

CHRISTINA DURÓN

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🌐 <https://cduron.info>

ACADEMIC EMPLOYMENT

- Assistant Professor of Mathematics** Aug 2022 – Present
Natural Science Division of Seaver College, Pepperdine University
- Postdoctoral Research Associate** Aug 2019 – May 2022
Department of Mathematics, University of Arizona
- High School Teacher** Aug 2013 – June 2019
Mathematics Department, The Webb Schools of California

RESEARCH INTERESTS

Network Theory; Network Dynamics; Statistical Analysis and Modeling of Complex Networks; Mathematical-Biology

EDUCATION

- Claremont Graduate University** May 2019
Ph.D. in Mathematics
- **Thesis:** The Distribution of Betweenness Centrality in Exponential Random Graph Models
 - **Advisors:** Dr. Ami Radunskaya (Professor, Pomona College) and Dr. Johanna Hardin (Professor, Pomona College)
- University of Washington** June 2013
Master's in Applied Mathematics
- Swarthmore College** May 2012
Bachelor of Arts in Mathematics; Minor in Computer Science

PUBLICATIONS *

8. Kravitz H, **Durón C**, Brio M. (2024). A Coupled Spatial-Network Model: A Mathematical Framework for Applications in Epidemiology. *Bulletin of Mathematical Biology*, 86(132): 1 – 35. doi: [10.1007/s11538-024-01364-3](https://doi.org/10.1007/s11538-024-01364-3)
8. **Durón C**, Swansen B[†], Kravitz H. (2024). Difference Approximation. *Wiley StatsRef: Statistics Reference Online* (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J.L. Teugels). doi: [10.1002/9781118445112.stat08440](https://doi.org/10.1002/9781118445112.stat08440)
7. Sullivant N, **Durón C**, Pfeffer D. (2023). From Mirrors to Wallpapers: A Virtual Math Circle Module on Symmetry. *Journal of Math Circles*: Vol. 3: Iss. 1, Article 1. Available at <https://digitalcommons.cwu.edu/mathcirclesjournal/vol3/iss1/1>.
6. **Durón C**. (2022). Adaptive Quadrature. *Wiley StatsRef: Statistics Reference Online* (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J.L. Teugels). doi: [10.1002/9781118445112.stat08388](https://doi.org/10.1002/9781118445112.stat08388)
5. **Durón C**, Farrell A. (2022). A Mean-Field Approximation of SIR Epidemics on an Erdős-Rényi Network Model. *Bulletin of Mathematical Biology*, 84(7): 1 – 19. doi: [10.1007/s11538-022-01026-2](https://doi.org/10.1007/s11538-022-01026-2)

* Authors are ordered by contribution.

[†] Undergraduate student.

4. **Durón C.** (2021). Linear Algebra, Computational. *Wiley StatsRef: Statistics Reference Online* (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J.L. Teugels). doi: [10.1002/9781118445112.stat00459.pub2](https://doi.org/10.1002/9781118445112.stat00459.pub2)
3. **Durón C.** (2020). Heatmap Centrality: A New Measure to Identify Super-Spreader Nodes in Scale-Free Networks. *PLoS ONE*, 15(7): e0235690. doi: [10.1371/journal.pone.0235690](https://doi.org/10.1371/journal.pone.0235690)
2. **Durón C**, Pan Y, Gutmann D.H., Hardin J, & Radunskaya A. (2018). Variability of Betweenness Centrality and Its Effect on Identifying Essential Genes. *Bulletin of Mathematical Biology*, 81(9): 3655 – 3673. doi: [10.1007/s11538-018-0526-z](https://doi.org/10.1007/s11538-018-0526-z)
1. Pan Y, **Durón C**, Bush E.C., et al. (2018). Graph Complexity Analysis Identifies an ETV5 Tumor-Specific Network in Human and Murine Low-Grade Glioma. *PLoS ONE*, 13(5): e0190001. doi: [10.1371/journal.pone.0190001](https://doi.org/10.1371/journal.pone.0190001)

UNDER REVIEW *

2. **Durón C**, Mello J[†], Kamps K[†]. (Sept 2024). Network Evaluation of Influential Sensors on Critical Infrastructures. *International Journal on Hydropower & Dams*.
1. Pfeffer D, **Durón C**. (July 2024). An Unlikely Duo: Injecting Art Projects in the Mathematics Classroom. *Journal of Humanistic Mathematics*.

IN PREPARATION

1. O'Brien E, **Durón C**. (Aug 2024). The Wasserstein metric as a tool to assess burn-in and convergence. *Statistical Science*.

