

Stephanie Dodson

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Professional Appointments

University of California, Davis

Krener Assistant Professor, Department of Mathematics

Davis, CA

2019 – Present

Education

Brown University

PhD, Applied Mathematics

Master of Science, Applied Mathematics

Providence, RI

2019

2015

University of Massachusetts, Amherst

Bachelor of Science, Mathematics

Bachelor of Science, Physics

Commonwealth Honors College Scholar with Greatest Distinction, Summa cum laude

Amherst, MA

2014

2014

Research Experience

Brown University

PhD Thesis: Wave propagation in spatially extended systems

Advised by Dr. Björn Sandstede, Division of Applied Mathematics

Analyzing instabilities arising in spiral and planar waves in PDE models through the use of numerical and analytical techniques.

Providence, RI

June 2015 - May 2019

National Oceanic and Atmospheric Administration

NSF Graduate Research Internship Program

Advised by Dr. Steven Bograd and Dr. Elliott Hazen

Collaborating with an interdisciplinary team to design an agent-based model of blue whale movement off the coast of California.

Monterey, CA

June 2018 - Present

MIT Lincoln Laboratory

Computing and Analytics Intern

Advised by Dr. Jeremy Kepner and Dr. Darrell Rieke

Assisted in creating and validating a new algorithm for fast genetic sequency analysis using parallel computing techniques in Matlab.

Lexington, MA

June 2013 - August 2014

University of Massachusetts, Amherst

Undergraduate Honors Thesis

Advised by Dr. Benjamin Brau, Physics Department

Analyzed collision data from the Large Hadron Collider and measured ratio of W to Z boson production as a check for the Standard Model of Particle Physics.

Amherst, MA

September 2012 - May 2014

Honors and Awards

Fellowships

2018 **National Science Foundation Graduate Internship Program**

2015 **National Science Foundation Graduate Research Fellowship**

2013 **William F. Field Alumni Scholar**, University of Massachusetts, Amherst

Awards

- 2019 **Stella Dafermos Award**, Division of Applied Mathematics, Brown University
2018 **Association for Women in Mathematics Poster Prize**, SIAM Annual Meeting
2017 **Red Sock Award for Poster Presentation**, SIAM Conference on Applications of Dynamical Systems
2014 **Best Paper Award**, IEEE High Performance Extreme Computing Conference

Publications

- 2019 **S. Dodson**, B. Sandstede. *Determining the Source of Period-Doubling Instabilities in Spiral Waves*, Submitted (2019). **Available here on arXiv.**
- 2018 H.M. McNamara, **S. Dodson**, Y-L Huang, E.W. Miller, B. Sandstede, and A.E. Cohen. *Geometry-Dependent Arrhythmias in Electrically Excitable Tissues*, Cell Systems, October 2018, doi.org/10.1016/j.cels.2018.08.013 **Available here on Cell Systems.**
- 2015 A. Conard, **S. Dodson**, J. Kepner, and D.O. Ricke, *Using a Big Data Database to Identify Pathogens in Protein Data Space*, New England Database Day (NEDB), 2015, Cambridge, MA.
- 2015 **S. Dodson**, D.O. Ricke, J. Kepner, N. Chiu, and A. Shcherbina, *Rapid Sequence Identification of Potential Pathogens Using Techniques from Sparse Linear Algebra*, IEEE Symposium on Technologies for Homeland Security (HST), 2015. **Available here on arXiv.**
- 2014 **S. Dodson**, D.O. Ricke, and J. Kepner, *Genetic Sequence Matching Using D4M Big Data Approaches*, IEEE High Performance Extreme Computing (HPEC) conference, 2014. **Available here on arXiv.**

Presentations

Invited Talks

- 2019 **Mathematical Biology Seminar**, University of California, Davis
Wave Propagation in Spatially Extended Systems, Davis, CA, May 10, 2019.
- 2019 **Brown-BU-UMass Dynamics and PDEs Seminar**, Boston University
Mechanisms driving period-doubling instabilities in spiral waves, Boston, MA, May 3, 2019.
- 2019 **Center for Biofilm Engineering Seminar Series**, Montana State University
Geometry Dependent Instabilities of Waves in Excitable Media, Bozeman, MT, March 28, 2019.
- 2018 **SIAM Annual Meeting**
Line Defects and Alternans: Period-Doubling Instabilities in Spiral Waves in MS138 Nonlinear Waves, Long-time Dynamics, and Stability, Portland, OR, July 13, 2018.
- 2018 **SIAM Conference on Nonlinear Waves and Coherent Structures**
Stability of Spiral Waves in Models of Cardiac Tissue in MS41 Spatial Dynamics: Local and Global Results, Anaheim-Orange County, CA, June 14, 2018.
- 2017 **Boston University Dynamical Systems Seminar**
Stability of Spiral Waves in Cardiac Dynamics, Boston, MA, October 2, 2017.

