Cherry Ng - CV

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EDUCATION

University of Colorado Boulder | Ph.D. in Mathematics   2022
Advisor: Dr. Agnès Beaudry
Dissertation title: Bredon homology of the non-abelian group of order 21

New Jersey Institute of Technology | M.S. in Applied Mathematics   2013
Project supervisor: Dr. Roy Goodman
Master's project: bifurcation analysis and identifying periodic orbits of families of PDEs using Matlab.

New York University | B.A. in Mathematics   2009

TEACHING

Instructor of Record | Northwestern University   2022-present
- MATH 218-1,2,3 Single-variable calculus with precalculus
- MATH 220-1 Single-variable calculus
- MATH 235-0 Sequences, series, and multiple integrals
- MATH 281-1,2,3 Accelerated math sequence: multivariable calc, differential equations, & linear algebra
- MATH 202-0 Finite mathematics
- MATH 300-0 Intro to proofs
- MATH 368-0 Intro to optimization
- MATH 399-0 Independent study

Instructor of Record | CU Boulder   2014-2022
- Math 1300 Single-variable differential calculus
- Math 2300 Single-variable integral calculus
- Math 2400 Multivariable calculus

Other teaching
- Course coordinator for 12 sections of Calculus I at CU Boulder
- Course coordinator for 20 sections of Calculus III at CU Boulder
- Course coordinator for 15 sections of Calculus III at CU Boulder
- Course coordinator for 4 sections of Calculus I at Northwestern
- Course coordinator for 4 sections of Calculus III at Northwestern (projected Spring 2025)
- Pedagogy for Mathematics (teacher training for graduate students)
- TA for College algebra, Calculus I, II, and III

Teaching Experience At A Glance

16	classes as sole instructor
8	classes as teaching assistant
4	classes as course coordinator
4	semesters as instructor for pedagogy course
3	research projects with undergraduates
4	teaching awards

MENTORSHIP

URAP | Undergraduate research
I started a project with undergraduate student Eli Carroll. We met weekly for a year toward our goal of computing equivariant topological invariants. The results will form Eli's upcoming senior thesis. Details can be found in the research statement. This work was funded by Northwestern's Office of Undergraduate Research.

SURG | Undergraduate research
Northwestern math major Bohai Lu was interested in applying topological data analysis techniques to voting data in the Canadian House of Commons. I supervised his project from in 2024 during the Spring and Summer terms. He is now writing up his results for submission to the Northwestern undergraduate research journal. This work was funded by Northwestern's Office of Undergraduate Research.

Research mentor | Summer research with first-year grad students   2020
Together with my advisor Dr. Agnès Beaudry, I co-mentored a team of early graduate students who worked to compute equivariant homology of projective spaces with a group action arising from $\mathbb{Z}/4$.

Peer Graduate Student Mentor | Mentorship for first-year grad students at CU   2019-2021
Small teams of incoming graduate students were matched with more senior graduate students in a mentoring arrangement. Duties included monthly meetings and general monitoring of progress and welfare.

SERVICE AND PROFESSIONAL DEVELOPMENT

Organizer for Special Session | JMM   2025
MAA Special Session on active learning

Project NExT | MAA   2024-present
This one-year program is designed to support early-career math faculty. I am a 2024 Project NExT Fellow.

NESP | Northwestern   2022-present
The Northwestern Emerging Scholars Program is a program aimed at promoting mathematical collaboration and problem-solving among undergraduates, especially those from underrepresented groups. Upper-division math majors lead weekly interactive sessions. I have been an organizer for three years.

Reflective and Effective Teaching | Searle Center at Northwestern   2024-present
RET is a one-year teaching certificate program that focuses on course design in various pedagogical frameworks.

Certificate in College Teaching | Center for Teaching and Learning at CU Boulder   2021
This professional development certificate is issued for participating in an array of activities that promote skills for attaining a professorship, such as a number of classroom observations, workshops, and trainings.

Lead Graduate Fellow | CU Boulder   2016-2018
This service role for graduate students at CU has duties that include co-teaching a pedagogy course for early grad students, conducting classroom observations for colleagues, and organizing professional development events.

Selected talks and presentations
Invited talks
- Localizations of model structures on lattices, JMM (2025 anticipated)
- Model structures on posets, Northwestern Undergrad Math Society
- Bredon Homology of the Nonabelian Group of Order 21, Algebraic Topology Seminar, UCLA

Other talks
- Bredon homology, Northwestern Postdoc Day
- Principles of Boardwork, Applied Math Pedagogy Seminar, CU Boulder
- 3D Printing for Yourself and Your Students, CU Boulder
- Applications of Conformal Mappings, Graduate Student Seminar, CU Boulder
- The Kervaire Invariant Problem, Graduate Student Seminar, CU Boulder
- Brown Representability, Topology Seminar, CU Boulder
- What Is the Fundamental Group?, STEMinar, CU Boulder
- GROOT Summer Seminar (online): Bredon Homology of the Nonabelian Group of Order 21

Conferences

- JMM in Seattle, 2025 (projected)
- MAA MathFest in Indianpolis, 2024
- AMS Mathematical Research Community in Java Center NY, 2024
- TEACHx at Northwestern, 2023
- Midwest Topology Seminar online, 2021
- CU Boulder Fall Teaching Intensive, 2021
- CU Boulder Fall Teaching Intensive, 2020
- CU Boulder Fall Teaching Intensive, 2019
- Graduate Students in Topology and Geometry at UIUC, 2019
- Midwest Topology Seminar at Michigan State, 2019
- Midwest Topology Conference in Chicago, 2019
- Women in Topology in Berkeley, 2019
- Young Topologists in Copenhagen, 2018
- Inquiry-based learning conference at CU Boulder, 2016

GRANTS, AWARDS, & HONORS

Postdoc Teaching Award | Northwestern   2024
Departmental award for excellence in teaching

Project NExT | MAA   2024-25
I was awarded $4500 from the math department at Northwestern to fund conference travel for Project NExT.

SURG | Northwestern   2024
The Office of Undergraduate Research granted me $4000 to fund a research project with Bohai Lu about applying topological data analysis to voting records.

URAP | Northwestern   2023
I proposed an undergrad research project targeted to students with no research experience. The Office of Undergraduate Research awarded me $1600 for one quarter, and I used the funds to pay undergrad Eli Carroll, who began work on equivariant homology computations during this project.

ASSETT grant | CU Boulder   2016
I worked on a team with two other graduate students and a faculty member to procure a grant for $4475, plus a department match, for establishing a 3D printing program to create manipulative teaching materials. The funds were used to purchase a 3D printer, organize training sessions for the department, and hire an undergraduate to design and print models. The models are still in use at CU Boulder, and details can be found on my website

Burton W. Jones Award | CU Boulder   2017-2018
Issued by the department of mathematics for teaching excellence among senior graduate students

W.E. Briggs Award | CU Boulder   2015
Issued by the department of mathematics for teaching excellence among early graduate students

"Best Should Teach" Silver Award | CU Boulder   2016
Issued by the CU Boulder Center for Teaching and Learning, for service to the department

OTHER SKILLS

Computer skills

- LaTeX
- HTML/CSS
- Broadcasting tools such as OBS Studio (for online teaching)
- Learning management systems such as Canvas and Desire2Learn
- Communication systems such as Slack, Discord, and Piazza
- Math coding languages such as Sage, Mathematica, and Matlab

Languages
Cantonese (conversational), Mandarin (basic), and French (conversational)