Kelly Spendlove

PhD Candidate · Rutgers University

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Education

Rutgers University — *New Brunswick, NJ*

Ph.D. Candidate in Mathematics — *Aug 2013-Present*

Montana State University — *Bozeman, MT*

M.S. + B.S. in Mathematics — *Aug 2007 - May 2013*

- highest honors

Honors & Awards

Honors

2014	**NSF Graduate Research Fellowship**, Rutgers University
2013	**GAANN Fellowship**, BioMaPS, Rutgers University
2013	**NSF East Asis and Pacific Summer Institutes (EAPSI) Fellowship**, Kyoto University
2012	**Meritorius Graduate Fellowship**, Montana State University

Awards

2017	**NSF Graduate Research Opportunities Worldwide (GROW)**, Vrije Universiteit (VU) Amsterdam
2013	**Bill Stannard Award for Excellence in Graduate Student Professional Presentations**, Department of Mathematical Sciences, Montana State University

Publications

Homological Phases of Matter
- with U Bauer, M Kahle, and R MacPherson
- In preparation (2018)

Computational Connection Matrix Theory with Applications to Transversality Models
- with S Harker, K Mischaikow, and R Vandervorst
- In preparation (2019)

Discrete Morse Theory for Computing Connection Matrices
- with S Harker and K Mischaikow
- In preparation (2019)

★ A Computational Framework for Connection Matrix Theory
- with S Harker and K Mischaikow
- Under review, arXiv:1810.04552 [math.AT] (2018)

★ On the Efficacy of State Space Reconstruction Methods in Determining Causality
- with B Cummins and T Gedeon
- SIAM Journal on Applied Dynamical Systems 14 (1), 335-381 (2015)

★ Predicting high-codimension critical transitions in dynamical systems using active learning
- with J. Berwald and T. Gedeon
- Mathematical and Computer Modelling of Dynamical Systems 19 (6), 557-574 (2013)

Extending the Lifetime of a WSN by Partial Covers
- with B Mumey and B Zhu
- Proceedings of IEEE International Conference on Communications (ICC), 2013, 1779-1783

An Exact Algorithm for Reconstructing Genomic Scaffolds
- with Z Liu, B Mumey and B Zhu
- Proceedings of 4th International Conference on Bioinformatics and Computational Biology (BICoB 2012)

Recent Talks

Computational Connection Matrix Theory — *ICMC, Sao Carlos*

ICMC Summer Meeting on Differential Equations 2019 — *Feb 2019*

Computational Connection Matrix Theory — *Kyoto University*
Kyoto Workshop on Applied Topology 2019 — *Jan 2019*

Morse, Conley, and Computation — *UPenn*
UPenn Applied Topology Seminar — *Nov 2018*

Morse, Conley, and Computation — *Rutgers University*
IAS-Penn-Rutgers Workshop: Identifying Order in Complex Systems — *Nov 2018*

Computational Connection Matrix Theory — *Newark DE*
AMS Sectional Meeting — *Sep 2018*

A Computational Framework for Connection Matrices — *Bozeman MT*
Algebraic Topology in Dynamics and Data — *Jul 2018*

A Computational Framework for Connection Matrices — *IST Austria*
Algebraic Topology: Methods, Computation, and Science (ATMCS 8) — *Jun 2018*

A Computational Framework for Connection Matrices — *Bedlewo Poland*
Dynamics, Topology and Computations — *Jun 2018*

Computing Connection Matrices — *Hokkaido Japan*
Applied Algebraic Toplogy Conference — *Aug 2017*

Toward a Computational Homology Theory of Dynamics — *The Ohio State University*
MBI Visitor Series Seminar — *Dec 2016*

Teaching

Fall 2018	**TA for Calculus I for the Mathematical and Physical Sciences**, Rutgers University
Spr 2018	**TA for Calculus II**, VU University Amsterdam
Spr 2018	**TA for Linear Algebra for Business Analytics**, VU University Amsterdam
Fall 2017	**TA for Differential Equations for Engineering and Physics**, Rutgers University
Summer 2017	**Instructor for Introduction to Abstract Algebra**, Rutgers Univeristy
Fall 2012	**Instructor for College Algebra**, Montana State University

Research Visits

2018	**VU Amsterdam**, GROW Fellow, (R. Vandervorst)
Fall 2016	**Mathematical Biosciences Institute (MBI), The Ohio State University**, Long Term Visitor, (Emphasis Semester on Analysis of Complex Data in Biological Systems)
Summer 2015	**INRIA Geometrica, Ècole Polytechnique**, (F Chazal)
Summer 2013	**Kyoto University**, EAPSI Fellow (H Kokubu)
Summer 2012	**The College of William & Mary**, (S Day)

Misc. Honors & Awards

Honors

2011-2012	**Hughes Scholar Research & Outreach Fellowship**, Howard Hughes Medical Institute, Montana State University
2011	**IDeA Networks of Biomedical Research Excellence Fellowship**, Applied Algorithms Laboratory, Montana State University

Awards

2016	**NSF-CBMS Conference Travel Award**, UT Austin
2015	**NSF Data Science Workshop Travel Award**, University of Washington
2014	**IMA Travel Award**, Institute for Mathematics and its Applications, University of Minnesota
2012	**Outstanding Graduating Senior with Distinction**, Department of Mathematical Sciences, Montana State University

Service and Outreach

2018-Present	**Organizer for Directed Reading Program**, Rutgers University
Fall 2017	**Mentor for Directed Reading Program**, Directed undergraduate in combinatorial Hodge theory project
Feb 2013	***'How to Be Successful in a Math Course'***, Organized popular workshop at Montana State University for
Oct 2012	incoming first-year students concerning how to prepare for college math courses