

# 2024-2025 Newsletter



*“Alexandra smiled. Then she gracefully explained that the most elegant mathematics proofs are the simplest and most direct. My understanding of elegance was forever changed and stays with me to this day!”*

~ Greg Jue, former NU Math Business Administrator,  
remembering the late Prof. Alexandra Bellow

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NU Math Faculty and [2024 Nemmers Prize](#) Recipient, Luigi Ambrosio (Pisa)

Keith Burns, Antonio Auffinger, Luigi Ambrosio, John Francis, Bryna Kra, Jared Wunsch, Eric Zaslow, Gabor Szekelyhidi, Ben Weinkove, Sonja Mapes, Elizabeth Burslem



*Letter from the DUS,*

**Prof. Ursula Porod**

As the 2024-25 academic year draws to an end, we are proud to look back on another successful year for our [undergraduate program](#). This spring, we have a graduating class of 69 majors and 5 minors. Among them, five seniors will graduate with Honors in Mathematics. Several students deserve special recognition:

Seven students completed senior theses this year. Each of them presented their work in a short talk to faculty and peers on May 19. Eli Carroll wrote about Bredon Homology and Recovery of Cohomological Mackey Functors; Leo Chang wrote about the Helmholtz Impedance Boundary Value Problem; Cam Kennedy wrote about Approximations to the Riemann Zeta Function; SJ Lee wrote about Curve Shortening and Mean Curvature Flows; Chi Li wrote about Large Values of Dirichlet Polynomials and Zero Density Results of the Riemann Zeta Function; Avery Powers wrote an Introduction to the Orbit Method via the Heisenberg Group; and Nara Shin wrote about Gelfand Duality of  $C^*$ -algebras and Topology.

Chi and Leo are co-recipients of this year's "Robert R. Welland Prize for Outstanding Achievement in Mathematics by a Graduating Senior". Leo will begin a PhD program in mathematics at Cornell University this fall, and Avery will pursue a PhD program in Operations Research at MIT. Other graduating seniors heading to graduate school include Eliseu Kloster-Filho (PhD program in theoretical physics at U. Chicago), Bill Chen (PhD program in Operations Research and Information Engineering at Cornell University), and Scott Hwang (MS program in statistics at Stanford University).

We celebrated all graduating seniors alongside this year's award-winning undergraduates at our [Undergraduate Math Awards ceremony](#) and special dinner on May 21. Special guest at this event was Prof. Tadashi Tokieda from Stanford University who delivered an engaging lecture titled "Applying Physics to Mathematics".

Our undergraduate community continues to grow, with over 280 declared Math majors and minors at the time of writing. In April, the MENU and Undergraduate committees co-hosted their first Advising Lunch for prospective majors and minors. We were pleased to see strong student participation in the event, and since then, have also seen a robust stream of new major declarations. The [Northwestern Undergraduate Mathematical Society \(NUMS\)](#) hosted a variety of talks and special events throughout the year. Special thanks go to Leo Chang and Jack Thielen for their leadership and dedication in keeping NUMS vibrant. The [Northwestern Emerging Scholars Program \(NESP\)](#) had another successful year under the guidance of faculty mentors Cherry Ng, Grace Jaffe, Hua Lin, and Zachary Smith. We especially thank peer leaders Leo Chang and Henry Wyers for their valuable contributions to the program.

On the faculty front, we are sad to see Santiago Cañez leave Northwestern at the end of this academic year. As a member of our teaching track faculty since 2015, Santiago has made significant contributions to our undergraduate program – through his excellent teaching and student advising, as former [MENU](#) director, as former Director of Undergraduate Studies, and with so much more. We wish him the best for his new position at the University of Chicago!

As my year as Director of Undergraduate Studies comes to a close, I will be passing the baton to Aaron Greicius as new Director of Undergraduate Studies in September. This year has deepened my appreciation for the amazing work by our faculty, staff, and students in building and sustaining a thriving undergraduate program. I extend special thanks to our donors whose generous contributions greatly support our mission.

## Undergraduate Program



*Photos above from 2025 NU Mathematics Undergraduate Awards Presentation*

## [2024 Microlocal Analysis and Quantum Dynamics](#)

This conference (June 24-28, 2024) focused on recent developments in semiclassical microlocal analysis, with a focus on quantum dynamics. Areas of applications included quantum chaos, Ruelle resonances, and solid state physics. The conference brought together researchers from various mathematical communities, enabling them to share new techniques and open problems. It was preceded by a summer school (June 17-21, 2024) for graduate students, advanced undergraduates, and early-career researchers. The conference also honored the mathematics and legacy of Steve Zelditch.



