

# Noelle Sawyer

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**Employment** **Southwestern University**, Georgetown, TX  
Assistant Professor of Mathematics August 2020 - Present

**Education** **Wesleyan University**, Middletown, CT  
Ph.D. in Mathematics May 2020  
Advisor: David Constantine  
Thesis: Partial marked length spectrum rigidity of negatively curved surfaces

**Vassar College**, Poughkeepsie, NY  
B.A. in Mathematics and History May 2014

**Research Interests** My research interests are in dynamics, geometry and topology. I am particularly interested in marked length spectrum rigidity, thermodynamic formalism, and Riemannian geometry.

**Papers** **Local product structure for equilibrium states of geodesic flows and applications**  
With Benjamin Call, David Constantine, Alena Erchenko, and Grace Work  
Preprint. Posted to arXiv March 2024.  
**Unique equilibrium states for geodesic flows on flat surfaces with singularities.**  
With Benjamin Call, David Constantine, Alena Erchenko, and Grace Work  
*International Mathematics Research Notices*, September 2022.  
**Phase transitions for the geodesic flow of a rank one surface with nonpositive curvature.**  
With Keith Burns, Jérôme Buzzi, and Todd Fisher  
*Dynamical Systems*, June 2021.

**Math Community** **Big Ideas in Dynamics and Geometry** September 2024  
A hybrid conference at UIC.  
Co-organized with Benjamin Call and Laura Schaposnik.  
**Big Ideas in Dynamics** Spring 2023 - Present  
An AIM Research Community.  
Co-organized with Benjamin Call.  
**Mid-Atlantic Regional Math Alliance Conference** April 2024  
Keynote Speaker.  
**A Word Problem** September 2023  
A special session at Science Writers, co-organized with Sam Hansen, Kenna Hughes-Castleberry, and Sadie Witkowski.  
**Underrepresented Students in Topology and Algebra Research Symposium (USTARS)** March 2023  
Keynote Speaker.

<b>Math Equity Forum</b> University of Toronto.	October 2022
<b>Austin Math Teachers' Circle</b> University of Texas at Austin.	March 2022
<b>Hidden Norms Webinar</b> Semi-Norm Speaker (Breaking Norms)	February 2022
<b>Black in Math Week</b> Co-organized with Marissa Loving, Candice Price, Dwight Williams II, Michole Enjoli, and more.	November 2020
<b>Midwest Dynamical Systems Early Career Conference</b> Co-organized with Ben Call, Ivan Chio, and Kitty Yang	November 2020

## Media

<b>A Black Mathematical History</b> A film review in <i>Nature</i> .	March 2024
<b>Mathematically Gifted and Black Honoree</b> A profile for Black History Month.	February 2024
<b>Meet a Mathematician</b> A video interview.	December 2023
<b>A Call to Defend Bodily Autonomy in the Math Community</b> Letter to the Editor in the AMS Notices.	March 2023
<b>Modern Mathematics Confronts its White, Patriarchal Past</b> An article in <i>Scientific American</i> . Written By Rachel Crowell.	August 2021
<b>Who Will Celebrate You?</b> A blog post on the AMS inclusion/exclusion blog.	June 2021
<b>The First Black in Math Twitter Event</b> Appeared in MAA Math Values Blog and the NAM newsletter Authored with Omayra Ortega.	December 2020
<b>#BlackInMathWeek</b> An episode of the podcast Relatively Prime. Hosted with Michole Enjoli.	November 2020

## Mentoring

<b>Roots of Unity</b> Geometry/Topology Mentor.	June 2024
<b>Honors Thesis Supervision</b> <i>Orbits on Translation Surfaces: Introducing Barriers and Game-Building</i> with Rowan Via.	Fall 2022 - Spring 2023
<b>Independent Study</b> <i>Math Communication</i> with Emily Thompson.	Spring 2022
<b>Mentor at Topology Students Workshop</b> Georgia Institute of Technology	July 2020
<b>Directed Reading Program, Wesleyan University</b> Discrete Geometry Hyperbolic Geometry	Spring 2019 Fall 2018

## Invited Talks

<b>Modern Mathematics Workshop at SACNAS</b> AIM invited speaker.	October 2024
<b>University of Texas at Austin Topology Seminar</b>	April 2024
<b>University of Wisconsin Madison Dynamics Seminar</b>	Feb 2024
<b>University of Illinois Chicago Dynamics Seminar</b>	Feb 2024
<b>South Central Topology Conference</b>	October 2023

