Nathaniel Bannister

Talks

March 2023	Determinacy of Games (Graduate Student and Postdoc Seminar)
February 2023	Extending Iterations Backwards (Graduate Set Theory and Model Theory Seminar)
July 2022	Partition Hypotheses and the Additivity of Strong Homology (IMS Graduate Summer School in Logic)
March 2022	A Cofinal Partition Hypothesis (Graduate Set Theory and Model Theory Seminar)
July-August 2021	Additivity of strong homology for locally compact separable metric spaces, parts 1-7 (Carnegie Mellon Mathematical Logic Seminar and Set Theory Reading Group)
November 2020	On the additivity of strong homology for locally compact separable metric spaces, part 2 (Cornell Logic Seminar)
March 2020	Strange Finite Spaces (Cornell Undergraduate Math Club)
October 2019	Saturation of the nonstationary ideal and δ^1_2 part 3: the calculation of δ^1_2 (Cornell Logic Seminar)
October 2019	Saturation of the nonstationary ideal and δ^1_2 part 2: iterability (Cornell Logic Seminar)
August 2019	An Introduction to Equivariant Homotopy (University of Chicago REU)
September 2018	Turing Machines and the Halting Problem (Cornell Undergraduate Math Club)

Publications

February 2023	Additivity of derived limits in the Cohen model (arXiv:2302.07222).
March 2022	A descriptive approach to higher derived limits, (arXiv:2203.00165), with Jeffrey Bergfalk, Justin Tatch Moore, Stevo Todorcevic. Submitted to Journal of the European Mathematical Society.
August 2020	On the additivity of strong homology for locally compact separable metric spaces, with Jeffrey Bergfalk and Justin Moore. Published in Israel Journal of Mathematics.
October 2019	Coefficient Rings of C_2-Equivariant Eilenberg-Maclane Spectra, now posted on the REU website.

Carnegie Mellon Math Courses Taken

*21-803 Model Theory III
*21-900 Reading and Research
21-624 Descriptive Set Theory
21-703 Model Theory II
21-702 Set Theory II
21-610 Algebra
21-603 Model Theory I
*21-800 Advanced Topics in Logic
*80-612 Seminar on Philosophy of Mathematics
21-701 Discrete Mathematics
21-900 Reading and Research
80-814 Categorical Logic
21-800 Advanced Topics in Logic
21-602 Set Theory I

*Currently Enrolled

Cornell Math Courses Taken

Math 7820: Seminar in Logic
Math 6120: Complex Analysis
Math 6870: Descriptive Set Theory
Math 7810: Seminar in Logic
Math 6830: Model Theory
Math 4500: Matrix Groups
Math 6840: Recursion Theory
Math 6870: Set Theory
Math 4280: Introduction to Partial Differential Equations
Math 4530: Introduction to Topology
Math 4410: Introduction to Combinatorics I
Math 7580: Topics in Topology
Math 6110: Real Analysis
Math 4900: Supervised Research
Math 6410: Enumerative Combinatorics
Math 7810: Seminar in Logic
Math 6520: Differentiable Manifolds
Math 6510: Algebraic Topology
Math 6810: Logic
Math 4330: Honors Linear Algebra
Math 2230-2240: Theoretical Linear Algebra and Calculus

Education

August 2021 - Present	PhD in Mathematics **Carnegie Mellon University**, Pittsburgh, PA
August 2017-May 2021	Bachelor of Arts, Major in Mathematics **Cornell University**, Ithaca, NY Gpa: 4.18 /4.0 Major Gpa: 4.23/4.0
May 2017	High School Degree (Math, Science, and Engineering Magnet), IB Diploma **Suncoast Community High School**, Riviera Beach, FL Gpa: 4.0/4.0

Work Experience

August-December 2023	TA for Math 21-254 Linear Algebra and Vector Calculus for Engineers Taught one session of Matlab and one session of math problem solving each week in addition to grading and office hours
May-June 2022	TA for Math 21-127 Concepts of Mathematics Worked in summer session I and held regular office hours and graded
October-December 2021	TA for Math 21-120 Differential and Integral Calculus Helped as an emergency replacement for two sections of Calculus
August 2019-May 2021	Tutor at Math Support Center, *Cornell Math Department* Help tutor students through a walk-in tutor service
August 2018-May 2020	Grader, *Cornell Math Department* Collaborated with graduate TA(s) to fairly grade and timely return papers, for Math 2230 (Theoretical Linear Algebra and Multivariable Calculus) in Fall 2018 and Fall 2019, Math 2240 (the next course in the sequence) in Spring 2019, and Math 3360 (Applicable Algebra) in Spring 2020.
August 2018-Spring 2019	Classroom Observation Protocol for Undergraduate STEM (COPUS) Observer *Cornell Math Department* Observed Calculus 1 classes to give the graduate students and professors teaching the sections an accurate breakdown of how they are spending their classes and to add to a database of typical teaching practices in basic calculus courses
June-July 2018	STEM Staff, *Camp Daniel Boone* Taught scouts Railroading, Electricity, Nuclear Science, Chemistry, and Digital Technology
September 2017-May 2018	Food Service Worker, *Cornell Dining* Refilled and replaced beverage station, cut and served pizzas. Adapted to and managed the responsibilities of multiple workers when workplace understaffed

Activities and Honors

August 2021 - Present	Departmental Fellowship from Carnegie Mellon University
May 2021	Kieval Prize in Mathematics from Cornell University
May 2021	Graduated Summa Cum Laude from Cornell University
August 2020 - May 2021	Events Coordinator, Undergraduate Math Club
January 2020 - Present	Member of Phi Beta Kappa
August 2017 - May 2021	Member of Cornell Math Club
August 2018 - May 2019	Algebra Tutor at Ithaca High School
May 2015	Eagle Scout