

CONTACT INFORMATION

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RESEARCH INTERESTS

Algebraic Topology, Homotopy Theory, Topological Data Analysis, Mathematical Biology

APPOINTMENTS

Assistant Professor Member of the Black and Latinx/e Student Success Cohort <i>Department of Mathematics, San Francisco State University</i>	Jan 2025 San Francisco, CA
William W. Elliott Assistant Research Professor <i>Department of Mathematics, Duke University</i>	Jan 2022 – Jul 2024 Durham, NC

EDUCATION

Ph.D. in Mathematics <i>Thesis: Decomposition of topological Azumaya algebras in the stable range</i> Supervisors: Ben Williams & Alejandro Adem	University of British Columbia 2016 – 2021
M.Sc. in Mathematics <i>Thesis: Cohomology of semidirect products</i> Supervisor: José Manuel Gómez Guerra	Universidad Nacional de Colombia 2014 – 2016
B.Sc. in Mathematics <i>Magna Cum Laude</i>	Universidad Nacional de Colombia 2009 – 2013

AWARDS, SCHOLARSHIPS & FELLOWSHIPS

Lathisms Honoree - <i>Lathisms Hispanic Heritage Month Calendar</i>	2024
NExT (New Experiences in Teaching) Fellow: Green'23 Cohort - <i>MAA Project NExT</i>	2023 – 2024
President's Academic Excellence Initiative PhD Award - <i>University of British Columbia</i>	2020 – 2021
International Tuition Award - <i>University of British Columbia</i>	2016 – 2021
Faculty of Science PhD Tuition Award - <i>University of British Columbia</i>	2016 – 2020
Itoko Muraoka Fellowship - <i>St. John's College, Vancouver</i>	2018
Academic Excellence Scholarship - <i>Universidad Nacional de Colombia</i>	2014 – 2016

PUBLICATIONS & PREPRINTS

- Decomposition of symplectic vector bundles and Azumaya algebras.** *Arcila-Maya, N.* (2023). Submitted. [ArXiv](#)
- Decomposition of topological Azumaya algebras with orthogonal involution.** *Arcila-Maya, N.* (2022). Accepted for publication after corrections at the *Journal of Pure and Applied Algebra*. [ArXiv](#)
- Compactly supported \mathbb{A}^1 -Euler characteristic and the Hochschild complex.** *Arcila-Maya N., Bethea C., Opie M., Wickelgren K., Zakharevich I.* (2022). *Topology and its Applications* 316. [DOI](#)
- Decomposition of topological Azumaya algebras.** *Arcila-Maya, N.* (2021). *Canadian Mathematical Bulletin*, 1-19. [DOI](#)
- Numerical solution of a fractional differential equation Wave-Diffusion.** *Arcila Maya N., Acosta Medina C., and Trujillo Casanova S.* (2013). *NOOS Journal*, Vol. 2, 43 - 48, *Universidad Nacional de Colombia, Manizales.*

TALKS

AT EVENTS

Vines and vineyards to understand ring-like formations within filamentous protein networks <i>Invited speaker - AMS 2024 Spring Southeastern Sectional Meeting</i>	Mar 2024 Florida State University
Topological Azumaya algebras and the decomposition problem <i>Invited speaker - AMS 2023 Spring Central Sectional Meeting</i>	Apr 2023 University of Cincinnati
Decomposition of topological Azumaya algebras in the stable range <i>Invited speaker - AT and TDA: A Conference in Honor of Gunnar Carlsson</i>	Aug 2022 University of Minnesota
Entendiendo álgebras topológicas de Azumaya <i>Invited speaker - I Encuentro de Estudiantes y Egresados de Matemáticas</i>	Jun 2021 Universidad Nacional de Colombia
Decomposition of topological Azumaya algebras with involution <i>Invited speaker - CMS Winter Meeting 2020 - Homotopy Theory Session</i>	Dec 2020 Montreal, Canada
Decomposition of Azumaya algebras <i>Invited speaker - Topology, Coast to Coast</i>	May 2020 University of British Columbia
Decomposition of topological Azumaya algebras <i>Invited speaker - CMS Winter Meeting 2019 - Topology Session</i>	Dec 2019 Toronto, Canada
Integral cohomology of BPU_n and the understanding of topological Azumaya algebras <i>Invited speaker - Women in Homotopy Theory and Algebraic Geometry II</i>	Mar 2019 Freie Universität

