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. Johana 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

5. **Durón C**, Farrell A. A Mean-Field Approximation of SIR Epidemics on an Erdös-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

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

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 *Jan 2017 – June 2018*
Pomona College

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

Jet Propulsion Laboratory (JPL) 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 College

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

TEACHING EXPERIENCE

Instructor of Record
University of Arizona

- **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

- **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

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) *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
- **Mathematics Undergraduate Teaching Assistantship (UTA) Program, Co-Director** *Fall 2020 – Spring 2021*
  University of Arizona
- **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 – June 2018*
  Claremont Graduate University
- **Mathematics and MATLAB Summer Workshop, Co-Instructor** *June 2016 – June 2017*
  Claremont Graduate University

Outreach

- **AWK: 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 Glioma** *Sept 2020*
  University of Arizona
  - Talk given to The MathCats Club (Undergraduate Math Club)
- **Tucson Math Circle** *Aug 2019 – present*
  University of Arizona
  - Co-developed materials and co-ran weekly sessions for middle school students

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*)