## [NUET 2024](#)

NUET 2024 was supported by the [RTG “Dynamics: Classical, Modern, and Quantum.”](#) Its Summer School was held July 29-August 2, 2024 and its conference was held August 5-9, 2024. All events were held on Northwestern University’s Evanston campus. The Summer School introduced early graduate students to modern ergodic theory and prepares them for the conference NU Trends in Ergodic Theory.

The school covered several aspects of modern ergodic theory at a level suitable for those with a background in analysis. The conference brought together researchers working on many aspects of ergodic theory, aimed to encourage interactions between young researchers and research leaders, and communicated new techniques to the community.

The NUET 2024 organizers were Bryna Kra (Northwestern University), Joel Moreira (University of Warwick), Florian Richter (Swiss Federal Institute of Technology Lausanne), Donald Robertson (University of Manchester), and Bradley Zykoski (Northwestern University).

## [MPC 2024](#)

Held at Northwestern University on October 10-12, 2024, probability theory has been the most applicable branch of pure mathematics. During the last decade it has seen a clear surge in popularity of probabilistic tools and methods in other branches of pure and applied mathematics. The Midwest Probability Colloquium has been an annual event for several decades. It brings together a wide breadth of knowledge in the field of probability. Sponsors of the 43rd Midwest Probability Colloquium are the National Science Foundation and Northwestern University.

## [2025 Homotopical Algebra in Geometry, Topology, and Physics](#)

This conference (held June 20-25, 2025) at Northwestern University, featured mini-courses, talks, and discussions on homotopical algebra focused on applications to (algebraic, differential, symplectic) geometry, topology, and mathematical physics. The toolbox of *homotopical algebra* was broadly understood and included: abstract homotopy theory, homological algebra, homotopy theory of operads and algebraic structures, higher category theory, higher representation theory, and deformation theory. The format allowed extensive questions, discussions, and exchange of ideas-- prioritizing understanding over being strict with time.

## [AG2025: Ergodic Method in Group Theory](#)

Northwestern University’s Summer School on Arithmetic and Random Groups, May 19–23, 2025, presented mini-courses by Michael Chapman, Michelle Chu, Yair Glasner, and Matthew Stover.

Following the school, there was the EMGT conference honoring Alex Furman’s 60th birthday May 26-30, 2025. The organizers were Nir Avni, Uri Bader, and Tsachik Gelander.



# 2025 Optimal Transport, Heat Flow, and Synthetic Ricci Bounds



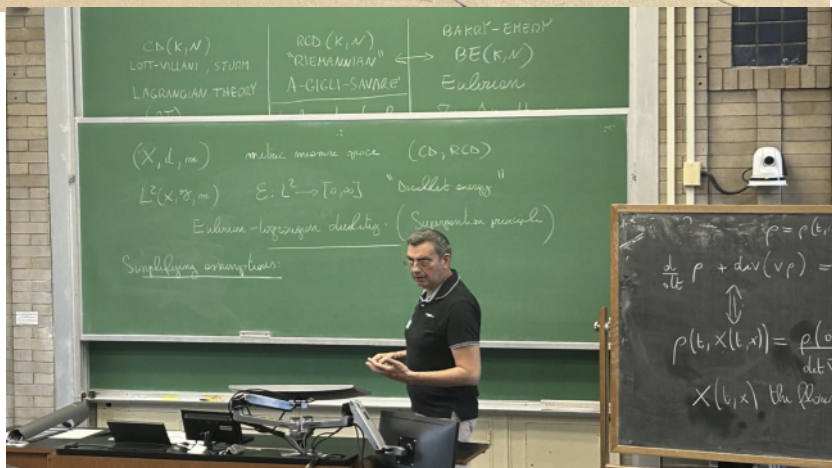
[This June 17-21, 2025 conference at Northwestern University was held in honor of Luigi Ambrosio](#), recipient of the 2024 Nemmers Prize in Mathematics. It was organized by NU Math faculty members, Gábor Székelyhidi, and Ben Weinkove.

## Mini-courses Presented:

- Luigi Ambrosio (Pisa): *Calculus and convergence in metric measure spaces*
- Gioacchino Antonelli (NYU): *Isoperimetric properties of smooth and non-smooth spaces with lower curvature bounds*
- Andrea Mondino (Oxford): *Smooth and non-smooth aspects of Ricci curvature lower bounds*

## Talks Presented:

- Aaron Naber (IAS): *Compact Manifolds with Positive Ricci Curvature and Unbounded Nilpotent Fundamental Groups*
- Jiayin Pan (UC Santa Cruz): *Nonnegative Ricci curvature and linear volume growth*
- Guofang Wei (UC Santa Barbara): *Almost smooth singular metrics and RCD*



[The Nemmers Prize](#) is awarded for achievement and work of lasting significance in the field of mathematics. In particular, the prize recognizes major contributions to new knowledge or the development of significant new modes of analysis. Recipients are selected in even-numbered years, and as a condition of the award, spend some time in residence at Northwestern University.



