

# Kelly Spendlove

POSTDOCTORAL RESEARCHER · UNIVERSITY OF OXFORD

Mathematical Institute, University of Oxford, Andrew Wiles Building, Radcliffe Observatory Quarter, Oxford, OX2 6GG UK

[✉ spendlove@maths.ox.ac.uk](mailto:spendlove@maths.ox.ac.uk) | [🏠 kellyspendlove.github.io](https://github.com/kellyspendlove) | [🌐 kellyspendlove](https://www.kellyspendlove.com) | [📄 kellyspendlove](https://www.kellyspendlove.com)

## Employment

### University of Oxford

POSTDOCTORAL RESEARCHER, MATHEMATICS

Oxford UK

2019 - Present

## Education

### Rutgers University

PH.D. IN MATHEMATICS

New Brunswick, NJ

2013 - 2019

### Montana State University

M.S. + B.S. IN MATHEMATICS

- highest honors

Bozeman, MT

2007 - 2013

## Honors & Awards

### HONORS

- 2014 **NSF Graduate Research Fellowship**, Rutgers University
- 2013 **GAANN Fellowship**, BioMaPS, Rutgers University
- 2013 **NSF East Asia 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 SUMMER MEETING ON DIFFERENTIAL EQUATIONS 2019

ICMC, Sao Carlos

Feb 2019

## Computational Connection Matrix Theory

KYOTO WORKSHOP ON APPLIED TOPOLOGY 2019

Kyoto University

Jan 2019

## Morse, Conley, and Computation

UPENN APPLIED TOPOLOGY SEMINAR

UPenn

Nov 2018

## Morse, Conley, and Computation

IAS-PENN-RUTGERS WORKSHOP: IDENTIFYING ORDER IN COMPLEX SYSTEMS

Rutgers University

Nov 2018

## Computational Connection Matrix Theory

AMS SECTIONAL MEETING

Newark DE

Sep 2018

## A Computational Framework for Connection Matrices

ALGEBRAIC TOPOLOGY IN DYNAMICS AND DATA

Bozeman MT

Jul 2018

## A Computational Framework for Connection Matrices

ALGEBRAIC TOPOLOGY: METHODS, COMPUTATION, AND SCIENCE (ATMCS 8)

IST Austria

Jun 2018

## A Computational Framework for Connection Matrices

DYNAMICS, TOPOLOGY AND COMPUTATIONS

Bedlewo Poland

Jun 2018

## Computing Connection Matrices

APPLIED ALGEBRAIC TOPOLOGY CONFERENCE

Hokkaido Japan

Aug 2017

## Toward a Computational Homology Theory of Dynamics

MBI VISITOR SERIES SEMINAR

The Ohio State University

Dec 2016

## Teaching

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

## Research Visits

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

## Misc. Honors & Awards

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### HONORS

2011-2012	<b>Hughes Scholar Research &amp; Outreach Fellowship</b> , Howard Hughes Medical Institute, Montana State University
2011	<b>IDEA Networks of Biomedical Research Excellence Fellowship</b> , 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

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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