Contributed Talks

- 2019 **SIAM Conference on Applications of Dynamical Systems**
Role of Spectra in Period-Doubling Instabilities of Spiral Waves, Snowbird, UT, May 20, 2019.
- 2019 **Dynamics Days**
Mechanisms Driving Period-Doubling Instabilities in Spiral Waves, Northwestern University, Evanston, IL, January 6, 2019.
- 2018 **Brown University SIAM/AWM Math Slam**
Stability of Spiral Waves in Models of Cardiac Tissue, Providence, RI, April 12, 2018.
- 2018 **Advancing Women's Impact in Mathematics Symposium (AWIMS)**
Spectral Stability of Spiral Waves in Models of Cardiac Tissue, Worcester Polytechnic Institute, Worcester, MA, April 7, 2018.
- 2018 **Dynamics Days, Ignite Talk**
Stability of Spiral Waves in Cardiac Dynamics, Denver, CO, January 4-6, 2018.
- 2017 **Applied Math Graduate Student Seminar**
Stability of Spiral Waves in Cardiac Dynamics, Brown University, Providence, RI, November 6, 2017.
- 2017 **Applied Math Days**
Spiral Waves in Cardiac Dynamics, Rensselaer Polytechnic Institute, Troy, New York, April 7-8, 2017.
- 2017 **Applied Math Graduate Student Seminar**
Spiral Waves in Cardiac Dynamics, Brown University, Providence, RI, February 27, 2017.
- 2015 **Applied Math Graduate Student Seminar**
Pinned Spiral Waves in Cardiac Tissue Brown University, Providence, RI, September 2015.
- 2015 **IEEE Symposium on Technologies for Homeland Security (HST)**
Rapid Sequence Identification of Potential Pathogens Using Techniques from Sparse Linear Algebra, Waltham, MA, April 14-16 2015.
- 2014 **IEEE High Performance Extreme Computing (HPEC) conference**
Genetic Sequencing Matching Using D4M Big Data Approaches, Waltham, MA, September 9-11, 2014.
- 2014 **Massachusetts Statewide Undergraduate Research Conference**
Measurement of the Ratio of the W to Z Boson Production in Events with Bottom Hadronic Quark Jets, Amherst, MA, April 25, 2014.
- 2013 **Women in Mathematics in New England**
Comparing D4M Genetic Sequence Analysis with BLAST, Northampton, MA, September 21, 2013.
- 2012 **Women in Mathematics in New England**
*RNA-Seq Analysis of *Aspergillus fumigatus* Infected Airway Cells: Unifying the Innate Immune Response and Iron Metabolism*, Northampton, MA, September 22, 2012.

Posters

- 2018 **SIAM Annual Meeting**, AWM Poster Session
Spectral Properties of Spiral Waves in the Karma Model, Portland, OR, July 9-14, 2018.
- 2018 **Dynamics Days**
Spectral Stability of Spiral Waves in Models of Cardiac Tissue, Denver, CO, January 4-6, 2018.
- 2017 **SIAM Conference on Applications of Dynamical Systems**
Spectral Properties of Spiral Waves in the Karma Model, Snowbird, Utah, May 21-25, 2017.
- 2017 **Dynamics Days**
Spectral Properties of Spiral Waves in the Barkley Model, Silver Spring, Maryland, January 4-6, 2017.

Workshops and Summer Schools

- 2019 Applied Mathematical Modeling with Topological Techniques Workshop, ICERM, Providence, RI, August 5 – 9, 2019.
- 2018 NOAA Ocean Satellite Data Course, University of Washington, Seattle, WA, August 28 – 30, 2018.
- 2017 MBI-NIMBioS-CAMBAM Summer Graduate Program: Connecting Biological Data with Mathematical Models, NIMBioS, Knoxville, TN, June 18 – 23, 2017.
- 2016 Gene Golub SIAM Summer School, Drexel University, Philadelphia, PA, July 25 – August 5, 2016.
- 2016 Séminaire de Mathématiques Supérieures: Dynamics of Biological Systems, University of Alberta, Edmonton, Alberta, Canada, May 30 – June 11, 2016.
- 2015 Brown-ICERM-Kobe Summer Simulation School, Brown University, Providence, RI and Kobe University, Kobe, Japan, August 17 – 31, 2015.
- 2013 NSF RTG Workshop: Integrating Dynamics and Stochastics, Division of Applied Mathematics, Brown University, November 22, 2013.
- 2012 Modeling and Simulation in Systems Biology, Research Experience for Undergraduates with the Laubenbacher Research Group at Virginia Bioinformatics Institute, Virginia Tech, Blacksburg, VA, Summer 2012.

