Connor Lehmacher

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Education

Vanderbilt University, Nashville, TN — Expected Graduation: May 2022

GPA: 3.90 Math GPA: 4.0
Bachelor of Science
Mathematics Major (Honors Track)
Education Studies Major (Learning and Equity in Diverse Contexts Specialization)

D. W. Daniel High School, Central, SC — 2014 – 2018

Valedictorian

Publications

A. Bachstein, W. Goddard, C. Lehmacher. *The Generalized Matcher Game*, Discrete Applied Mathematics, vol. 284, pp. 444-453, 2020. doi.org/10.1016/j.dam.2020.04.055.

Experience

REU at UChicago
University of Chicago — Summer 2021

Learned an overview of modern algebraic topology as well as many other topics from the talks. Worked through old papers to modernize a result of Burdick, Conner, and Floyd on chain theories and their derived homology theories.

Research in Graph Embeddings
Vanderbilt University — Spring 2021 – Present

Studying quadrangular embeddings of multipartite graphs in various surfaces. Integrating graph theory, number theory, and algebraic topology knowledge to solve problems.

Research in Extremal Graph Theory
Vanderbilt University — Spring 2020 – Fall 2020

Studied the Turán problem on diagraphs avoiding directed paths and cycles. Developed skills in python and algorithms for automated casework and improved ability working with inequalities.

Research in Geometric Group Theory
Vanderbilt University Summer 2020

Studied cut lines in asymptotic cones of the Cayley graphs of groups. Learned how to read dense papers and clever applications of the triangle inequality.

Grading Spring 2020 & Spring 2021

Graded for a linear algebra and a topology course.

Research in Competitive Optimization Graph Games
Clemson University Summer 2019

Studied a generalized matcher game. Learned how to collaborate on research and to think long on a problem.

Directed Reading Program
Vanderbilt University Spring 2019 – Fall 2019

Each semester worked through some of a textbook with a graduate student. Covered material from Munkres' *Topology* and from Kreyszig's *Introductory Functional Analysis with Applications*.

Tutoring Summer 2018 – Fall 2019

Assisted students in 3rd grade math, high school algebra, and single variable calculus.

Presentations

MAA MathFest, PME Student Section 5 August 2021
The Generalized Matcher Game

UChicago REU August 2021
Most Homology Theories aren't Cycles Modulo Boundaries

Vanderbilt Undergraduate Research Fair May 2021
Cut Lines in Asymptotic Cones

Pi Mu Epsilon Tennessee Zeta Chapter, Induction Ceremony December 2020
Fractals and Hausdorff Dimension

Vanderbilt Math Club October 2019
Modeling Zombie Outbreaks and Autonomous Systems

Awards and Honors

Putnam, 23/120 points, Rank 403 Fall 2019
Virginia Tech Regional Mathematics Contest, Placed 6th out of 758 Fall 2019
Math Contest in Modeling, Meritorious Winner Spring 2019

Dean's List	All 7 Semesters
Eagle Scout	2017

Selected Coursework

Riemannian Geometry	graduate level, current
Operator Algebras	graduate level, current
Differential Topology	graduate level, A
Functional Analysis	graduate level, A
Geometric Group Theory	graduate seminar, A
Algebraic Geometry (two classes)	independent study, A & current
Partial Differential Equations	A
Real Analysis (two classes)	graduate level, A & A
Category Theory	graduate seminar, A
Algebraic Topology	graduate level, A
Modern Algebra (two classes)	graduate level, audited & A
Topology (two classes)	graduate level, A & A
Order Theory and Universal Algebra	independent study, A
Graph Theory	A
Combinatorics	A

Service and Leadership

Pi Mu Epsilon Mathematics Honor Society, Tennessee Zeta Chapter — Spring 2019 – Present
Vice President: Spring 2019 – Fall 2020, President: Spring 2021 – Fall 2021

Vanderbilt Math Club, Secretary — Fall 2018 – Present
Send weekly emails and organize weekly social activities for community building.

Vanderbilt Undergraduate Research Journal, Reviewer for Math and Physics
Spring 2021 – Present