

Nicholas G. Lohr

CONTACT INFORMATION B9 Lunt Hall *office phone:* (847) 467-6255
2033 Sheridan Road *email:* nlohr@math.northwestern.edu
Evanston, IL 60201 USA *website:* <https://math.northwestern.edu/~nlohr/>

EDUCATION **Northwestern University** September 2020 - Present

Northwestern University September 2019 - September 2020
M.S. in Mathematics

University of Notre Dame August 2015 - May 2019
B.S. in Mathematics with Actuarial Science minor, *magna cum laude*
Senior honors thesis with Jeffrey Diller: *Approximating Riemann Mappings by Circle Packings*

- Overall GPA: 3.890; GPA in Mathematics Classes: 4.0
- Notable Classwork
 - Basic Complex Analysis I with Dr. Mei-Chi Shaw Fall 2017
 - Basic Complex Analysis II with Dr. Mei-Chi Shaw, Spring 2018
Probability with Dr. Steven Heilman
 - Basic Real Analysis I with Dr. Qing Han, Fall 2018
Basic Geometry and Topology with Dr. Stephan Stolz
 - Basic Real Analysis II with Dr. Qing Han, Spring 2019
Differential Geometry with Dr. Karsten Grove

RESEARCH **Research Assistant, Senior Thesis Research** Fall 2017 - May 2019
Notre Dame, IN

- Read through *Complex Analysis* by Stein and Shakarchi during Fall 2017 under the guidance of Dr. Jeffrey Diller
- Won College of Science Summer Undergraduate Research Fellowship to conduct research over Summer 2018
- Read through Dr. Terence Tao's notes on Circle Packing
- Learned SageMath and implemented a program to illustrate the Collins and Stephenson's work *A Circle Packing Algorithm*.
- Presented work in a talk given at the annual College of Science Joint Annual Meeting

Fresno State REU Participant Summer 2017
Fresno, CA

- Extensively read *Is Computing with the Finite Fourier Transform Pure or Applied Mathematics?* by Auslander and Tolimieri and *Eigenvectors and Functions of the Discrete Fourier Transform* by Dickinson and Steiglitz under the guidance of Dr. Comlan de Souza
- Attempted to find a simpler proof to the multiplicities of the eigenvalues of the Fourier matrix, and, was able to prove a formula for the determinant of the Fourier matrix

Summer Convexity Group Participant Summer 2016
Notre Dame, IN,

- Participated in learning Convexity with advanced freshmen, sophomores, and juniors and read through the book *Convexity* by Webster under the guidance of a graduate student.
 - Performed weekly lectures on the book's material

- Learned Fourier Analysis under the guidance of a graduate student and wrote a paper proving Heisenberg's uncertainty principle for functions ψ in the Schwartz space such that $\|\psi\|_{L^2} = 1$.

Research Assistant, Particle Physics Research Summer 2014
Notre Dame, IN

- Researched with local high school students and teachers on Particle Physics on Notre Dame's Campus through the physics program QuarkNet
- Observed the effect of separation and elevation on the muon counts of cosmic ray detectors
- Third place winner of the 2015 Indiana Junior Science Humanities Symposium
- Won two 2015 NIRSEF (Northern Indiana Regional Science- Engineering Fair) awards

Research Assistant, Lie Algebra Research 2013-2014
Notre Dame, IN

- Researched with a graduate student on Lie algebra
- Successfully classified the nilpotent ideals in the Borel subalgebra in $\mathfrak{sl}(n, \mathbb{C})$
- Won three 2014 NIRSEF awards

TEACHING
ASSISTING AND
GRADING

Northwestern Teaching Assistant Fall 2019 - Present
Evanston, IL

- Assisted teaching and graded for the following classes
 - Sequences and Series (MATH 226-0) Fall 2020
 - Elementary Differential Equations (MATH 250-0)
 - Probability and Stochastic Processes* (MATH 310-2) Winter 2020

Summer Group Theory and Number Theory Group Leader Summer 2019
Notre Dame, IN,

- Lectured Group Theory and Number Theory from the books *Graph Theory* by Diestel and *The Higher Arithmetic* by Davenport to undergraduates.
- Taught undergraduates how to lecture math and critiqued their performance
- Directed undergraduate research on the elementary proof of the Prime Number Theorem

Math Reasoning Teaching Assistant Spring 2018
Notre Dame, IN

- Held biweekly lectures on homework and test preparation for Intro to Mathematical Reasoning (MATH 20630)
 - Taught students many forms of mathematical proofs, including proof by contradiction, contrapositive, and induction

Notre Dame Mathematics Department Grader Fall 2016 - Summer 2019
Notre Dame, IN

- Graded for the following classes
 - Honors Analysis II (MATH 30860) Spring 2019
 - Real Analysis (MATH 30750)
 - Honors Analysis I (MATH 30850) Fall 2018
 - Intro to Mathematical Reasoning (MATH 20630) Spring 2018
 - Intro to Linear Algebra and Differential Equations (MATH 20580) Fall 2017
 - Discrete Fourier and Wavelet Transformations (MATH 30720) Spring 2017
 - Honors Calculus I (MATH 10850) Fall 2016

*only graded

- Received directed reading credit for grading Discrete Fourier and Wavelet Transformations, as this was the first time the course was offered

TUTORING

Mathematics Major Tutor

Fall 2016 - Summer 2019

Notre Dame, IN

- Work 4 hours a week in the O'Meara mathematics Library for walk-in tutoring for math majors in Honors Calculus I,II,III,IV, Honors Algebra I,II,III,IV, and Honors Analysis I,II.
 - Emphasized proof writing and problem solving

O'Meara Mathematics Library Tutoring Coordinator

Fall 2017 - Summer 2019

Notre Dame, IN

- Responsible for hiring and managing a staff of 5 student tutors for university-wide tutoring
- Updated the previous website and enhanced tutoring sign-up capability
- Work 6 hours a week tutoring students from any major
 - Consists of tutoring calculus, linear algebra, differential equations, probability, and statistic classes.

Instructor, Mathnasium LLC

Fall 2013 - Fall 2016

Granger, IN

- Tutored students in 2nd to 12th grade in a variety of mathematical subjects
 - Arithmetic, Pre-Algebra, Algebra I and II, Geometry, Pre-Calculus, Calculus
- Worked 15 hours per week while going to school full time
 - Over 1,500 hours worked

AWARDS AND GRANTS

NSF RTG: Analysis on Manifolds	2020
GE Prize for Excellence in Mathematics - Honors	2019
College of Science Summer Undergraduate Research Fellowship	2018
Riverbend Math Center Award for Excellence in Quantitative Analysis	2015
Bayer Physical Science Award for Excellence in Physical Science	2015
Hoosier Science-Engineering Fair Award	2014
Mu Alpha Theta Science Fair Award	2014
University of Notre Dame Mathematics Department Award	2014

PROGRAMMING SKILLS

Emacs, C++, Mathematica, MATLAB, LaTeX, SageMath (written mostly in Python and Cython)