

Curriculum Vitae

for Katrina Morgan

katri@live.unc.edu
www.morgank.info

APPOINTMENTS

- NSF RTG Postdoctoral Fellow** Starting January 2020
Northwestern University, Evanston, IL
- Gamelin Postdoctoral Fellow** Fall 2019
Mathematical Sciences Research Institute, Berkeley, CA
· **Scientific Program:** Microlocal Analysis

EDUCATION

- Ph.D., Pure Mathematics** August 2014 - August 2019
University of North Carolina at Chapel Hill, Chapel Hill, NC
· **Advisor:** Dr. Jason Metcalfe
· **Thesis:** "Wave decay in the asymptotically flat stationary setting"
- Non-Degree Seeking Post-Baccalaureate, Mathematics** Spring 2012 - Spring 2013
Rice University, Houston, TX
- B.A., Cognitive Sciences** August 2005 - May 2009
Rice University, Houston, TX

RESEARCH FELLOWSHIPS

- Dissertation Completion Fellowship** PERIOD: AY 2018-2019
UNC Chapel Hill Graduate School AMOUNT: \$18,000
- Kenan Graduate Fellowship** PERIOD: AY 2018-2019
UNC Chapel Hill College of Arts and Sciences AMOUNT: \$7,500
· One of 10 students selected for inaugural cohort in recognition for excellence in research and teaching.
- Kenneth Gaines Smith Summer Research Fellowship** PERIOD: Summer 2016
UNC Chapel Hill Graduate School AMOUNT: \$4,000

GRANTS AND AWARDS FOR DIVERSITY INITIATIVES

Funding and recognition for work promoting underrepresented groups in STEM.

- Tensor-SUMMA Grant Program** PERIOD: April 2019 - May 2020
Mathematical Association of America AMOUNT: \$6,000
· Granted funds to organize the 2019 run of the *Girls Talk Math* summer day camp.

Boka W. Hadzija Award for Distinguished University Service April 2019
UNC Chapel Hill Office of the Chancellor

University Award for the Advancement of Women February 2018
UNC Chapel Hill Office of the Chancellor

Tensor Grant Program for Women and Mathematics PERIOD: March 2016 - May 2019
Mathematical Association of America AMOUNT: \$10,900
 · Granted funds to create and organize the *Girls Talk Math* summer day camp, which has run for the past 3 summers.

NSF INCLUDES WATCH:US Mini-Grant, PERIOD: AY 2017-2018
Administered by the University of Nebraska - Lincoln AMOUNT: \$2,100
 · Granted funds to create and organize the *Association for Women in Mathematics Triangle Conference*.

Student Chapter Award for Community Outreach July 2017
Association for Women in Mathematics
 · Winner of inaugural award in recognition for *Girls Talk Math*.

RESEARCH

RESEARCH INTERESTS

Partial differential equations, spectral theory, microlocal analysis, global analysis, non-linear waves, mathematical relativity

TECHNICAL PAPERS

[1] J. Metcalfe, **K. Morgan**. *Global existence for systems of quasilinear wave equations in (1+4)-dimensions*. Submitted. [arXiv: 1812.11956](https://arxiv.org/abs/1812.11956)

[2] **K. Morgan**. *The effect of asymptotic metric behavior on pointwise wave decay in the asymptotically flat stationary setting*. (2019) Graduate Dissertation.

PRESENTATIONS AND POSTERS

INVITED TALKS

Analysis and Partial Differential Equations Seminar March 2019
University of Kentucky

Spectral and Scattering Theory Seminar October 2018
Purdue University

AMSI-ANU Workshop on Microlocal Analysis March 2018
South Durras, Australia [[View Talk Slides](#)]

Department of Mathematics Research Week Event October 2017
UNC Chapel Hill [[View Talk Slides](#)]

SELECTED OTHER TALKS

- "Analysis and Geometry of Nonlinear Evolution Equations" Session January 2019
Joint Mathematics Meetings, Baltimore, MD
- Texas Analysis and Mathematical Physics Symposium October 2018
Baylor University
- "Great Talks: Coached Presentations by Graduate Students" Session August 2018
MathFest, Denver, CO [[View Talk Slides](#)]
- Triangle Area Graduate Mathematics Conference
UNC Chapel Hill December 2016/April 2018
North Carolina State University November 2018
Duke University April 2017
- Graduate Mathematics Association Visions Seminar March 2017/March 2018
UNC Chapel Hill
- Resonances: Geometric Scattering and Dynamics March 2017
Centre International de Rencontres Mathématiques, Marseilles, France
- Southeastern Conference for Undergraduate Women in Math November 2015
Duke University