# Graduate Program

## *Letter from the DGS, Prof. Jared Wunsch*

[The graduate program](#) continues to offer our students a vibrant and supportive atmosphere in which to learn math and undertake research. Numerous student-led initiatives have made a big difference this year. The weekly Graduate Student Seminar, organized by Colin Fan, Curtis Grant, Daniel Mallory, and Daniel Townsend, offers a venue for practicing high level mathematical exposition and for disseminating advanced topics of interest to students. This is followed, naturally, by a happy hour, organized by Daniel Townsend.

In response to a gap in the [department's seminar offerings](#), Amadeus Maldonado organized a learning seminar on smooth dynamics that has been a big addition to the already very active dynamics group at NU. Maldonado was recognized by the department's Gelfand Award at the end of academic year, in large part in recognition of this important contribution to the mathematical life of the department. Also sharing the award was Daniel Townsend for all his work in "improving and maintaining the graduate student culture", in the words of one of his nominators.

Amadeus's smooth dynamics seminar was in fact one of a tremendous number of student-run seminars that have enriched mathematical life in our department. Daniel Mallory ran an Informal Algebraic Geometry student seminar; Uisun Lee and Mingyuan Hu organized a student reading seminar on sheaf quantization; Xiangtao Chen organized one on the Kazhdan--Lusztig Conjecture; Haochen Cheng ran a number theory seminar; and Diego Rojas ran a Hodge theory seminar. Equally important for other aspects of student well-being were Corey Lunsford's soccer program, and Curtis Grant's volleyball.

This department's Best Thesis Award this year went to Deven Manam, for his thesis, "Some Observations on Syntomic Cohomology". Manam's advisor, Ben Antieau, writes, "Deven Manam's thesis solved an important problem in the area of prismatic cohomology, specifically, whether a formal group arising from geometry, discovered by Drinfeld, agrees with a topological description suggested by homotopy theory. Manam put the latter definition on firm foundational footing and proved that they agree. He goes on to a postdoctoral position at the University of Copenhagen."

Best Prelim prizes went to Ben Cooper and Haochen Cheng. Graduate TA award winners were Guin Bixler and Daniel Townsend, both of whom went above and beyond the call of duty in their dedication to the undergraduate program.

More broadly, the department's [Directed Reading Program](#) has become a central experience for our graduate students' training as educators.

Funded by our [NSF RTG grant entitled "Dynamics: Classical, Modern, and Quantum"](#) and overseen by postdoc Bradley Zykoski, with student organizers Noah Wisdom (2024) and Santiago Velazquez Iannuzzelli (2025), the math DRP matches graduate students with undergraduates, whom they mentor in independent study, and who give a final presentation at the end of the term. Many graduate and undergraduate students return to the program from term to term, building meaningful mentoring relationships over time. Another venue for graduate involvement in undergraduate training is [Northwestern's Emerging Scholars Program \(NESP\)](#). Alex Karapetyan participated in this program's mission to convince undergraduates early on that "there is a wider, richer world of mathematics lying outside the confines of calculus!"

Bao Le Hung oversaw an impressively successful graduate recruiting season, despite a challenging recruitment environment. Our incoming graduate class will be: Abbigael Arseneau (University of Toronto), Howard Beck (MIT), Jacob Daum (Columbia University), Jiaqi Hao (UC Berkeley, Xian Jiaotong), Haoran Hu (NYU, Shandong University), Vladimir Schein (Indiana University), Weimufei Wu (Peking University), Jiaheng Zhao (Chinese Academy of Sciences), and Jiangyue Zheng (UC Berkeley).

Students finishing PhDs this year likewise flourished on the job market despite the turbulent times in higher education. This year's new PhDs are Hy Lam, Zhenyi Chen, Jennifer Jones, Nick Lohr, Kai Hsiang Wang, Yi Gu, Mingyuan Hu, and Deven Manam.