RESEARCH POSITIONS

Graduate Research Assistant

Pomona College

Jan 2017 – June 2018

- NIH (1R01-CA195692-01) funding under Dr. Ami Radunskaya and Dr. Johanna Hardin

Jet Propulsion Laboratory (JPL) Intern

California Institute of Technology

June 2015 – August 2015

- Implemented the Extended Kalman Filter (EFK) and incorporated inter-robot measurements to improve the state estimation and localization of autonomous vehicles

Mathematical and Theoretical Biology Institute Researcher

Arizona State University

June 2011 – July 2011

- Developed a mathematical model for the evaluation and analysis of the air pollution in Los Angeles

TEACHING EXPERIENCE

Instructor of Record

Pepperdine University

- **MATH 450: Mathematical Statistics** Spring 2024
- **MATH 350: Mathematical Probability** Fall 2023
- **MATH 260: Linear Algebra** Spring 2023, Fall 2024
- **MATH 150: Calculus I** Fall 2022, Spring 2023,
Fall 2023, Spring 2024
Fall 2024

* Authors are ordered by contribution.

† Undergraduate student.

Instructor of Record

University of Arizona

- **MATH 491: Undergraduate Teaching Assistantship (UTA) Seminar** *Fall 2021 – Spring 2022*
- **MATH 196M: Calculus I Supplementary Seminar** *Spring 2022*
- **MATH 396L: Wildcats Proofs Workshop** *Spring 2022*
- **MATH 464: Theory of Probability** *Fall 2021*
- **MATH 363: Introduction to Statistical Methods** *Spring 2021*
- **MATH 129: Calculus II** *Fall 2020*
- **MATH 475A: Mathematical Principles of Numerical Analysis** *Fall 2020*
- **MATH 163: Basic Statistics** *Spring 2020*
- **MATH 122B: First Semester Calculus** *Fall 2019*
- **MATH 196L: Precalculus Supplementary Seminar** *Fall 2019*

Instructor of Record

The Webb Schools of California

- **Advanced Placement Computer Science Principles** *Fall 2018 – Spring 2019*
- **Honors Precalculus** *Fall 2014 – Spring 2019*
- **Introduction to Computer Programming with Python** *Fall 2014 – Spring 2018*
- **Precalculus** *Fall 2013 – Spring 2019*
- **Integrated Mathematics 2** *Fall 2013 – Spring 2014*

PRESENTATIONS

Student-Directed

2. **Using Networks to Evaluate an Infrastructure's Condition During Seismic Activity: A Proposed Approach** *Jan 2024*
JMM: AMS - PME Undergraduate Student Poster Session
1. **Using Networks to Evaluate an Infrastructure's Condition During Seismic Activity: A Proposed Approach** *July 2023*
Pepperdine University, Natural Science Division Summer Research

Contributed

7. **A Coupled Spatial-Network Model for Epidemiology** *July 2024*
Frankfurt School of Finance and Management Workshop on Metric Networks
6. **Math Circles: Elevating Student Engagement and Mathematical Enjoyment Outside the Classroom** *Jan 2024*
University of Arizona Mathematics Educator Appreciation Day Conference (MEAD)
5. **Incorporating Undergraduate Students in Research on Assessing Dam Safety Using Network Analysis** *Jan 2024*
JMM Special Session: Navigating the Benefits and Challenges of Mentoring Students in Data-Driven Undergraduate Research Projects
4. **Tiling a Chessboard: A Problem Adapted for the Virtual Math Circle** *Jan 2023*
JMM Special Session: Math Circle Activities as a Gateway into Mathematics
3. **A Mean Field Approximation of SIR Epidemics on an Erdős-Rényi Network Model** *May 2021*
Los Alamos-Arizona Days Conference (Virtual Poster)

2. **Identifying Super-Spreader Nodes in Scale-Free Networks using Network Centrality Measures** Sept 2020
Arizona Postdoctoral Research Conference (Virtual Talk)
1. **Identifying Treatment Targets for Pediatric Gliomas using Network Centrality Measures** June 2020
SIAM Conference on the Life Sciences (Virtual Talk)

Seminar

4. **A Coupled Spatial-Network Model for Epidemiology** Nov 2023
University of Florida, Health Systems Medicine Seminar (Virtual Talk)
3. **Network Centrality: Theory to Applications** Oct 2021
Arizona State University, Mathematical Biology Seminar (Virtual Talk)
2. **Heatmap Centrality: A New Measure to Identify Super-Spreader Nodes in Scale-Free Networks** Feb 2021
Claremont Colleges and University of Utah, Joint Applied Mathematics Seminar (Virtual Talk)
1. **Network Data Analysis Techniques on DESeq and RNASeq Data** Nov 2019
University of Arizona, TRIPODS Research Working Group 6 - Analyzing large-scale point-set data