AT SEMINARS

Decomposition problem for topological Azumaya algebras with an involution of the first kind <i>Invited speaker - Topology Seminar</i>	Apr 2023 University of Virginia
Decomposition problem for topological Azumaya algebras with an involution of the first kind <i>Invited speaker - Topology Seminar</i>	Apr 2023 John Hopkins University
Algebras topológicas de Azumaya y el problema de descomposición <i>Invited speaker - Seminario de Topología Algebraica y Geometría</i>	Apr 2023 Virtual
Topological Azumaya algebras and the decomposition problem <i>Invited speaker - Homotopy Theory Seminar</i>	Apr 2023 University of Pennsylvania
Decomposition of topological Azumaya algebras in the stable range <i>Invited speaker - Peripatetic Seminar</i>	Apr 2022 University of Calgary
Decomposition of topological Azumaya algebras with symplectic involution <i>Geometry & Topology Seminar</i>	Mar 2022 Duke University
Decomposition of topological Azumaya algebras <i>Invited speaker - Topology Seminar</i>	Oct 2020 University of Illinois Urbana-Champaign
Cohomology Operations <i>QTOP Math - Series: Stable homotopy theory</i>	Fall 2019 University of British Columbia
What is a topological Azumaya algebra? <i>Reading Seminar - Series: Power Operations & Miscellaneous</i>	Spring 2019 University of British Columbia

WORKSHOPS ATTENDED

Climate Science at the Interface Between Topological Data Analysis and Dynamical Systems Theory - <i>AMS - Mathematics Research Community</i>	Jul 2024
Algebraic K-theory and Brauer Groups - <i>Banff International Research Station</i>	Jun 2024
Representation of Codes Using Group Algebras - <i>Rethinking Number Theory</i>	Jun 2023
VSU CBMS Conference on Topological Data Analysis and Persistence Theory - <i>Valdosta State University</i>	Aug 2022
Motivic Homotopy: Interactions and Applications - <i>IAS Park City Mathematics Institute</i>	Jul 2021
Cohomology of Finite Groups: Interactions and Applications - <i>Research Institute for Mathematics: MFO</i>	Aug 2020
Women in Topology III - <i>Hausdorff Research Institute for Mathematics: HIM</i>	Aug 2019
Workshop Women in Topology - <i>Mathematical Sciences Research Institute: MSRI</i>	Nov 2017

TEACHING EXPERIENCE

Math 105L: Laboratory Calculus and Functions I <i>Instructor - One section</i>	Spring 2024 <i>Department of Mathematics - Duke University</i>
Math 611: Algebraic Topology I <i>Instructor - One section</i>	Fall 2023 <i>Department of Mathematics - Duke University</i>
Math 218D2: Vectors and Matrices <i>Discussion facilitator - Four sections</i>	Spring 2023 <i>Department of Mathematics - Duke University</i>
Math 401/701: Introduction to Abstract Algebra <i>Instructor - One section</i>	Fall 2022 <i>Department of Mathematics - Duke University</i>
Math 112L: Laboratory Calculus II - Online <i>Instructor - One section</i>	Summer 2022 <i>Department of Mathematics - Duke University</i>
Math 112L: Laboratory Calculus II <i>Instructor - Two sections</i>	Spring 2022 <i>Department of Mathematics - Duke University</i>
Math 152: Linear Systems - Online <i>Instructor - One section</i>	Spring 2021 <i>Department of Mathematics - University of British Columbia</i>
Head TA of the Mathematics Learning Center (MLC) <i>40 to 60 graduate and undergraduate TAs</i>	2019–2020 <i>Department of Mathematics - University of British Columbia</i>
Mathematical Logic <i>Instructor - One section</i>	Fall 2013 <i>Department of Mechatronics Engineering - Universidad de Caldas</i>

In what follows, all items marked with a star (★) are activities related to Justice, Equity, Diversity and Inclusion.

MENTORING EXPERIENCE

★ AWM - Mentoring Network MENTORED A GRADUATE STUDENT: <i>Dhanusshya Raghu</i> Mentors are paired with undergraduate students to meet monthly to discuss career goals, resources, and build community.	Summer 2023 – Present <i>Ramanujan Institute for Advanced Study in Mathematics</i>
Summer Project MENTORED A MATHEMATICS UNDERGRADUATE STUDENT <i>Festus Akinsola</i> - An introduction to vines and vineyards	Summer 2023 <i>Duke University</i>
Math 491: Non-research Independent Study MENTORED TWO MATHEMATICS AND COMPUTER SCIENCE UNDERGRADUATE STUDENTS <i>Ryan Iki and Mark Reutin</i> - An introduction to topological data analysis	Spring 2023 <i>Duke University</i>
★ Twoples - Online Directed Reading Program MENTORED A MATHEMATICS UNDERGRADUATE STUDENT <i>Alice Mehalek</i> - Group actions, Sylow theorems, and modules	Spring 2022 <i>University of Alaska Southeast</i>

