

Sarah B Percival

PERSONAL DATA

ADDRESS: Department of Biochemistry and Molecular Biology
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RESEARCH INTERESTS

Applied topology, real algebraic geometry, Reeb spaces, plant morphology

EDUCATION

AUGUST 2021 **Purdue University**, West Lafayette
PH.D MATHEMATICS,
Advisor: Saugata Basu
Dissertation Topic: Efficient computation of Reeb spaces and first homology groups
MAY 2014 **Rice University**
Bachelor of Arts in MATHEMATICS and STATISTICS

SCHOLARSHIP

2014-2015 **Ross Fellowship**
This fellowship is awarded to incoming doctoral applicants at Purdue University who demonstrate academic excellence.
2020 **GAANN Fellowship**
The US Department of Education awards this fellowship through the Graduate Assistance in Areas of National Need program to graduate students of superior ability who demonstrate financial need.

INTERNSHIP

Summers 2020 & 2021 **IBM Research**
Studied SARS CoV-2 viral analysis using Genomic TDA

PREPRINTS

July 2020 S. Basu, N. Cox, and S. Percival. **On the Reeb spaces of definable maps**, arXiv:1804.00605 (34 pages) (provisionally accepted to Discrete and Computational Geometry, revised version submitted.)
July 2021 S. Basu and S. Percival. **Efficient computation of a semi-algebraic basis of the first homology group of a semi-algebraic set**, arXiv:2107.08947 (30 pages)

TALKS

September 2021 *Efficient Computation of Reeb Spaces*, Michigan State University TDA Seminar
August 2020 *An Algorithm for the Computation of Reeb Graphs from Roadmaps*, Graduate Students Reminisce Online on Topology Seminar
April 2020 *An Algorithm for the Computation of Reeb Graphs from Roadmaps*, Graduate Student Topology and Geometry Seminar, Indiana University (canceled due to COVID-19)
April 2019 *Reeb Graphs and Their Applications*, MAA Indiana Section, University of Indianapolis
February 2019 *Reeb Graphs and Their Applications*, Student Colloquium, Purdue University
October 2018 *Reeb Spaces of Definable Maps*, Purdue Topology Seminar, Purdue University
January 2018 *An Introduction to Topological Data Analysis*, Student Colloquium, Purdue University
November 2017 *An Introduction to Topological Data Analysis*, Graduate Research Day, Purdue University

POSTERS

May 2018 *Reeb Spaces of Definable Maps*, TGDA@OSU TRIPODS Center Workshop, The Ohio State University
August 2020 *Using persistent homology to reveal distinct pathways of SARS CoV-2 geographic spread*, IBM

TEACHING EXPERIENCE

FALL 2019	Instructor for applied calculus (MA 16010) <i>Purdue University (Mathematics Dept.)</i> Wrote and delivered lectures, facilitated active learning activities, wrote and graded quizzes, held office hours
SUMMER 2019	Instructor for calculus (MA 162) <i>Purdue University (Mathematics Dept.)</i> Wrote and delivered lectures, facilitated active learning activities, wrote and graded quizzes, held office hours
2018-2019	Graduate Teaching Assistant for calculus (MA 161 & MA 162) <i>Purdue University (Mathematics Dept.)</i> Assisted students in a “flipped classroom” environment, wrote and graded quizzes, held office hours
SUMMER 2018	Instructor for calculus (MA 162) <i>Purdue University (Mathematics Dept.)</i> Wrote and delivered lectures, facilitated active learning activities, wrote and graded quizzes, held office hours
FALL 2016	Instructor for precalculus (MA 158) <i>Purdue University (Mathematics Dept.)</i> Wrote and delivered lectures, wrote and graded quizzes, held office hours
2015-2016	Graduate Teaching Assistant for calculus (MA 162) <i>Purdue University (Mathematics Dept.)</i> Led recitation, wrote and graded quizzes, held office hours
2013-2014	Undergraduate Teaching Assistant <i>Rice University (Statistics Dept.)</i>

SERVICE

September-October 2021	Organizer , Graduates Achieving Inclusion Now
March 2021	Organizer , Tutorial-a-thon, Applied Algebraic Topology Research Network
2020-2021	Graduate Student Representative , Purdue Department of Mathematics
2015-2021	Cabinet Member , Association for Women in Mathematics, Purdue chapter
2013-2014	Rice University Math Club

CONFERENCES ATTENDED

June 2019	GT.DA.ML, The Ohio State University
April 2019	Graduate Student Topology and Geometry Conference, University of Illinois at Urbana-Champaign
November 2018	Upstate New York Topology Seminar, SUNY Albany
September 2018	Approximation Theory and Machine Learning, Purdue University
June 2018	TGDA@OSU Tripods Summer School and Workshop, The Ohio State University
April 2018	Graduate Student Topology and Geometry Conference, University of Illinois at Chicago
February 2017	Midwest Women in Mathematics Symposium, IUPUI
October 2016	Algebra, Geometry, and Combinatorics Day, Purdue University
June/July 2012	Summer Mathematics Program for Women Undergraduates, Carleton College

SKILLS

Python, \LaTeX , R, Maple