

# CHRISTINA DURÓN

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## ACADEMIC EMPLOYMENT

### Assistant Professor of Mathematics

*Natural Science Division of Seaver College, Pepperdine University*

Aug 2022 – Present

### Postdoctoral Research Associate

*Department of Mathematics, University of Arizona*

Aug 2019 – May 2022

### High School Teacher

*Mathematics Department, The Webb Schools of California*

Aug 2013 – June 2019

## RESEARCH INTERESTS

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

## EDUCATION

### Claremont Graduate University

*Ph.D. in Mathematics*

May 2019

- **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

*Master's in Applied Mathematics*

June 2013

### Swarthmore College

*Bachelor of Arts in Mathematics; Minor in Computer Science*

May 2012

## PUBLICATIONS \*

8. Durón C, Swansen B<sup>†</sup>, Kravitz H. (Accepted Sept 2023). Difference Approximation. *Wiley StatsRef: Statistics Reference Online*.
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.

<sup>†</sup> 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 \*

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2. O'Brien E, **Durón C.** (Sept 2023). The Wasserstein metric as a tool to assess burn-in and convergence. *Statistics and Computing*.
1. Kravitz H, **Durón C.**, Brio M. (Sept 2023). A coupled spatial-network model for epidemiology. *Bulletin of Mathematical Biology*.

## IN PREPARATION \*

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1. Pfeffer D, **Durón C.** An Unlikely Duo: Injecting Art Projects in the Mathematics Classroom.

## RESEARCH POSITIONS

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### 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 (EKF) 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

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### Instructor of Record

Pepperdine University

- **MATH 350: Mathematical Probability** Fall 2023
- **MATH 260: Linear Algebra** Spring 2023
- **MATH 150: Calculus 1** Fall 2022, Spring 2023, Fall 2023

### Instructor of Record

University of Arizona

- **MATH 491: Undergraduate Teaching Assistantship (UTA) Seminar** Fall 2021 – Spring 2022

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\* Authors are ordered by contribution.

• 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
• Introduction to Computer Programming with Python	Fall 2014 – Spring 2018
• Honors Precalculus	Fall 2014 – Spring 2019
• Precalculus	Fall 2013 – Spring 2019
• Integrated Mathematics 2	Fall 2013 – Spring 2014

## PRESENTATIONS

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#### Student-Directed

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

5. **An Unlikely Duo: Injecting Art Projects in the Mathematics Classroom** Aug 2023  
*MAA MathFest Session: Incorporating Alternative Forms of Assessment into Undergraduate Mathematics Classes*
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

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*

## Other

2. **The Distribution of Betweenness Centrality in Exponential Random Graph Models**  
*Claremont Graduate University, Doctoral Thesis Defense* April 2019
1. **A Mathematical Model of the Emission and Optimal Control of Photochemical Smog**  
*Arizona State University, Mathematical and Theoretical Biology Institute (MTBI)* Aug 2011

## PROFESSIONAL DEVELOPMENT

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

## SERVICE

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### Mentoring and Advising

- **Undergraduate Research Advisor** (Team of 2 undergraduates) Summer 2023 – Present  
*Pepperdine University*
- **Math Club Vice-Principal Advisor** Spring 2023 – Fall 2023  
*Pepperdine University*
- **Undergraduate Student Mentor** Spring 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

- **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

- **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:**
  - Indian Journal of Discrete Mathematics Nov 2020
  - DNA and Cell Biology Jan 2020
  - Revista de Matemática: Teoría y Aplicaciones Oct 2019
- **Mathematics and MATLAB Summer Workshop, Co-Coordinator** June 2016 – June 2018  
*Claremont Graduate University*
- **Mathematics and MATLAB Summer Workshop, Co-Instructor** June 2016 – June 2017  
*Claremont Graduate University*

## Outreach

- **How I Found My Network: My Path to Mathematics** Nov 2021  
*Arizona State University*
  - Keynote address for Sonia Kovalevsky Day
- **Tucson Math Circle** Aug 2019 – Present  
*University of Arizona*
  - 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** April 2021  
*University of Arizona*
  - 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** Nov 2022  
*Pepperdine University*
  - Talk given to Math Club during Tuesday Tea
- **Using Network Centrality Measures to Identify Unknown Regulatory Pathways in Pediatric Glioma** Sept 2020  
*University of Arizona*
  - Talk given to The MathCats Club (undergraduate math club)

## HONORS AND AWARDS

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- The Teaching and Service Award** April 2022  
*University of Arizona, Department of Mathematics*
- The Jean E. Miller Excellence in Teaching Award** June 2018  
*The Webb Schools of California*
- The Thompson and Vivian Webb Excellence in Teaching Award** June 2015  
*The Webb Schools of California*
- The Heinrich W. Brinkmann Mathematics Prize** June 2012  
*Swarthmore College*

## FUNDING

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### Research Grants

- **Academic Year Undergraduate Research Initiative** (\$1,000) *Sept 2023*  
*Pepperdine University*
- **Collaborative Research Grant for Postdocs** (\$1,500) *June 2020*  
*University of Arizona*

### Travel Awards

- **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

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### 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*)