



# CHRISTINA DURÓN

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 Tucson, AZ

## ACADEMIC EMPLOYMENT

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### Postdoctoral Research Associate

Mathematics Department, University of Arizona

Aug 2019 – present

### 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

## 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. Johana 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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**Durón C**, Farrell A. *A Mean Field Approximations of SIR Epidemics on an Erdős–Rényi Network Model*. Mathematical Biosciences. Submitted May 10, 2021.

**Durón C**. (2021). *Linear Algebra, Computational*. In Wiley StatsRef: Statistics Reference Online. Davidian, M., Kenett, R.S., Longford, N.T., Molenberghs, G., Piegorsch, W.W., and Ruggeri, F., eds. Chichester: John Wiley & Sons. 2021; Article No. stat00459.pub2. doi:10.1002/9781118445112.stat00459.pub2.

**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)

**Durón C**, Pan Y, Gutmann D.H., Hardin J, & Radunskaya A. (2019). *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)

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)

## IN PREPARATION

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O'Brien E, **Durón C**. *The Wasserstein Metric as a Tool for Assessing Burn-in of Markov Chains*.

Fider N, **Durón C**, Pfeffer D. *Six Weeks of Symmetry: A Tucson Math Circle Series*.

## RESEARCH POSITIONS

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### Graduate Research Assistant

Jan 2017 – June 2018

Pomona College

- NIH funding under Dr. Ami Radunskaya and Dr. Johana Hardin

### Jet Propulsion Laboratory Intern

June 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

Arizona State University

- 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

University of Arizona

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|--|-------------------------|
| • Undergraduate Teaching Assistantship (UTA) Seminar | Fall 2021 – Spring 2022 |
| • Theory of Probability                              | Fall 2021               |
| • Introduction to Statistical Methods                | Spring 2021             |
| • Calculus II  | Fall 2020               |
| • Mathematical Principles of Numerical Analysis      | Fall 2020               |
| • Basic Statistics                                   | Spring 2020             |
| • First Semester Calculus                            | Fall 2019               |
| • Precalculus Supplementary Seminar                  | Fall 2019               |

### Instructor of Record

The Webb Schools of California

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|--|-------------------------|
| • 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

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|---|-----------|
| • A Mean Field Approximations of SIR Epidemics on an Erdős–Rényi Network Model<br><i>Los Alamos-Arizona Days Conference (Virtual Poster)</i>                  | May 2021  |
| • Identifying Super-Spreader Nodes in Scale-Free Networks using Network Centrality Measures<br><i>Arizona Postdoctoral Research Conference (Virtual Talk)</i> | Sept 2020 |
| • Identifying Treatment Targets for Pediatric Gliomas using Network Centrality Measures<br><i>SIAM Conference on the Life Sciences (Virtual Talk)</i>         | June 2020 |

### Seminar

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|---|----------|
| • Network Data Analysis Techniques on DESeq and RNASeq Data<br><i>University of Arizona</i> | Nov 2019 |
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### Other

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|--|------------|
| • The Distribution of Betweenness Centrality in Exponential Random Graph Models<br><i>Doctoral Thesis Defense</i>  | April 2019 |
| • A Mathematical Model of the Emission and Optimal Control of Photochemical Smog<br><i>The Mathematical and Theoretical Biology Institute (MTBI) at Arizona State University</i> | Aug 2011   |

## 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** 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

## DEVELOPMENT AS A RESEARCHER

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### Workshops

- **Network Modeling for Epidemics** Aug 2020  
*University of Washington*
- **BioBridge Clinic** Jan 2020  
*University of California, Irvine*
- **Computational Genomics Summer Institute** May 2020  
*University of California, Los Angeles*

## OUTREACH AND SERVICE

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### Mentoring and Advising

- **Undergraduate Research Supervisor** 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), *Instant Decision for Credit Card Application* Spring 2020  
*University of Arizona*
- **Math Club Advisor** Fall 2017 – Spring 2019  
*The Webb Schools of California*

### Departmental Service

- **Mathematics Undergraduate Teaching Assistantship (UTA) Program**, Director Fall 2021 – Spring 2022  
*University of Arizona* Fall 2020 – Spring 2021  
Co-Director
- **Vice President, Postdoctoral Group Governance** Fall 2020 – Spring 2021  
*University of Arizona*
- **Non-Academic Liaison, Postdoctoral Group Governance** Spring 2020  
*University of Arizona*

### Service to the Discipline

- **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 – 2018  
Claremont Graduate University
- **Mathematics and MATLAB Summer Workshop**, Co-Instructor June 2016 – 2017  
Claremont Graduate University

### Outreach

- **AWM: SK Day** April 2021  
University of Arizona
  - Developed materials and co-ran workshop (Virtual)
- **Using Network Centrality Measures to Identify Unknown Regulatory Pathways in Pediatric Gliomas** Sept 2020  
University of Arizona
  - Talk given to The MathCats Club (Undergraduate Math Club)
- **Math Circle** Aug 2019 - present  
University of Arizona
  - Co-developed materials and co-ran weekly sessions for middle school students

## HONORS AND AWARDS

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- 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

- **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)