Curriculum Vitae   Rachel Levanger

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http://rachellevanger.com

Education

Rutgers, The State University of New Jersey	Mathematics	Ph.D. 2017
University of North Florida	Mathematics & Art History	B.A. 2012

Appointments and Employment

Postdoctoral Researcher, University of Pennsylvania	Summer 2017 - present
Graduate Assistant, Advisor: Prof. K. Mischaikow, Rutgers University	Spring 2017
NSF EAPSI Fellow, Advisor: Prof. T. Ishihara, Nagoya University	Summer 2016
Graduate Assistant, Advisor: Prof. K. Mischaikow, Rutgers University	Fall 2015 – Spring 2016
Graduate Student Coordinator, DIMACS REU	Summer 2014
Statistical Data Analyst Intern, Fidelity National Financial	Summer 2012
Business Systems Analyst, Fidelity National Financial	2005 - 2011
Business Systems Analyst, Wells Fargo Services Company	2001 - 2005

Awards & Fellowships

TA Teaching Excellence Award   Fall 2016
Rutgers University, Department of Mathematics

University Diversity Fellowship   2012 - 2014
Rutgers University Graduate School of Arts and Sciences

Janice Pattwell Annual Mathematics Fellowship   2012 - 2013
Rutgers University, Department of Mathematics

Outstanding Undergraduate Student in Mathematics   Apr. 2012
University of North Florida Mathematics & Statistics Department

Student Speaker Award   Aug. 2011
Pi Mu Epsilon National Meeting at MathFest 2011, Lexington, KY.

Undergraduate Scholarships for Analysis & Probability   May 2011
University of North Florida Mathematics & Statistics Department

UNF College of Arts & Sciences, Willard O. Ash Award   Nov. 2010
*Award recognizing a senior who embodies Dean Ash's philosophy of a
broad-based education in the liberal arts and sciences.*

Publications

An adaptive subsample approximation for large Vietoris-Rips Filtrations (with S. Harker, M. Kramar, and K. Mischaikow) *in preparation.*

A Comparison Framework for Interleaved Persistence Modules (with S. Harker, M. Kramar, and K. Mischaikow) *in preparation.*

Analysis of Kolmogorov Flow and Rayleigh-Bénard Convection using Persistent Homology (with M. Kramar, J. Tithof, B. Suri, M. Xu, M. Paul, M.Schatz, and K. Mischaikow), *Physica D: Nonlinear Phenomena*, 334, 82-98 (2016)

On singular value inequalities for matrix means (with R. Dumitru and B. Visinescu), *Linear Algebra and its Applications*, 439(8), 2405-2410 (2013)

Selected Talks

An Introduction to Topological Data Analysis for the Digital Humanities.　　　　Apr. 28, 2017
Group for Experimental Methods in the Humanities, Columbia University.

Studying fluid dynamics with persistent homology.　　　　Feb. 23, 2017
Applied Topology Seminar, Brown University.

Studying fluid dynamics with persistent homology.　　　　Feb. 2, 2017
Applied Mathematics Seminar, U.S. Military Academy, West Point, NY.

A Comparison Framework for Interleaved Persistence Modules.　　　　Jan. 4, 2017
Joint Mathematics Meeting, Atlanta, GA.

Studying fluid dynamics with persistent homology.　　　　Dec. 15, 2016
Computational Math and Applications Workshop, Rutgers University.

Rigorous error tracking for topological data analysis.　　　　Dec. 8, 2016
Thomas J. Watson Research Center, IBM Research.

A Comparison Framework for Interleaved Persistence Modules.　　　　Dec. 3, 2016
Union College Mathematics Conference, Union College.

New applications of persistent homology to image and time series analysis.　　　　Nov. 15, 2016
Applied Topology Seminar, University of Pennsylvania

Exploring high dimensional data with persistent homology.　　　　Oct. 11, 2016
Guest lecturer, Senior capstone class, New Jersey Institute of Technology

Tracking Errors in the space of Persistence Diagrams.　　　　Aug. 1-5, 2016
Patterns and Waves 2016, Hokkaido University, Sapporo, Japan

Using persistent homology and diffusion map embeddings to study turbulent　　　　July 20, 2016
combustion dynamics*. Seminar, Nagoya University, Nagoya, Japan*

Recent Developments in Topological Data Analysis.　　　　May 25-27, 2016
High-Dimensional Data Analysis (HDDA VI), Fields Institute, Toronto

A Comparison Framework for Interleaved Persistence Modules.　　　　Apr. 11, 2016
Applied topology seminar, University of Pennsylvania.

Auslander-Reiten Quivers of finite-dimensional algebras.　　　　Mar. 23, 2016
Algebra seminar, Rutgers University.

Generalizations of the induced matching and algebraic stability theorems.　　　　Mar. 10, 2016
MacPherson seminar, Institute for Advanced Study.

Dynamics of 2D fluid simulations through persistent homology.　　　　Oct. 23, 2015
Applied topology seminar, Columbia Medical University.

Using Persistent Homology to study dynamics in the space of persistence　　　　Aug. 17-28, 2015
diagrams, Parts I & II. *Algebraic Topology & High-Dimensional Data Analysis
(HDDA V), University of Victoria, Victoria, BC*

Bent out of Shape: Taking a look at Perturbed Eigenvalues　　　　Feb. 18, 2012
Florida MAA Conference Student Speaker, University of North Florida

Imagining the Banach-Tarski Paradox　　　　Aug. 4, 2011
Student Speaker, Pi Mu Epsilon National Meeting at MathFest 2011

Service

Co-organizer for New York Applied Topology seminar, *Columbia University Medical Center*	Fall 2015 – Spring 2016
Co-organizer for AMS Special Session on Topological Data Analysis: Computations, Statistics and Applications, *Rutgers University*	Nov. 2015
Directed Reading Program, *Rutgers University*	Fall 2014 – Spring 2016
Pi Mu Epsilon Florida Eta Chapter, *President*	2011 - 2012
Pi Mu Epsilon Florida Eta Chapter, *Vice President*	2011

Teaching

TA for Calculus III, Rutgers University	Fall 2016
TA for Computational Topology, Rutgers University	Spring 2016
Instructor for Graph Algorithms, RYSP, Rutgers University	Summer 2015
Undergraduate research mentor, DIMACS REU	Summer 2015
TA for Calculus II for Math/Science Majors, Rutgers University	Fall 2014

Programming and Technical Experience

Programming: Python, shell scripting, MATLAB, Mathematica, Maple, R, JavaScript, D3, SQL, and C++. Data modeling experience with relational databases and domain models (UML).

OS and other: Mac OS X, and Linux environments. Microsoft Office Suite (Excel, Word, Access, Visio). Experience running distributed computations in HPC environments.

References

Konstantin Mischaikow, Rutgers University	mischaik@math.rutgers.edu
Michael Schatz, Georgia Tech	ms201@gatech.edu
Miroslav Kramar, Inria Saclay	miroslav.kramar.1@gmail.com
Charles Weibel, Rutgers University	weibel@math.rutgers.edu