

CHRISTINA DURÓN

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🌐 <https://cduron.info>

ACADEMIC EMPLOYMENT

Postdoctoral Research Associate

Department of Mathematics, University of Arizona

Aug 2019 – present

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. 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

5. **Durón C**, Farrell A. A Mean-Field Approximation of SIR Epidemics on an Erdős-Rényi Network Model. Bulletin of Mathematical Biology. Submitted May 2021.
4. **Durón C**. (2021). Linear Algebra, Computational. In Wiley StatsRef: Statistics Reference Online (eds N. Balakrishnan, T. Colton, B. Everitt, W. Piegorsch, F. Ruggeri and J.L. Teugels). <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. (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)
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)

IN PREPARATION

2. O'Brien E, **Durón C**. *The Wasserstein Metric as a Tool for Assessing Burn-in of Markov Chains*.
1. Fider N, **Durón C**, Pfeffer D. *From Mirrors to Wallpapers: A Virtual Math Circle Series on Symmetry*.

RESEARCH POSITIONS

Graduate Research Assistant

Pomona College

Jan 2017 – June 2018

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

Jet Propulsion Laboratory (JPL) Intern

California Institute of Technology

June 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 College

June 2011

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

TEACHING EXPERIENCE

Instructor of Record

University of Arizona

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

Instructor of Record

The Webb Schools of California

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| • Advanced Placement Computer Science Principles | <i>Fall 2018 – Spring 2019</i> |
| • Introduction to Computer Programming with Python | <i>Fall 2014 – Spring 2018</i> |
| • Honors Precalculus | <i>Fall 2014 – Spring 2019</i> |
| • Precalculus | <i>Fall 2013 – Spring 2019</i> |
| • Integrated Mathematics 2 | <i>Fall 2013 – Spring 2014</i> |

PRESENTATIONS

Contributed

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

1. **Network Data Analysis Techniques on DESeq and RNASeq Data** *Nov 2019*
University of Arizona

Other

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

DEVELOPMENT AS AN EDUCATOR

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

Workshops

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

OUTREACH AND SERVICE

Mentoring and Advising

- **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) *University of Arizona* Spring 2020
- **Math Club Advisor** *The Webb Schools of California* Fall 2017 – Spring 2019

Departmental Service

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

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

Outreach

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

HONORS AND AWARDS

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

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*)