Leadership and Service

Service

- 2019 **Minisymposium Organizer**, SIAM Conference on Applications of Dynamical Systems
Co-organizer of two-part minisymposium series titled *Theoretical Aspects of Spiral Waves and Traveling Waves in a Cardiac or Neuroscience Context*, Snowbird, UT, May 2019.
- 2018 - 2019 **Lefschetz Center for Dynamical Systems Seminar**
Co-organizer of weekly dynamical systems seminar for the 2018-2019 academic year.
Division of Applied Mathematics, Brown University

- 2017 **Women's Intellectual Network Research Symposium, New England**
Lead organizer of regional conference to support and connect underrepresented researchers, Providence, RI.
- 2017 & 2019 **Judge**, AWM National Essay Contest: Biographies of Contemporary Women in Math
- 2016 - 2017 **Brown Math SLAM**
Co-organizer of this series of short mathematical talks
- 2015 - 2017 **Faculty-Graduate Liaison**, Division of Applied Mathematics, Brown University
Organized graduate student group budgets and facilitated communication between faculty and graduate students
- 2014 - 2019 **Event organizer**, Rose Whelan Society for Graduate Women in Math, Brown University

Leadership

- 2018 - 2019 **Directed Reading Program**, Division of Applied Mathematics, Brown University
Mentored 2 undergraduate students pursuing an independent reading project on the use of differential equations in climate and epidemic models.
- 2016 - 2017 **Applied Math Graduate Student Retreat**
Co-organized the annual fall retreat which serves to foster a collaborative research and learning environment for graduate students in the department. Led small group of peers in study of pattern formation in PDEs.
- 2015 - 2017 **President**, Brown University Association for Women in Mathematics Student Chapter.
*Chapter received the **Scientific Excellence Award** from the national AWM Executive Committee in 2016.*
- 2015 - 2019 **Applied Math Undergraduate Graduate Mentoring Program**
Mentor and co-founder, Division of Applied Mathematics, Brown University
- 2014 - 2015 **Secretary**, Brown University Association for Women in Mathematics Student Chapter

Teaching

Experience

- Summer 2017 **Instructor**, Applied Ordinary Differential Equations, Brown University
- Spring 2016 **Teaching Assistant**, Method of Applied Mathematics I, Brown University
- Fall 2015 **Teaching Assistant**, Applied Ordinary Differential Equations, Brown University

Pedagogical Training

- Spring 2018 **Sheridan Center Course Design Seminar**, Brown University
Seminar focused on composing realistic course goals and using principles of backward design to create effective forms of assessment
- 2017 - 2018 **Sheridan Center Teaching Consultant Program**, Brown University
Learned how to observe and provide constructive feedback on the teaching practices of diverse classrooms and subject areas.

Fall 2016 **Sheridan Center Certificate I: Reflective Teaching**, Brown University
Introductory seminar which highlighted inclusive teaching practices, student engagement, and principles of learning design.

Travel Awards

- 2019 **Brown University Graduate School Conference Funding**
To attend and present an invited talk at the SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May, 2019.
- 2019 **Dynamics Days Conference**
Award from conference to attend and present contributed talk, Evanston, IL, January, 2019.
- 2018 **SIAM Student Travel Award**
To attend and present an invited talk at the SIAM Annual Meeting, Portland, OR, July, 2018.
- 2018 **Association for Women in Mathematics**
To attend special sessions and present a poster at the SIAM Annual Meeting, Portland, OR, July, 2018.
- 2018 **Brown University Graduate School Conference Funding**
To attend and present an invited talk at the SIAM Conference on Nonlinear Waves and Coherent Structures, Anaheim - Orange County, CA, June, 2018.
- 2018 **Dynamics Days Conference**
Award from conference to attend and present poster and ignite talk, Denver, CO, January, 2018.
- 2017 **SIAM Student Travel Award**
To attend and present poster at the SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 2017.
- 2017 **Brown University Graduate School Conference Funding**
To attend and present poster at the SIAM Conference on Applications of Dynamical Systems, Snowbird, UT, May 2017.
- 2017 **Brown University Graduate Student Council Funding**
To attend and present poster at the Dynamics Days conference, Silver Springs, MD, January, 2017.
- 2017 **Dynamics Days Conference**
Award from conference to attend and present poster, Silver Springs, MD, January, 2017.
- 2016 **Brown University Graduate Student Council Funding**
To attend Séminaire de Mathématiques Supérieures: Dynamics of Biological Systems summer school, University of Alberta, Edmonton, Alberta, Canada, May - June, 2016.

Professional Organizations

- o Association for Women in Mathematics, 2014 - Present
- o Mathematical Association of America, 2013 - Present
- o Society for Industrial and Applied Mathematics, 2013 - Present