CHRISTINA DURÓN

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ACADEMIC EMPLOYMENT

Postdoctoral Research Associate *Aug 2019 – present*
Department of Mathematics, University of Arizona

High School Teacher *Aug 2013 – June 2019*
Mathematics Department, The Webb Schools of California

RESEARCH INTERESTS

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

EDUCATION

Claremont Graduate University *May 2019*
Ph.D. in Mathematics

- **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 *June 2013*
Master's in Applied Mathematics

Swarthmore College *May 2012*
Bachelor of Arts in Mathematics; Minor in Computer Science

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

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

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

* 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 Erdös-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 *Jan 2017 – June 2018*
Pomona College

- NIH (1R01-CA195692-01) funding under Dr. Ami Radunskaya and Dr. Johanna Hardin

Jet Propulsion Laboratory (JPL) Intern *June 2015 – August 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 – July 2011*
Arizona State University

- 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 Erdös-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** *June 2016 – June 2018*
  Claremont Graduate University

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

Outreach

- **Tucson Math Circle** *Aug 2019 – present*
  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

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

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*)