

# CHRISTINA DURÓN



(909) 731-0932



<https://cduron.info>



[duronc@math.arizona.edu](mailto:duronc@math.arizona.edu)



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; Mathematics-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. Johana Hardin (Professor, Pomona College)

### University of Washington

Master's in Applied Mathematics

June 2013

### Swarthmore College

Bachelor of Arts in Mathematics, Computer Science Minor

May 2012

## PUBLICATIONS AND TECHNICAL REPORTS

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**Durón C.** (2021). *Linear Algebra, Computational*. In /Wiley StatsRef: Statistics Reference Online/. Davidian, M., Kenett, R.S., Longford, N.T., Molenberghs, G., Piegorisch, 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)

Burkow, D., **Durón, C.**, Heal, K., Vargas, V., & Melara, L. (2011). *A Mathematical Model of the Emission and Optimal Control of Photochemical Smog*. Technical Report, MTBI-08- 07M, Mathematical and Theoretical Biology Institute, Arizona State University.

## IN PREPARATION

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Farrell A, **Durón C.** *Connections between Discrete SIR and Network Epidemic Models*.

## RESEARCH POSITIONS

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### Graduate Research Assistant

Pomona College

Jan 2017 – June 2018

- 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 (EKF) 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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|--|-------------|
| • Math 129: Calculus II                                      | Fall 2020   |
| • Math 475A: Mathematical Principles of Numerical Analysis   | Fall 2020   |
| • Undergraduate Teaching Assistantship Seminar, Co-Organizer | 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

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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 |

## CONFERENCE AND SEMINAR TALKS

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### Contributed

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|---|-----------|
| • <b>Identifying Super-Spreader Nodes in Scale-Free Networks using Network Centrality Measures</b><br><i>Arizona Postdoctoral Research Conference (Virtual)</i> | Sept 2020 |
| • <b>Identifying Treatment Targets for Pediatric Gliomas using Network Centrality Measures</b><br><i>SIAM Conference on the Life Sciences (Virtual)</i>         | June 2020 |

### Seminar

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

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|---|------------|
| • <b>The Distribution of Betweenness Centrality in Exponential Random Graph Models</b><br><i>Doctoral Thesis Defense</i>  | April 2019 |
| • <b>A Mathematical Model of the Emission and Optimal Control of Photochemical Smog</b><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

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|---|-----------|
| • <b>Effective Online Discussions</b><br><i>University of Arizona</i>   | June 2020 |
| • 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 – present  
University of Arizona
- **Mathematics Undergraduate Teaching Assistantship (UTA) Program Mentor** Fall 2020  
University of Arizona
- **Math 485 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

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

### Service to the Discipline

- **Reviewer for Revista de Matemática: Teoría y Aplicaciones** Oct 2019
- **Mathematics and MATLAB Summer Workshop, Co-Coordinator** June 2016, June 2017, June 2018  
Claremont Graduate University
- **Mathematics and MATLAB Summer Workshop, Co-Instructor** June 2016, June 2017  
Claremont Graduate University

### Outreach

- **Using Network Centrality Measures to Identify Unknown Regulatory Pathways in Pediatric Gliomas** Sept 2020  
Talk given to The MathCats Club (Undergraduate Math Club) at University of Arizona
- **Math Circle** Aug 2019 - present  
University of Arizona

## HONORS AND AWARDS

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<b>Five Star Faculty</b> (Nomination) <i>University of Arizona</i>	<i>Feb 2020</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

- **Collaborative Research Grant for Postdocs** (\$1,500)  
*University of Arizona* *June 2020*

### Travel Awards

- **TDA-BIO** (\$1,000)  
*ACM Conference on Bioinformatics, Computational Biology, and Health Informatics* *Oct 2016*

### Fellowships

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

## 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)