PROFESSIONAL SERVICE

★ Founder and Co-organizer - Pares Ordenados: Online DRP in Spanish <i>Free mentorship program serving Spanish-speaking math undergraduate students in Latin America</i>	Spring 2023 – Present <i>Worldwide Community</i>
Co-organizer - Project NExT Green '23 Fellows Session <i>Creating a classroom environment that empowers students to learn independently</i>	Aug 7, 2024 <i>MAA MathFest</i>
★ Member of the Duke Math DEI team <i>Department of Mathematics</i>	Fall 2023 - Spring 2024 <i>Duke University</i>
★ Member of the Prison Engagement Initiative Network <i>Member of the in-prison education task force</i> Interdisciplinary Duke University network committed to engaging prisons, the people affected by prisons, and the politics and pathways surrounding mass incarceration.	Fall 2023 <i>The Kenan Institute for Ethics - Duke University</i>

PROFESSIONAL DEVELOPMENT

TEACHING & MENTORING TRAINING

- ★ **Cultivating an Inclusive Teaching & Learning Community through Narrative Change** Duke University
Center for Truth, Racial Healing & Transformation (TRHT)
Nov 8, 2023
Workshop: 1 hour
- Best Practices in Mentoring** Duke University
Duke Graduate Academy
Summer 2023
Workshop: 6 sessions of 75 minutes each
- Instructional Skills Workshop** University of British Columbia
Centre for Teaching, Learning and Technology (CTLT)
Spring 2021
Workshop: 3 sessions of 4 hours each
- Transitioning to Online Teaching: A Blended Approach** University of British Columbia
Centre for Teaching, Learning and Technology (CTLT)
Summer 2020
Workshop: 12 hours
- Foundations of Pedagogy** University of British Columbia
Centre for the Integration of Research, Teaching, and Learning (CIRTL)
Fall 2019
Workshop: 8 sessions of 2 hours each

DEI TRAINING & EVENTS ATTENDED

- ★ **Neurodiversity Student Panel - Duke Neurodiversity Connections** Duke University
Personal experience from neurodivergent students - Practical advice for teaching and mentoring
Sep 26, 2023
- ★ **Bystander Training - Kenan Institute for Ethics** Duke University
Workshop: 3 hours
Summer 2023
- ★ **Mathematics for Human Flourishing** Duke University
Talk by Professor Francis Su
December 2022

PROJECT NEXT

Professional development program for early career mathematicians focusing on enhancing math education, promoting inclusivity, and guiding early career faculty in research, scholarship, and service.

- ★ **Engaging Students Meaningfully with Proof** Tampa, Florida
Workshop: 80 minutes
Summer 2023
- ★ **Creating a Vibrant & Inclusive Community** Tampa, Florida
Workshop: 80 minutes
Summer 2023
- Helping Students Value Learning Outcomes over Grades** Tampa, Florida
Workshop: 80 minutes
Summer 2023
- Developing and Establishing Modeling/Computational Courses** Tampa, Florida
Workshop: 80 minutes
Summer 2023
- Charting your Career Course** Tampa, Florida
Workshop: 80 minutes
Summer 2023
- Jumpstarting Your Scholarship** Tampa, Florida
Workshop: 2 sessions of 2 hours each
Summer 2023

MISCELLANEOUS

- Science & Research Communication - Duke Graduate Academy** Duke University
Workshop: 6 sessions of 2 hours each
Summer 2023
- Generational differences in the workplace: Fact or Fiction - Alumni UBC** University of British Columbia
Webinar: 1 hour
Spring 2019
- Presentation Skills I - MITACS** University of British Columbia
Workshop: 8 hours
Spring 2019
- Skills of Communication - MITACS** University of British Columbia
Workshop: 8 hours
Spring 2017

OUTREACH

★ **FEMMES+ Capstone 2023**

Led an activity together with two of my students

Duke University

Apr 2023

★ **Festival of Numbers**

Facilitated recreational activities with children and teenagers

Red Matemática Antioquia

Aug 2015

Youth Math Contest

Made a digital solution manual for the contest

Universidad Nacional de Colombia

Fall 2013

PROFESSIONAL AFFILIATIONS

AMS : American Mathematics Association

AWM : Association for Women in Math

MAA : Mathematical Association of America

SACNAS : Society for Advancement of Chicanos/Hispanics & Native Americans in Science

TECHNICAL SKILLS

Data Analysis : Python, Jupyter, GitHub

Other : \LaTeX , Microsoft Office, HTML

LANGUAGES

English : Fluent

Spanish : Native