

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. 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*

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). <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)

* Authors are ordered by contribution.

UNDER PEER REVIEW*

2. Fider N, **Durón C**, Pfeffer D. From Mirrors to Wallpapers: A Virtual Math Circle Module on Symmetry. *Journal of Math Circles*. Submitted August 2021.
1. **Durón C**, Farrell A. A Mean-Field Approximation of SIR Epidemics on an Erdős-Rényi Network Model. *Bulletin of Mathematical Biology*. Submitted June 2021. Under revision September 2021.

IN PREPARATION*

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

RESEARCH POSITIONS

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 (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

June 2011 – July 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

- **MATH 491: Undergraduate Teaching Assistantship (UTA) Seminar** Fall 2021 – 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

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

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

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 2019
University of California, Los Angeles

OUTREACH AND SERVICE

Mentoring and Advising

- **Undergraduate Student Mentor** Fall 2021 – present
University of Arizona, Women in Science and Engineering (WISE) Program
- **Graduate Student Mentor** Fall 2021 – present
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

Departmental Service

- **President, Postdoctoral Governance** Fall 2021 – present
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

- **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

- **How I Found My Network: My Path to Mathematics**
Arizona State University

Nov 2021

– Keynote address for Sonia Kovalevsky Day

- **Tucson Math Circle**
University of Arizona

Aug 2019 – present

– 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**
University of Arizona

April 2021

– 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**
University of Arizona

Sept 2020

– Talk given to The MathCats Club (undergraduate math club)

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)**
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) 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*)