POSTERS

- Summer School in Semiclassical Analysis August 2019
Northwestern University [[View Poster](#)]
- Texas Analysis and Mathematical Physics Symposium October 2018
Baylor University
- PosterFest: Scholarship by Early Career Mathematicians August 2018
MathFest, Denver, CO
- Association for Women in Mathematics Poster Competition January 2018
Joint Mathematics Meetings, San Diego, CA

EXPOSITORY PUBLICATIONS

- [1] **K. Morgan.** *Which Sounds Better, Analogue or Digital Music?.* Scientific American Observations Blog. 11 Oct 2017. [[View Article](#)]
· Discussed Fourier Transform and Shannon Sampling Theorem.

MATHEMATICS CONFERENCES

CONFERENCES AND SEMINARS CO-ORGANIZED

- Graduate Mathematics Association Visions Seminar AY 2016 - 2017
UNC Chapel Hill
- Triangle Area Graduate Mathematics Conference December 2016
UNC Chapel Hill

"Harmonic Analysis and Dispersive PDE" Session November 2016
AMS Sectional Meeting, North Carolina State University

Joint Student Math Colloquium Fall 2015
Duke University & UNC Chapel Hill

CONFERENCES AND MINI-SCHOOLS ATTENDED

Summer School in Semiclassical Analysis August 2019
Northwestern University

Texas Analysis and Mathematical Physics Symposium October 2018
Baylor University

The ∂ Problem in the Twenty-First Century Summer School June 2018
Mathematical Sciences Research Institute, Berkeley, CA

8th Ohio River Analysis Meeting March 2018
University of Kentucky

AMSI-ANU Workshop on Microlocal Analysis March 2018
South Durras, Australia

Symposium on Scattering and Spectral Theory July 2017
Florianopolis, Brazil

Resonances: Geometric Scattering and Dynamics March 2017
Centre International de Rencontres Mathématiques, Marseilles, France

Joint Mathematics Meetings
Baltimore, MD January 2019
San Diego, CA January 2018
Atlanta, GA January 2017

New Mexico Analysis Seminar February 2016
University of New Mexico

Geometric and Computational Spectral Theory Summer School July 2015
Universite de Montreal

PDE/Analysis Mini-School
UNC Chapel Hill

- with Jared Wunsch December 2018
- with Tanya Christiansen November 2017
- with William Minicozzi April 2017
- with Thomas Duyckaerts February 2017
- with Peter Hislop October 2016
- with Patrick Gerrard February 2016
- with Alexandru Ionescu April 2015
- with Gunther Uhlmann March 2015

TEACHING AND MENTORING

All instruction and mentoring at UNC Chapel Hill unless otherwise specified

* indicates graduate courses/instruction

INSTRUCTOR OF RECORD

Wrote syllabus, assignments, lesson plans, and exams unless otherwise specified.

MATH 383 First Course in Differential Equations	Spring 2018
MATH 233 Calculus of Functions of Several Variables	Summer 2017
MATH 116 Intuitive Calculus	Fall 2016
MATH 130 Precalculus	Fall 2015
· Syllabus, assignments, and exams written by Course Coordinator.	

GRADUATE TEACHING ASSISTANT

Graded homework and answered questions on material. Additional responsibilities as specified.

* MATH 653 Introductory Analysis	Fall 2017
· Held two office hours per week.	
MATH 533 Elementary Theory of Numbers	Fall 2015
MATH 521 Advanced Calculus	Summer 2015
· Substitute instructor for two lectures.	
MATH 547 Linear Algebra with Applications	Summer 2015
MATH 523 Complex Analysis	Spring 2015
MATH 534 Elements of Modern Algebra	Spring 2015
MATH 381 Discrete Mathematics	Fall 2014

OTHER INSTRUCTION

* Semiclassical Analysis Course TA	August 2019
<i>Summer Northwestern Analysis Program</i>	
* Analysis Boot Camp	August 2016/2017/2018
· Planned and taught five 3-hour review sessions for incoming graduate students.	
* Analysis Comprehensive Exam Review	Summer 2016
· Planned and taught nine 2-hour review sessions.	