### **2024-2025 NU Mathematics Causeway Program**

Prof. Santiago Cañez, Junior Ndayikengurukiye, Joram Amador, Hugo Sanchez, Willow Sanderlin, Alley Koenig, Prof. Eric Zaslow, Prof. Sonja Mapes

## ***Letter from Causeway Program Co-directors Santiago Cañez, Sonja Mapes and Eric Zaslow***

[The Causeway Postbaccalaureate Program](#) celebrates another successful year, its fourth. This year, for the first time ever, we believe that each of our students will have earned the certificate for their work. They are Joram Amador, Alley Koenig, Junior Ndayikengurukiye, Hugo Sanchez and Willow Sanderlin. In addition, all five received admission offers to PhD programs in mathematics.

Four will begin next year at Auburn, Temple, Notre Dame and UIUC. The Causeway project succeeds because of the hard work of the students, research mentors, peer mentors, advisors and instructors. It has been a privilege to get to know the students and to work with all of you. Thank you!





## *Letter from the NU Math Department Chair, Prof. Antonio Auffinger*



This is my first newsletter as Chair, and wow, what a year it's been! I will take this space to highlight the remarkable progress and changes that have shaped our department in AY 2024/25. Our teaching and research missions continue to make a profound impact, and the department has reached some historical milestones during this period.

To begin, our [undergraduate courses](#) are now reaching more students than ever before, marking an impressive 47% increase in UG enrollment over the past five years. On top of that, [our tenure-line faculty](#) will grow to its largest size in department history starting next Fall, and our [graduate programs](#) are thriving at unprecedented levels.

While many challenges always lie ahead—such as space limitations, financial constraints, and quite a bit of uncertainty—I am certain that our collective talent and dedication will enable us to meet them head-on and continue to thrive.

Speaking of our strengths, last Fall was particularly exciting as we welcomed two new members to our permanent faculty. We were thrilled to welcome Rachel Greenfeld, a leading expert in harmonic analysis with impactful work in tiling theory and arithmetic combinatorics, and Allen Yuan, a distinguished algebraic topologist specializing in higher category theory and chromatic homotopy theory, particularly known for his contributions to the chromatic Nullstellensatz.

Looking ahead, Fall 2025 will bring even more exceptional talent: Alex Smith, a number theorist from UCLA; Marcus Michelen, a probabilist joining us from UIC; and Jakub Witaszek, an algebraic geometer from Princeton. They will all join us as new assistant professors.

Our faculty's groundbreaking work continues to garner significant recognition. Rachel Greenfeld has been awarded both the prestigious Sloan Fellowship and an NSF Career Award – an incredible start to her time

with us! Maksym Radziwill's profound work on the Kummer-Petterson Conjecture was honored with the 2024 SASTRA Ramanujan Prize. Furthermore, six of our faculty members received the Frontier of Science Award. We also celebrated Ben Weinkove being named the Madan Lal Puri Professor of Mathematics, with his investiture taking place this past Spring. Congratulations, Ben!

We also extend our deepest congratulations to Reza Gheissari and Xiumin Du on their well-deserved promotions to Associate Professor with tenure! Kudos to both of you!! Big milestone!

This past year our department also organized and hosted several impactful conferences and summer schools. We were honored to host Luigi Ambrosio, the winner of the [2024 Nemmers Prize](#) in Mathematics. We had a summer school on [Optimal Transport, Heat Flow, and Synthetic Ricci Bounds](#), organized by Ben Weinkove and Gabor Szekelyhidi, in his honor.

The [emphasis year in Lattice and Arithmetic Groups](#), organized by Nir Avni and Tsachik Gelander, brought us a Summer School on Arithmetic and Random Groups and a [conference on The Ergodic Method in Group Theory](#). More recently, Boris Tsygan organized the [2025 Homotopical Algebra in Geometry, Topology, and Physics](#).

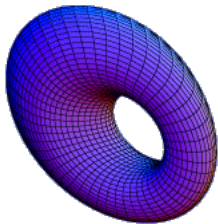
Our [NSF Research Training Grant \(RTG\) in Dynamics](#) continues to thrive, supporting the next generation of scholars through its extensive network of postdocs and students. This summer, the RTG also organized a valuable [Research Experience for Undergraduates \(REU\)](#).

Our distinguished lecture series continued to bring top mathematical minds to our department. The [Bellow Lecture Series](#) featured Melanie

Wood from Harvard University, while the [Pinsky Lecture Series](#) was given by Ivan Corwin from Columbia University. Many thanks to the dedicated faculty, staff and graduate students for all their work in putting these events together!

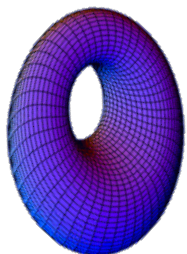
We also want to acknowledge a departure this year: Santiago Cañez will be joining the University of Chicago, and we wish him all the best in his new endeavor. We also pause to remember Professor Emerita Alexandra Bellow, who passed away on May 2, 2025. A truly influential figure, she was a professor here for almost 30 years, and her immense contributions to our department and to mathematics will be deeply missed. A dedicated column in this newsletter provides a fuller tribute to her remarkable life.

