

# CHRISTINA DURÓN

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## ACADEMIC EMPLOYMENT

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### 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

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

## EDUCATION

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### 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\*

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7. Sullivant N, **Durón C**, Pfeffer D. (2022). 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. Piegorisch, 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)
4. **Durón C**. (2021). Linear Algebra, Computational. *Wiley StatsRef: Statistics Reference Online* (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorisch, 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)

## 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 (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

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### Instructor of Record

*Pepperdine University*

- **MATH 260: Linear Algebra**

*Spring 2023*

- **MATH 150: Calculus 1**

*Fall 2022, Spring 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*

- **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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### Contributed

4. **Tiling a Chessboard: A Problem Adapted for the Virtual Math Circle** *Jan 2023*  
*JMM Special Session on 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** *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)*

## DEVELOPMENT AS AN EDUCATOR

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### 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**

*University of Arizona*

*June 2020*

- 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

## DEVELOPMENT AS A RESEARCHER

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### Workshops

- **Network Modeling for Epidemics**

*University of Washington*

*Aug 2020*

- **BioBridge Clinic**

*University of California, Irvine*

*Jan 2020*

- **Computational Genomics Summer Institute**

*University of California, Los Angeles*

*May 2019*

## OUTREACH AND SERVICE

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### Mentoring and Advising

- **Undergraduate Student Mentor**

*University of Arizona, Women in Science and Engineering (WISE) Program*

*Fall 2021 – Spring 2022*

- **Graduate Student Mentor**

*University of Arizona, Association for Women in Mathematics (AWM) Mentor Network*

*Fall 2021 – Spring 2022*

- **Undergraduate Research Advisor**

*University of Arizona*

*Fall 2020 – Spring 2021*

- **Mathematics Undergraduate Teaching Assistantship (UTA) Program Mentor**

*University of Arizona*

*Fall 2020 – Spring 2021*

- **Mathematical Modeling Group Mentor** (Team of 4 undergraduates)

*University of Arizona*

*Spring 2020*

- **Math Club Advisor**

*The Webb Schools of California*

*Fall 2017 – Spring 2019*

### University and Departmental Service

- **Member of Review Committee, Excellence in Postdoctoral Mentoring Award**

*University of Arizona*

*Spring 2022*

- Served on the three-member review committee that determined the recipient of the 2022 Excellence in Postdoctoral Mentoring Award

- **President, Postdoctoral Governance**

*University of Arizona*

*Fall 2021 – Spring 2022*

- 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**

*University of Arizona*

*Fall 2021 – Spring 2022*

- Coordinate the mentorship of the UTA's, and run the weekly professional development seminar

- **Mathematics Undergraduate Teaching Assistantship (UTA) Program, Co-Director**

*University of Arizona*

*Fall 2020 – Spring 2021*

- 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 – May 2022*

*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

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

## FUNDING

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### Research Grants

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| • <b>Collaborative Research Grant for Postdocs</b> (\$1,500)<br><i>University of Arizona</i> | <i>June 2020</i> |
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### Travel Awards

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| • <b>TDA-BIO</b> (\$1,000)<br><i>ACM Conference on Bioinformatics, Computational Biology, and Health Informatics</i> | <i>Oct 2016</i> |
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### Fellowships

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

## 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*)