

Difan Li, *Local energy estimates for wave equations with degenerate trapping*	2019
David Spencer, *Global existence for a coupled wave system related to the Strauss conjecture.* Highest honors.	2017
Shreyas Tikare, *Localized energy estimates for wave equations on higher dimensional black holes.* Highest honors.	2014
Bryan Lloyd, *A localized energy estimate exterior to a class of almost star-shaped obstacles.*	2013
Jacob Perry, *Solutions to quasilinear wave equations in homogeneous waveguides with Neumann boundary conditions.*	2010

Faculty Research Advisor for Summer Undergraduate Research Fellowships (SURF): David Spencer (2016), Shreyas Tikare (2013)

Current Research Students.

Collin Kofrath (graduate student), Taylor Rhoads (graduate student), Kenan Hasanaliyev (high school student, unpaid intern)

Grants.

NSF grant DMS-1501020 (Conference grant). Co-PI with PI H. Christianson ($49,000)	2015-2018
NSF CAREER grant DMS-1054289. PI ($410,853)	2011-2018
W.N. Reynolds Senior Faculty Research and Scholarly Leave, Competitive Leave, University of North Carolina	2015
NSF grant DMS-0800678. PI ($110,557)	2008-2012
Junior Faculty Development Award (IBM Fund Award), University of North Carolina ($7500)	2008
NSF Mathematical Sciences Postdoctoral Research Fellowship DMS-0502854. PI ($108,000)	2005-2007
Dean's Teaching Fellowship, Krieger School of Arts and Sciences, Johns Hopkins University	2001

Memberships and Service.

Associate Chair, Department of Mathematics, University of North Carolina	2012-2015
Equity in Teaching Institute Participant, University of North Carolina	2019-2020
Safe Zone Ally, UNC LGBTQ Center, University of North Carolina	2018-present
Carolina Firsts Advocate, Office of Undergraduate Retention, University of North Carolina	2018-present
University Teaching Awards Committee, Subcommittee for the Board of Governors' Award for Excellence in Teaching, University of North Carolina	2018-2020
2021 Doctoral Hooding Ceremony Speaker Selection Panel, Graduate School, University of North Carolina	2020
Data Science Initiative Committee, Undergraduate Committee, Advisory Member, University of North Carolina	2019
Internal Review Panel for the Packard Fellowship, University of North Carolina	2019
Reviewer for FONDECYT Regular grant competition, an initiative of the Chilean National Science and Technology Commission	2017
National Science Foundation panelist	2012, 2013 (2), 2015, 2016
Chair of the Tenure Track Assistant Professor Mentoring Committee, Department of Mathematics, University of North Carolina	2019-present
Faculty Advisor for AMS Graduate Student Chapter, University of North Carolina	2016-present
Linker committee (for selection of a graduate teaching award), Department of Mathematics, University of North Carolina	2012, 2019, 2020

First Year Graduate Advisor, University of North Carolina	2009-2011, 2012-2015, 2016, 2018, 2019
Undergraduate Advisor, University of North Carolina	2009-2011, 2012-2017, 2018-2019
Analysis Comprehensive Exam Committee, University of North Carolina	2009-2011, 2012-2013 (chair), 2018-2019
Hiring committee (teaching assistant professor), Department of Mathematics, University of North Carolina	2018-2019
Promotion and reappointment committee, Department of Mathematics, University of North Carolina	2018
Sub-committee for Advising Policies, Department of Mathematics, University of North Carolina	2018
Chair's advisory committee (elected), Department of Mathematics, University of North Carolina	2010-2012, 2015-2018
Hiring committee (tenure track), Department of Mathematics, University of North Carolina	2013-2014, 2015-2016, 2017-2018
Chair of the postdoctoral hiring committee, Department of Mathematics, University of North Carolina	2017, 2018
Strategic planning committee, Department of Mathematics, University of North Carolina	2016-2017
Undergraduate Committee, University of North Carolina	2009-2011, 2014
Graduate Committee, University of North Carolina	2011-2012
Departmental Undergraduate Honors Advisor, University of North Carolina	2009-2011
Pi Mu Epsilon Advisor, University of North Carolina	2011
Carolina Corollaries, Departmental Newsletter, Faculty Contact (with D. Arinkin)	2009-2010
Math Club / Math Competition Team / Problem Solving Seminar Organizer, University of North Carolina	2009-2010
Departmental representative to: Science and Technology Excellence Program, ADVANCE, University of Michigan, Ann Arbor, MI	May 2009
Steering Committee, Johns Hopkins University, Department of Mathematics	2002-03
SIAM Conference on Nonlinear Waves and Coherent Structures (Anaheim, CA), Co-organizer with M. Johnson (co-chair), T. Kapitula (co-chair), A. Barreiro, A. Bertozzi, G. Derks, R. Horne, C. K. R. T. Jones, H. Kalisch, B. Seibold, T. Trogdon, and V. Vicol.	June 2018
UNC PDE Mini-Schools Organizer, University of North Carolina. Co-founder and co-organizer with H. Christianson and J. Marzuola.	2013-present
AMS Special Session on Harmonic Analysis and Dispersive PDE, AMS Sectional Meeting, Raleigh, NC, Co-organizer with R. Booth and K. Morgan	November 2016
Analysis/PDE Seminar Organizer, University of North Carolina. Since 2011, co-organized with H. Christianson and J. Marzuola.	2007-2010, 2011-2016
AMS Special Session on Applications of Microlocal Analysis: Eigenfunctions and Dispersive PDE, AMS Sectional Meeting, Fargo, ND, Co-organizer with H. Christianson.	April 2016

