# CHRISTINA DURÓN

christina.duron@pepperdine.edu (310) 506 – 4832 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 *

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

5. **Durón C**, Farrell A. (2022). A Mean-Field Approximation of SIR Epidemics on an Erdös-Rényi Network Model. *Bulletin of Mathematical Biology*, 84(7): 1 – 19. doi: 10.1007/s11538-022-01026-2

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

* Authors are ordered by contribution.

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

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

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

## IN PREPARATION *

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

3. O'Brien E, **Durón C**. The Wasserstein metric as a tool to assess burn-in and convergence.

2. Kravitz H, **Durón C**, Brio M. The Effect of a Transport Network on the Spread of Epidemics.

1. Swansen B†, **Durón C**, Kravitz H. Difference Approximation.

## RESEARCH POSITIONS

**Graduate Research Assistant** *Jan 2017 – June 2018*
*Pomona College*

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

**Jet Propulsion Laboratory (JPL) Intern** *June 2015 – August 2015*
*California Institute of Technology*

- 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** *June 2011 – July 2011*
*Arizona State University*

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

## TEACHING EXPERIENCE

**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*
- **MATH 196M: Calculus I Supplementary Seminar** *Spring 2022*

* Authors are ordered by contribution.
† Undergraduate student.

- **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

**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 Erdös-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** *April 2019*
   *Claremont Graduate University, Doctoral Thesis Defense*

1. **A Mathematical Model of the Emission and Optimal Control of Photochemical Smog** *Aug 2011*
   *Arizona State University, Mathematical and Theoretical Biology Institute (MTBI)*

## 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*

- **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 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

**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

### Research Grants

- **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

### 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*)