Finally, it's an honor to serve as your Chair. The energy, intellect, and collaborative spirit of our [faculty](#), our [staff](#), and students are truly inspiring. Together, we will continue to elevate our department's standing and tackle any challenge that lies ahead.



### **YUCHEN LIU SELECTED AS AT&T RESEARCH FELLOW, 9/18/2024**

NU Math faculty member, Prof. Yuchen Liu, is selected as an AT&T Research Fellow by Northwestern's Weinberg College of Arts and Sciences. This appointment, which lasts from Sept 2024--Aug 2026, recognizes the excellence of Yuchen's many accomplishments as a scholar, teacher, and citizen of the University and aims to support his current research projects.



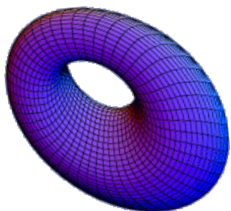
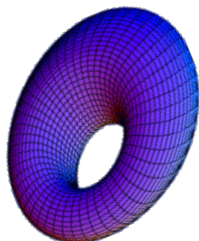
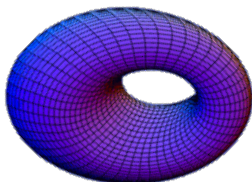
### **BEN WEINKOVE NAMED MADAN LAL PURI PROFESSOR OF MATHEMATICS, 9/18/2024**

NU Math faculty member, Ben Weinkove, is now named the inaugural Madan Lal Puri Professor of Mathematics. This new endowed chair is named after Madan Lal Puri, Professor Emeritus at Indiana University, a prolific researcher whose work spanned many areas of statistics. This appointment acknowledges Ben's incredible accomplishments in research, teaching and service.

### **2024 BOAS DAY, 10/10/24**

On Oct 16th at 4pm in Lunt 105 we celebrated the mathematics of our new postdocs: Boas AP, RTG fellows, and postdoctoral lecturers. Our postdocs will present their mathematical interests in talks of 4 minutes each, always aimed at our first-year graduate students. The titles of the talks were:

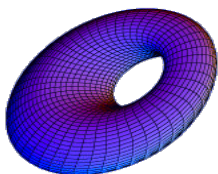
- **Caleb Dilsavor:** What is the geodesic flow of a discrete space?
- **Michael Zshornack:** Flexibility and rigidity among discrete subgroups in higher rank
- **Fernando Figueroa:** The dual complex of Calabi-Yau pairs
- **Grace Jaffe:** Strange Change
- **Tianmin Yu:** Gibbs sampling through Langevin Dynamics
- **Izak Oltman:** The Spectrum of the Scottish flag operator
- **Redmond McNamara:** Encoding information about the primes
- **Ethan Sussman:** Asymptotic analysis with manifolds-with-corners



### **NU MATH FACULTY WIN 2025 FSA, 2/21/2025**

The Frontier of Science Award is awarded by the International Congress of Basic Sciences to a recent paper, recognized for a breakthrough in its field. The following NU Math Faculty Members won a 2025 FSA:

- Rachel Greenfeld won for her article, "A counterexample to the periodic tiling conjecture" (by Rachel Greenfeld, Terence Tao)
- Bryna Kra won for her article, "Infinite sumsets in sets with positive density" (by Bryna Kra, Joel Moreira, Florian Richter, Donald Robertson)
- John Francis won for his article, "A 2025 Factorization homology of stratified spaces" (by David Ayala, John Francis, Hiro Tanaka)
- Xiumin Du won for her article, "A sharp Schrödinger maximal estimate in  $\mathbb{R}^2$ " (by Xiumin Du, Larry Guth, Xiaochun Li)
- Gábor Székelyhidi won for his article, "Sasaki-Einstein metrics and K-stability" (by Tristan C. Collins, Gábor Székelyhidi)



### **RACHEL GREENFELD AWARDED NSF CAREER GRANT AND SLOAN FELLOWSHIP, 2/21/2025**

NU Math faculty member, Rachel Greenfeld, has been awarded a CAREER grant from the National Science Foundation. The 5-year award, "Structure Theory in Additive Combinatorics", will bring exciting research and training activities to our department. She has also won a 2025 Sloan Fellowship, which is given to scholars representing the most promising early-career scientists working today.