Group Actions in Riemannian Geometry: A Conference in Honor of Patrick Eberlein. Co-organizer with R. Decoste, K. Grove, M. Jablonski, M. Mast, T. Payne, R. Spatzier, and M. Williams. May 2014

AMS Special Session on Harmonic Analysis and Dispersive Equations, AMS Sectional Meeting, Albuquerque, NM, Co-organizer with M. Blair. April 2014

Analysis/PDE Summer Graduate Seminar Organizer, University of North Carolina 2008, 2011, 2012

ICIAM 2011 Special Session on Dispersive Equations in Mathematical Physics, Co-organizer with J. Marzuola, S. Gustafson, I. Zwiers, and T. Tsai July 2011

Carolina Meeting on Harmonic Analysis and PDE, Co-organizer with J. Cima January 2009

Seminar Organizer, MSRI, Nonlinear Dispersive Equations Fall 2005

AMS-SIAM Special Session on Analysis and Applications to PDE, Joint Mathematics Meetings, Atlanta, GA, Co-organizer with M. Lacey, G. Mockenhaupt, R. Pan, and A. Swiech. January 2005

Graduate Seminar Co-organizer, Johns Hopkins University, Department of Mathematics 2003

NSF CAREER Learning Community Mentor, University of North Carolina 2015-2019

Faculty Learning Community for Mathematics, The Finish Line Project, Center for Faculty Excellence, UNC 2015-2017

Course Coordinator (University of North Carolina): Math 521 (Spring 2019), Math 383 (Fall 2016), Math 381 (Spring 2016), Math 521 (Spring 2015), Math 521 (Fall 2012), Math 232 (Spring 2012), Math 383 (Spring 2011), Math 232 (Fall 2009), Math 383 (Spring 2008)

Undergraduate Honors Thesis Defense Committee (University of North Carolina): Difan Li (2019), Katrina Lu (2019), Scott Emmons (2019), David Spencer (2017), Arik Wheeler (2017), Laura James (2016), David Clancy (2016), Shreyas Tikare (2014), Bryan Lloyd (2013), Ryan Kirk (2012), Jacob Perry (2010)

Master's Thesis Defense Committee (University of North Carolina): Evan Stafford (2018), Sterling Swygert (2017), Katherine Roddy (2013), Adam Gouge (2012), Anna Geyer (2011), Robert Booth (2011), Adam Graham-Squire (2009)

Graduate Oral Exam Committee (University of North Carolina): Dmitro Golovanich (2019), Blake Keeler (2019), Katrina Morgan (2018), Robert Booth (2017), Jacob Perry (2017), Dylan Muckerman (2015), Mayukh Muckerjee (2014), David Webb (2014), Bevin Maultsby (2014), Amanda French (2011), John Helms (2011), Adam Graham-Squire (2010), Parul Laul (2009), Indrani Rao (2009), Nathan Pennington (2008), Benjamin Dodson (2008)

Ph.D. Dissertation Defense Committee (University of North Carolina): Katrina Morgan (2019), Mengyun Liu (2019, Zhejiang University), Xueyun Lin (2019, Zhejiang University), Dylan Muckerman (2018), Robert Booth (2018), Jacob Perry (2018), David Webb (2017), Mayukh Muckerjee (2015), Bevin Maultsby (2014), Shuxin Wang (2013, University of New Mexico), Amanda French (2012), John Helms (2012), Adam Graham-Squire (2011), Parul Laul (2011), Indrani Rao (2010), Nathan Pennington (2010), Benjamin Dodson (2009)

Reviewer: Mathematical Reviews 2006-2008

Journal Referee: Electronic Journal of Differential Equations, Mathematische Zeitschrift, International Journal of Mathematics and Mathematical Sciences, Journal of Differential Equations, Journal of Hyperbolic Differential Equations, SIAM Journal on Mathematical Analysis, Transactions of the American Mathematical Society, International Mathematical Research Notices, Analysis and PDE, American Journal of Mathematics, Mathematische Nachrichten, Journal of Functional Analysis, Forum Mathematicum, Nonlinear Analysis Series A, Communications on Pure and Applied Analysis, Applicable Analysis, Mathematische Annalen, Differential and Integral Equations, Michigan Mathematical Journal, Mathematika, Communications in Mathematical Physics, Reviews in Mathematical Physics, Evolution Equations and Control Theory, Israel Journal of Mathematics, Advances in Mathematics, Selecta Mathematica, Journal of Evolution Equations, Discrete and Continuous Dynamical Systems (Series A), Annales Henri Poincaré, Surveys in Differential Geometry, Communications on Pure and Applied Mathematics, Indiana University Mathematics Journal, Nonlinear Analysis Series B: Real World Applications, Journal of Mathematical Analysis and Applications, Annales de l'Institut Henri Poincaré (C) Analyses Non Linéaire, Communications in Partial Differential Equations, Duke Mathematical Journal, Proceedings of the Royal Society of Edinburgh Section A: Mathematics, Proceedings of the American Mathematical Society

Book Reviewer: Pearson Prentice Hall

American Mathematical Society	1998-2005, 2014-present
Mathematical Association of America	1998-99, 2003-04