

Curriculum Vitae

Rachel Levanger

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Education

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

Appointments and Employment

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

Janice Pattwell Annual Mathematics Fellowship <i>Rutgers University, Department of Mathematics</i>	2013 - 2014
University Diversity Fellowship <i>Rutgers University Graduate School of Arts and Sciences</i>	2013 - 2015
Outstanding Undergraduate Student in Mathematics <i>University of North Florida Mathematics & Statistics Department</i>	Apr 2012
Student Speaker Award <i>Pi Mu Epsilon National Meeting at MathFest 2011, Lexington, KY.</i>	Aug 2011
Undergraduate Scholarships for Analysis & Probability <i>University of North Florida Mathematics & Statistics Department</i>	May 2011
UNF College of Arts & Sciences, Willard O. Ash Award <i>Award recognizing a senior who embodies Dean Ash's philosophy of a broad-based education in the liberal arts and sciences.</i>	Nov 2010

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

A Comparison Framework for Interleaved Persistence Modules. <i>Joint Mathematics Meeting, Atlanta, GA.</i>	Jan. 4, 2017
Studying fluid dynamics with persistent homology. <i>Computational Math and Applications Workshop, Rutgers University.</i>	Dec. 15, 2016
A Comparison Framework for Interleaved Persistence Modules. <i>Union College Mathematics Conference, Union College.</i>	Dec. 3, 2016
New applications of persistent homology to image and time series analysis, <i>Applied topology seminar, University of Pennsylvania</i>	Nov. 15, 2016
Tracking Errors in the space of Persistence Diagrams, <i>Patterns and Waves 2016,</i> <i>Hokkaido University, Sapporo, Japan</i>	Aug. 1-5, 2016
Recent Developments in Topological Data Analysis, <i>High-Dimensional Data</i> <i>Analysis (HDDA VI), Fields Institute, Toronto</i>	May 25-27, 2016
A Comparison Framework for Interleaved Persistence Modules. <i>Applied topology seminar, University of Pennsylvania.</i>	Apr. 11, 2016
Auslander-Reiten Quivers of finite-dimensional algebras. <i>Algebra seminar, Rutgers University.</i>	Mar. 23, 2016
Generalizations of the induced matching and algebraic stability theorems. <i>MacPherson seminar, Institute for Advanced Study.</i>	Mar. 10, 2016
Dynamics of 2D fluid simulations through persistent homology. <i>Applied topology seminar, Columbia Medical University.</i>	Oct. 23, 2015
Using Persistent Homology to study dynamics in the space of persistence diagrams, Parts I & II. <i>Algebraic Topology & High-Dimensional Data Analysis</i> <i>(HDDA V), University of Victoria, Victoria, BC</i>	Aug. 17-28, 2015
Bent out of Shape: Taking a look at Perturbed Eigenvalues <i>Florida MAA Conference Student Speaker, University of North Florida</i>	Feb. 18, 2012
Imagining the Banach-Tarski Paradox <i>Student Speaker, Pi Mu Epsilon National Meeting at MathFest 2011</i>	Aug. 4, 2011

Service

Co-organizer for New York Applied Topology seminar, <i>Columbia University Medical Center</i>	Fall 2015 – Spring 2016
Co-organizer for AMS Special Session on Topological Data Analysis: Computations, Statistics and Applications, <i>Rutgers University</i>	Nov. 2015
Directed Reading Program, <i>Rutgers University</i>	Fall 2014 – Spring 2016
Pi Mu Epsilon Florida Eta Chapter, <i>President</i>	2011 - 2012
Pi Mu Epsilon Florida Eta Chapter, <i>Vice President</i>	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
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, Tohoku University	kramar.miroslav.e1@tohoku.ac.jp
Charles Weibel, Rutgers University	weibel@math.rutgers.edu