### **MAKSYM RADZIWIŁL RECEIVED ALEXANDERSON AWARD AND CONJECTURE WORK RECOGNITION, 3/6/2025**

NU Math faculty member, Maksym Radziwiłł, has received the Alexanderson Award by AIM for his paper, "Higher Uniformity of Bounded Multiplicative Functions in Short Intervals on Average" (jointly with Kaisa Matomäki, Terence Tao, Joni Teräväinen, and Tamar Ziegler). Maksym's work on the Kummer-Petterson Conjecture was recognized in the 2024 SASTRA Ramanujan Prize. The prize was won by his co-author and post-doctoral mentee Alexander Dunn.

### **2025 NU MATH TEACHING AWARDS, 5/30/2025**

NU Math faculty members, Erin Griffin and Martin Bishop, won the 2025 *NU Mathematics Award for Excellence in Teaching* by a Postdoctoral or Visiting Faculty Member.

### **REZA GHEISSARI RECEIVES NSF CAREER AWARD, 7/3/2025**

NU Math faculty member, [Reza Gheissari](#), has won a CAREER award from the National Science Foundation, a prestigious award in support of early-career faculty who have the potential to serve as academic role models in research and education. This 5-year award, titled, "Analysis of Slowly Mixing Markov Chains," will bring exciting research and training activities to the NU Math Dept.



## 2025 NU Mathematics Undergraduate Award Winners

### Robert R. Welland Prize for Outstanding Achievement in Mathematics

Chi Li, Leo Chang

### Senior Career Award in Mathematics

Nara Shin

### Junior Career Award in Mathematics

Corbin Diaz, Henry Wyers, James Lenze

### Award for Excellence in Mathematics by a First-Year Student

Sofia Kang, Jonah Kim, Sam Vogel, Paari Dhanasekaran, Bruce Bei, Gabriel Girao, Muzi Dang, Ariel Wong, Yuxin Wang, Yucheng Jin, Maya Wassercug, Michael Yao, Peter Platosh, Owen Yan

### Award for Outstanding Contributions to Undergraduate Mathematical Life

Cam Kennedy

### Award for High Achievement in the William Lowell Putnam Competition

Chi Li, Prach Thaewanarumitkul, Hongyi Wang, Yuxin Wang

### Award for Excellence as an Undergraduate Teaching Assistant

Leo Chang, Henry Wyers

### Undergraduate Teaching Assistant Service Award

Leo Chang, Estella Xu

## 2025 NU Mathematics Graduate Student Award Winners

### Gelfand Award

Amadeus Maldonado, Daniel Townsend

### Best Thesis Award

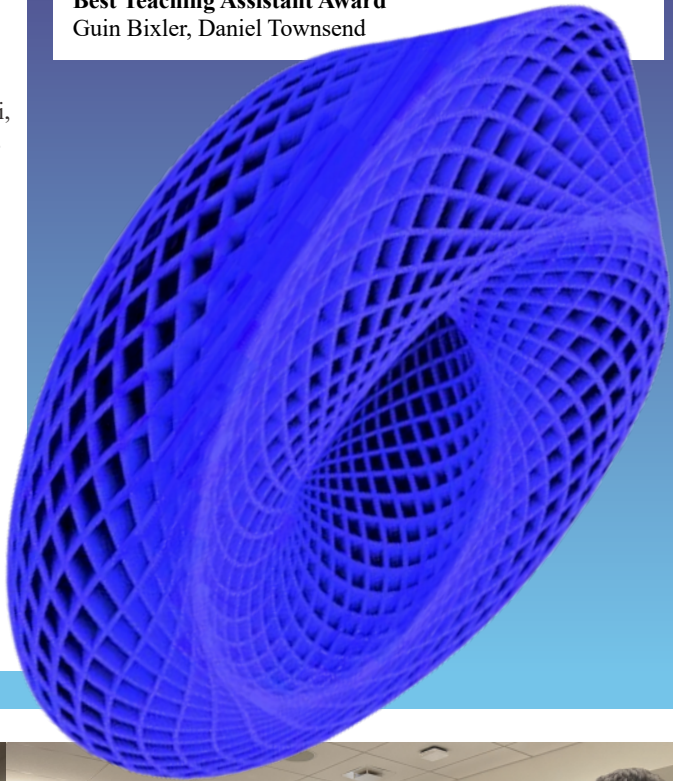
Deven Manam

### Best Preliminary Exam

Ben Cooper, Haochen Cheng

### Best Teaching Assistant Award

Guin Bixler, Daniel Townsend





## IN MEMORIAM: ALEXANDRA BELLOW

*August 30, 1935 - May 2, 2025*

Alexandra Bellow, (née Bagdasar), 89, Professor Emeritus of Mathematics at Northwestern University, passed away peacefully at home in Chicago's Edgewater neighborhood, May 2, 2025.