UNDERGRADUATE MENTORING

- Directed Reading Program** September 2018 - May 2019
 · Developed and direct undergraduate reading project on Differential Geometry.
- Undergraduate Research** November 2017 - May 2019
 · Assisting Dr. Jason Metcalfe in directing undergraduate student research project.
- AWM Chapter Mentoring Network** February 2017 - May 2019
 · Mentor to two undergraduate members of the AWM Student Chapter.

TEACHING SKILLS DEVELOPMENT

- Creating and Implementing a Course Workshop** August 2017
UNC Chapel Hill Graduate School
- Integrating Active Learning Techniques Workshop** August 2017
UNC Chapel Hill Graduate School
- MATH 920 Teaching Assistants Teaching Seminar** Fall 2014
UNC Chapel Hill Mathematics Department

OUTREACH AND DIVERSITY

PROGRAM DEVELOPMENT

All held at UNC Chapel Hill Mathematics Department

Programs were co-founded with then Ph.D. candidate Dr. Francesca Bernardi.

- Association for Women in Mathematics Triangle Conference** February 2017
 FOUNDER AND ORGANIZER [[Visit Conference Website](#)]
 · Hosted 74 participants from 12 institutions.
- AWM Chapter Mentoring Network** January 2017 - May 2019
 FOUNDER AND ORGANIZER
 · Paired undergraduates with graduate student mentors.
- Girls Talk Math** March 2016 - Present
 FOUNDER AND DIRECTOR [[Visit Camp Website](#)]
 · Created 2-week summer day camp for high school girls.
 · Hosted 26 campers in 2016; 35 in 2017; and 39 in 2018.
 · Oversaw inquiry-based learning curriculum development.
 · Program expanded to the University of Maryland in 2018.

PUBLICATIONS

- TITLE: *Girls Talk Math: Not Your Ordinary Math Camp* September 2018
 PUBLISHER: American Mathematical Society Inclusion/Exclusion Blog [\[View Article\]](#)
 AUTHORS: F. Bernardi & **K. Morgan**
- TITLE: *Girls Talk Math: Engaging Girls Through Math Media* September 2017
 PUBLISHER: Association for Women in Mathematics Newsletter [\[View Article\]](#)
 AUTHORS: F. Bernardi & **K. Morgan**

PRESENTATIONS, POSTERS, AND PANELS

- MAA General Session on Outreach** January 2019
Joint Mathematics Meetings, Baltimore, MD
 TITLE: *Promoting diversity through outreach at the Girls Talk Math camp*
- "Advancing Women in Mathematics" Session** August 2018
MathFest, Denver, CO
 TITLE: *Mentoring, Outreach, and Professional Development: Activities of the UNC AWM Chapter*
- Supporting Underrepresented Students in STEM Panel** January 2018
North Carolina School of Science and Math, Durham, NC
 · Invited to be a panelist at event for high school educators.
- MAA Session on Inquiry-Based Teaching and Learning** January 2018
Joint Mathematics Meetings, San Diego, CA
 TITLE: *Inquiry-Based Learning Problem Sets at Girls Talk Math: Increasing Confidence and Strengthening Interest Among Underrepresented Groups*
- MAA Mathematical Outreach Poster Session** January 2017/2018/2019
Joint Mathematics Meetings, GA/CA/MD
 · Invited by MAA Tensor Grant officials.

OUTREACH ACTIVITIES

- Scientific Research and Education Network Event** September 2017
Raleigh, NC
 CURRICULUM WRITER
- Science Expo** April 2015-2018
UNC Chapel Hill
 ORGANIZER AND VOLUNTEER
- Julia Robinson Math Festival** April 2017/2018
UNC Chapel Hill
 VOLUNTEER

OUTREACH SKILLS DEVELOPMENT

Morehead Planetarium IMPACTS Program

AY 2018-2019

Chapel Hill, NC

- One of 15 out of over 100 applicants selected for program.
- Developed and implemented non-Euclidean geometry and knot theory activities for middle and high school students.

ComSciCon Triangle: Science Communication Conference

March 2017

Research Triangle Park, NC

ACADEMIC SERVICE

LEADERSHIP

Directed Reading Program

June 2018 - May 2019

UNC Chapel Hill

ORGANIZING COMMITTEE MEMBER

- Organized first run of the program at UNC.

Association for Women in Mathematics Student Chapter

August 2015 - May 2019

UNC Chapel Hill

PRESIDENT/TREASURER

Graduate Mathematics Association

AY 2017-2018

UNC Chapel Hill

PRESIDENT