Industry

1. **Network Evaluation of Influential Sensors: A Proposed Approach[‡]** March 2024
California Department of Water Resources
2. **Network Evaluation of Influential Sensors: A Proposed Approach[‡]** Nov 2023
Southern California Edison, Dam & Public Safety Group

PROFESSIONAL DEVELOPMENT

Program

- **Project NExT (Green 2023)** Aug 2023 – Aug 2024
Mathematical Association of America (MAA)
 - Focused on all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, finding exciting and interesting service opportunities, and participating in professional activities

Certification

- **Diversity, Equity, and Inclusion in the Workplace** May 2021
University of South Florida
 - Focused on ways that organizations can create a more diverse workplace, address equity issues, and foster inclusivity
- **Effective Online Discussions** June 2020
University of Arizona
 - Developed strategies for designing and facilitating effective online discussions that deepen learning, expand student exposure to curriculum, and increase student engagement
- **Teaching the Large Online Course** June 2020
University of Arizona
 - Developed instructional practices for encouraging student engagement and motivation in a large online class, as well as for effectively managing administrative tasks such as monitoring student progress and conducting assessments

Workshops

- **Network Modeling for Epidemics** Aug 2020
University of Washington

[‡] Presented with undergraduate students.

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- **BioBridge Clinic** Jan 2020
University of California, Irvine
- **Computational Genomics Summer Institute** May 2019
University of California, Los Angeles

SERVICE

Mentoring and Advising

- **Undergraduate Research Advisor** (Team of 2 undergraduates) Summer 2023 – Present
Pepperdine University
- **Math Club Vice-Principal Faculty Advisor** Spring 2023 – Fall 2023
Pepperdine University
- **Undergraduate Student Mentor** Spring 2023 – Fall 2023
Pepperdine University, Faculty/Student Mentor Program
- **Undergraduate Student Mentor** Fall 2021 – Spring 2022
University of Arizona, Women in Science and Engineering (WISE) Program
- **Graduate Student Mentor** Fall 2021 – Spring 2022
University of Arizona, Association for Women in Mathematics (AWM) Mentor Network
- **Undergraduate Research Advisor** Fall 2020 – Spring 2021
University of Arizona
- **Mathematics Undergraduate Teaching Assistantship (UTA) Program Mentor** Fall 2020 – Spring 2021
University of Arizona
- **Mathematical Modeling Group Mentor** (Team of 4 undergraduates) Spring 2020
University of Arizona
- **Math Club Advisor** Fall 2017 – Spring 2019
The Webb Schools of California

University and Departmental Service

- **Institutional Review Board, Natural Science Representative** Fall 2023 – Present
Pepperdine University
 - Review research study protocol/application materials (exempt, expedited, and full review) and evaluate them from the perspective of the regulatory criteria for approval.
- **Admissions and Scholarship Committee** Fall 2023 – Present
Pepperdine University
 - Review student applications and select Faculty-Staff Scholars based on merit, including academic performance and recommendations.
- **Co-Instructor of RISE/Connection Chapel** Fall 2023
Pepperdine University
 - Facilitated discussions on different aspects of science from the Christian perspective, primarily in the disciplines of history, physics, astronomy, and mathematics, with students over five sessions
- **Member of Hiring Committee, Assistant Professor of Mathematics (AY 24/25)** Fall 2023 – Spring 2024
Pepperdine University
 - Served on the seven-member review committee whose duties included reading through application packages, conducting virtual interviews via Zoom and in-person interviews on campus, collecting and consolidating information about the interviews, and making final recommendations

- **Member of Hiring Committee, Visiting Assistant Professor of Mathematics (AY 23/24)** *Summer 2023*
Pepperdine University

 - Served on the five-member review committee whose duties included reading through application packages, conducting virtual interviews via Zoom, collecting and consolidating information about the interviews, and making final recommendations
- **Member of Hiring Committee, Assistant Professor of Mathematics (AY 23/24)** *Fall 2022 – Spring 2023*
Pepperdine University

 - Served on the seven-member review committee whose duties included reading through application packages, conducting virtual interviews via Zoom and in-person interviews on campus, collecting and consolidating information about the interviews, and making final recommendations
- **Member of Review Committee, Excellence in Postdoctoral Mentoring Award** *Spring 2022*
University of Arizona

 - Served on the three-member review committee that determined the recipient of the 2022 Excellence in Postdoctoral Mentoring Award
- **President, Postdoctoral Governance** *Fall 2021 – Spring 2022*
University of Arizona