After earning her M.S. in mathematics from the University of Bucharest in 1957 and her PhD from Yale University in 1959, Alexandra Bellow was appointed Professor in the Department of Mathematics at Northwestern University in the fall of 1967. She was 32 years old and was the first woman full professor in the Mathematics Department. She taught and did research at Northwestern for nearly 30 decades until her retirement in 1996.

Alexandra's early work involved properties and consequences of mathematical lifting theory. She was lauded for her contributions to analysis, particularly ergodic theory, along with measure theory, and for exposition resulting in practical value for statisticians and other scientists.

In 2012, Alexandra Bellow decided to make a gift to Northwestern University, specifically to the Math Department. This gift was used to endow the annual lecture series which became known as the *Alexandra Bellow Distinguished Lecture Series in Mathematics*. Each year a world-class mathematician is invited to come to Northwestern give a series of talks for the *Bellow Lecture Series*. Per Bellow's hope, world-class women mathematicians are represented among the speakers, so as not only to enhance the position of mathematics at Northwestern but also to raise visibility of women in the field.

### 2015 NU Math Dept Interview with Alexandra Bellow

### 2025 Obituary for Alexandra Bellow

"When you meet someone you know, it is common to say, 'nice to see you,' almost as a formality. When Alexandra said this to you, you instantly understood what it meant. It meant, 'there are many things going on in your life and in mine, and there are circumstances surrounding our encounter, but none of that is as important as the fact that I am seeing you and that is nice.'"

It is impossible to describe how she was able to convey all this with such an economy of words. Maybe it's contextual: you know that like a great artist or author she chooses expressions and words with care. Maybe you respect her for all the great things she has done and the rich life she has lived. But maybe it's because genuine people don't hide their genuineness. Alexandra was genuine. If you were privileged to know her, you sensed this instantly. If she touched you with a kind thought — and she did not hold them in reserve — you felt honored, welcomed.

(In writing this, I toggled between past and present tense, because Alexandra's presence will remain felt long after being taken from us.)

But I don't mean for this to be hagiography. As saintly as Alexandra may have been, she was a person: fun, sharp, witty. Perhaps the last thing she said to me after we chatted briefly at one of the lectures in her honor was this. I told her that it was nice to see her (I meant it!) and I hoped she was well. She said she was not as mobile as she had been, but instead of droning on like many of us do about health and doctor's and gory details, she just left it at: "growing old is not for sissies!"

Maybe not, but she managed to do it while enriching our lives"  
~ NU Math faculty member, Prof. Eric Zaslow



"Alexandra led an incredible life and every interaction with her left a lasting impression. A few months before her passing, I sent her a copy of my student's thesis and invited her to the defense. She wrote back that she was unfortunately not well enough to come to the defense and didn't have the energy to read the whole document, but in typical fashion pointed out a small typo on page 22."

~ NU Math faculty member, Prof. Bryna Kra

"One thing I'll always remember about Alexandra is that each and every time she visited the department, she would make a point of stopping in first to say hello to the staff and bring us a box of chocolates. She'd always hang out and chat for a while, make a point of thanking us for our work, and asking to be sure that we were happy working in the Math department!"

The second thing that I will never forget is what I learned about elegance from her. I was designing a poster for the Bellow Lecture Series. I wanted to express some of the complexities of the topic, so I added a lot of different graphic elements to express that feeling. When I proudly showed the design to Alexandra, she smiled. Then in her typically graceful and "on point" way, she explained that the most elegant mathematics proofs are the simplest and most direct. I, of course, got rid of all the "bells and whistles!" My understanding of elegance was forever changed-- and stays with me to this day!"

~ Greg Jue, former NU Math Dept Business Administrator

## Portrait Gallery: Earliest Chairs of Northwestern University's Mathematics Department

Curated by NU Math faculty member, Prof. Sandy Zabell



### Henry Sanborn Noyes (1822-1872)

The first Professor of Mathematics at Northwestern University, from 1855 to his death in 1872. He also served twice as the acting President of Northwestern (1854-1856 and 1860-1867) and was responsible for the construction of the first permanent building on campus, University Hall. Like many later presidents, a street in Evanston is named after him.



### Clark Titus Hinman (1819-1854)

The first President of Northwestern, Hinman recommended the Trustees appoint Noyes, having known him from their days together at the Newbury Seminary in Vermont, where Hinman had been the principal. Hinman died in 1854 of typhoid fever and dysentery while traveling home to New York during the summer, less than a year in office, and Noyes (as one of only two other faculty members who had been appointed up to that time) was asked by the Trustees to stand in for Hinman until a replacement could be found.



