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 (2019)

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)

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