 - Serve as an in-between for the postdocs and the Postdoctoral Committee, and organize the postdoctoral professional development seminar topics and panels
- **Mathematics Undergraduate Teaching Assistantship (UTA) Program, Director** *Fall 2021 – Spring 2022*
University of Arizona

 - Coordinate the mentorship of the UTA's, and run the weekly professional development seminar
- **Mathematics Undergraduate Teaching Assistantship (UTA) Program, Co-Director** *Fall 2020 – Spring 2021*
University of Arizona

 - Supported the Director of the UTA Program, and was responsible for additional duties related to the weekly professional development seminar
- **Vice President, Postdoctoral Governance** *Fall 2020 – Spring 2021*
University of Arizona

 - Supported the President of the Postdoctoral Governance, and was responsible for additional duties related to the postdoctoral professional development seminars
- **Non-Academic Liaison, Postdoctoral Governance** *Spring 2020*
University of Arizona

 - Organized a panel pertaining to non-academic careers for the postdoctoral professional development seminar

Service to the Discipline

- **JMM 2024, Co-Organizer of MAA Project NExT Session** *Jan 2024*
Pepperdine University

 - “Making Student Thinking Visible with Team-Based Inquiry Learning”
- **MAA MathFest 2022, Co-Organizer of Themed Contributed Paper Session** *Aug 2022*
University of Arizona

 - “Math Circles: Talks about Mathematical Joy, Inspirations, and Data-Driven Lessons Learned”
- **Reviewer for:**

 - Complexity *March 2023*
 - Indian Journal of Discrete Mathematics *Nov 2020*
 - DNA and Cell Biology *Jan 2020*

- **Mathematics and MATLAB Summer Workshop, Co-Coordinator**
Claremont Graduate University
- **Mathematics and MATLAB Summer Workshop, Co-Instructor**
Claremont Graduate University

June 2016 – June 2018

June 2016 – June 2017

Outreach

- **How I Found My Network: My Path to Mathematics**
Arizona State University
 - Keynote address for Sonia Kovalevsky Day

Nov 2021

- **Tucson Math Circle**
University of Arizona

Aug 2019 – Present

- Co-develop materials and co-run the university sponsored weekly program designed to get middle school students excited about mathematics through hands-on exploration and discovery

- **Association for Women in Mathematics (AWM): Sonia Kovalevsky Day**
University of Arizona

April 2021

- Developed materials and co-ran a workshop designed to bolster female high school and middle school students' passion and enthusiasm for mathematics in a supportive environment

- **The Seven Bridges of Königsberg**
Pepperdine University

Nov 2022

- Talk given to Math Club during Tuesday Tea

- **Using Network Centrality Measures to Identify Unknown Regulatory Pathways in Pediatric Glioma**
University of Arizona

Sept 2020

- Talk given to The MathCats Club (undergraduate math club)

HONORS AND AWARDS

The Teaching and Service Award

University of Arizona, Department of Mathematics

April 2022

The Jean E. Miller Excellence in Teaching Award

The Webb Schools of California

June 2018

The Thompson and Vivian Webb Excellence in Teaching Award

The Webb Schools of California

June 2015

The Heinrich W. Brinkmann Mathematics Prize

Swarthmore College

June 2012

FUNDING

Research Grants

- **Academic Year Undergraduate Research Initiative (\$1,000)**
Pepperdine University
- **Collaborative Research Grant for Postdocs (\$1,500)**
University of Arizona

Sept 2023

June 2020

Travel Awards

- **AIM SQuaRE Research Collaboration** April 2025
American Institute of Mathematics (AIM)
- **TDA-BIO** (\$1,000) Oct 2016
ACM Conference on Bioinformatics, Computational Biology, and Health Informatics

Fellowships

- **Clinic Fellowship** (\$900) Jan 2020
University of California, Irvine
- **Daniel Pick Fellowship** (\$10,000) Oct 2017
Claremont Graduate University
- **Joseph and Elizabeth Peeler Endowed Fellowship** (\$32,570) Aug 2015 – June 2017
Claremont Graduate University
- **CGU Mathematics Fellowship** (\$13,700) Aug 2014 – June 2015, June 2017
Claremont Graduate University
- **CGU Minority Fellowship** (\$2,000) Aug 2014 – June 2016
Claremont Graduate University

SKILLS

Programming Languages

- C (*Moderate proficiency*)
- C++ (*Moderate proficiency*)

- MATLAB (*Proficient*)
- Python (*Proficient*)
- R (*Proficient*)

Scientific Applications

- GitHub
- LaTeX
- RSweave

Languages

- English (*Native*)
- Spanish (*Reading, writing, and conversational speaking*)