### Julius Field Kellogg (1830-1894)

The second Professor of Mathematics and chair of the Department from 1872 to his death in 1894, Kellogg initially came to Northwestern as a Professor of Civil Engineering in 1869 but became Professor of Mathematics after Noyes died in 1872. A popular teacher, he was a fixture on campus for a quarter of a century. Although esteemed by many for his scholarly attainments, he had only two years of formal academic training at Yale and an honorary MA from Lawrence College in Wisconsin. He became the Noyes Professor of Mathematics in 1876 when the Trustees established it on the recommendation of John Evans, its first President.



### Eliakim Hastings Moore (1862-1932)

The third chair of the Math Department, Moore was the first faculty member in the Department to have a PhD in mathematics (Yale, 1885). Initially an instructor in the NU Preparatory Academy in 1886-87, he returned soon after as an Assistant Professor in 1889 and the Associate Professor in 1891. He was likely de facto chair of the Department starting in 1890, when Kellogg's health began to fail. Although Moore left for the University of Chicago when it opened in 1892, so that his time at Northwestern was relatively brief, he had an important impact on the Department, both overseeing the establishment of a major and offering advanced courses, as well as setting the stage for its master's level graduate program.



### Henry Seely White (1861-1943)

The fourth chair of the Department (1892-1905), White was hired in 1892 under hurried circumstances when it emerged Moore was moving to Chicago. He was the second PhD in mathematics Northwestern hired (under Felix Klein in Göttingen, awarded in 1891). Under his watch, the Department began to offer graduate courses in Mathematics in 1894. An outstanding research mathematician, he also played an important role in making Chicago a center of U.S. mathematics. He left Northwestern in 1905 to teach at Vassar for personal reasons. He later became a President of the AMS (1907-08) and was elected to the National Academy of Sciences in 1915.



### Thomas Franklin Holgate (1859-1945)

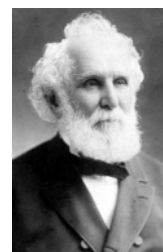
Holgate came to Northwestern in 1893 as an instructor but was promoted after only a year—along with White—to Professor in 1894, remaining at Northwestern for the next 40 years until his retirement in 1934. Although “titular” chair of Mathematics after White left in 1905, as Dean of the College of Liberal Arts (1902-1919) and twice acting President (1904-06 and 1916-19), Holgate's activities were necessarily largely at the College and University level, the day-to-day running of the Department being left up to his younger colleague, D. R. Curtiss. Along with White, Holgate was active in the Chicago section of the AMS and was its Secretary from the founding of the Section in 1897 until the end of 1905.



### David Raymond Curtiss (1878-1953)

Curtiss was the 5<sup>th</sup> chair of the Department and its longest serving – 30 years, from 1905 to 1935. Like his predecessors Moore and White, he had impeccable mathematical credentials. He earned his doctorate at Harvard in 1903 under Bôcher and

Osgood, held a postdoc at the École Normale Supérieure 1904-05, and after teaching Yale for a year, came to Northwestern. Although he had a respectable publication record, he was also very active at the national level, at various times serving as President of the MAA, Vice-President of both the AMS and AAAS, and being for many years an editor of both the AMS *Transactions* (1914-1919) and *Bulletin* (1928-38). His Carus Mathematical Monograph, *Analytic Functions of a Complex Variables* (AMS, 1929) is still in print as an ebook.



### Orrington Lunt (1815-1897)

One of the original founders of Northwestern as well as a Trustee and President of the Board, his gifts to the University over the years made possible, among other things, the construction of the present-day Lunt Hall, which initially served as the location of the expanding University

Library in 1894 (then called Orrington Lunt Library in his honor). He had a conservative view of the role of Northwestern and famously clashed with President Henry Rogers at the latter's inauguration in 1890. Lunt Avenue in Chicago is named after him and his brother, Stephen.



### Henry Wade Rogers (1853-1926)

The 6<sup>th</sup> President of Northwestern, from 1890 to 1900. The first President of Northwestern who was not a Methodist minister, he transformed Northwestern from small cluster of colleges into a single

cohesive university and expanded the University's liberal arts programs to give students access to a broader program of learning, including the fields of political science and economics. He worked to unify the various professional schools under the authority of the University's Board of Trustees, hired new faculty for all the schools and insisted they be given time and facilities for research as well as teaching. He strongly supported coeducation at Northwestern. His leadership led to a dramatic increase in enrollment and a recognition of the school as one of the top universities in the country.



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