<b>Columbia University Geometry Seminar</b>	April 2023
<b>Columbia University Undergraduate Colloquium</b>	April 2023
<b>University of Houston Dynamics Seminar</b>	March 2023
<b>A Dynamical Weekend at Wesleyan</b> Wesleyan University.	March 2023
<b>George Mason University Geometry Seminar</b>	November 2022
<b>Women in Groups, Geometry, and Dynamics</b> <i>Special Session.</i> AWM Research Symposium. University of Minnesota.	June 2022
<b>Smith College Brown Bag Series</b>	April 2022.
<b>The College of New Jersey Colloquium</b>	March 2022
<b>OURFA<sup>2</sup>M<sup>2</sup> Our Stories</b>	December 2021
<b>Wake Forest University Colloquium</b>	November 2021
<b>Rice University Topology Seminar</b>	April 2021
<b>Indiana University Geometry Seminar</b>	March 2021
<b>Bryn Mawr Distressing Math Collective</b>	March 2021
<b>University of Washington Rainwater Seminar</b>	February 2021
<b>Cal State East Bay Colloquium</b>	January 2021
<b>Women of Color in Topology and Algebra</b> <i>AMS-AWM Special Session.</i> Joint Math Meetings.	January 2021
<b>Boston College Dynamics Seminar</b>	October 2020
<b>Graduate Student Online Anything Topology Seminar</b>	April 2020
<b>University of Virginia Geometry Seminar</b>	February 2020
<b>Fractal Geometry, Dynamics, and Applications</b> <i>AMS Special Session.</i> Joint Math Meetings. Denver.	January 2020
<b>Ohio State University Topology Seminar</b>	November 2019
<b>Yale University Geometry and Topology Seminar</b>	September 2019
<b>Midwest Dynamical Systems Early Career Conference</b> Ohio State University.	May 2019
<b>University of Hartford Undergraduate Colloquium</b>	April 2019
<b>Statistical and Geometrical Properties of Dynamical Systems</b> <i>AMS Special Session</i> San Francisco State University.	October 2018

## Contributed Talks

<b>Talk Math with Your Friends</b>	July 2020
<b>Poster Presentations by Women Graduate Students</b> <i>AWM Workshop.</i> Joint Math Meetings. Denver.	January 2020
<b>Graduate Student Conference in Algebra, Geometry and Topology</b> Temple University. Area and partial length spectrum data.	June 2019
<b>Graduate Student Topology and Geometry Conference</b> UIUC. Area and partial length spectrum data.	March 2019
<b>Graduate Student Seminar</b> Wesleyan University.	
- Ends of groups.	November 2019
- Building $\varepsilon$ -dense closed geodesics.	March 2019
- Fun with discrete geometry and polygonal curvature.	September 2018
- Geodesic currents and the boundary at infinity.	April 2018
- It's Chaotic: an introduction to topological entropy.	October 2017
- Hadamard's Theorem.	March 2017
- Power indices and the upcoming election.	February 2016
<b>Special Preliminary Examination.</b> Wesleyan University. The specification property and closed	October 2017

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## Teaching

### **Southwestern University**

Modern Calculus I

Topology

Introduction to Statistics

Real Analysis

New Experiences in Research Design

Algebraic Structures

First Year Seminar: If Board Games Could Talk

EQUIP 2022 and 2023

### **Instructor, Wesleyan University**

Elements of Calculus Part I

Fall 2019

Elements of Calculus Part II

Spring 2018

Introductory Calculus II

Spring 2017

### **Graduate Teaching Assistant, Wesleyan University**

Discrete Math

Spring 2020

Differential Equations

Spring 2019

Math Workshop

Fall 2018 and Spring 2016

Vectors and Matrices

Fall 2017

Combinatorics

Fall 2016

Calculus I, Part II

Fall 2015

Calculus I, Part II

Spring 2015

Multivariable Calculus

Fall 2014

### **Teaching Assistant,**

#### **Wesleyan Center for Prison Education**

Intermediate Algebra

Fall 2016

### **Summer School Instructor,**

#### **St. John's College, New Providence, The Bahamas.**

Seventh Grade Math

June 2014, 2013, 2011, and 2010

### **Head Supplemental Instruction Leader,**

#### **Quantitative Reasoning Center, Vassar College.**

Single Variable Calculus II

Spring 2014

Single Variable Calculus I

Fall 2013

### **Supplemental Instruction Leader,**

#### **Quantitative Reasoning Center, Vassar College**

Single Variable Calculus II

Spring 2013

Single Variable Calculus I

Fall 2012

## Other Service

### **Human Resources Board**

October 2023 - Present

American Institute of Mathematics.

### **Faculty Diversity, Equity, Inclusion and Belonging**

Fall 2021- Present

Southwestern University.

### **Publicity and Publication Committee**

August 2019 - August 2021

National Association of Mathematicians.

### **Directed Reading Program Committee**

September 2018 - May 2020

Wesleyan University.

### **Co-founder and Vice President**

September 2018 - May 2020

AWM Grad Student Chapter, Wesleyan University.

### **Co-organizer**

January 2019 - December 2019

Graduate Student Seminar, Wesleyan University.  
**Vice President** September 2017 - July 2019  
AMS Grad Student Chapter, Wesleyan University.  
**Career Panel** April 2019  
*Beyond the Binary* conference, University of Hartford.  
**Editorial Board** June 2018 - January 2019  
MAD Pages, National Association of Mathematicians.  
**Graduate Life After Vassar Panel** September 2018  
LAVA and AWM, Vassar College.  
**Graduate School Panel** February 2018  
Physics and Math Club, Montclair State University.  
**Graduate School Panel** October 2017  
McNair Program, Wesleyan University.  
**Graduate Student Working Group** July 2016 - June 2017  
Wesleyan University.  
**Treasurer** July 2015 - June 2016  
Graduate Student Association, Wesleyan University.  
**Speaker** February 2016  
*Life After Vassar* by LAVA and AWM, Vassar College.  
**Co-Chair** Spring 2014  
Relay for Life Committee, Vassar College.

**Conferences  
& Workshops  
Attended**

**MAA Mathfest** August 2022  
**Flexibility and rigidity in dynamical systems** March 2022  
Simons Center for Geometry and Physics. Stony Brook, New York.  
**MAA Mathfest** August 2021  
**Joint Math Meetings** January 2021  
**Paradigms: Diversity in Graduate Mathematical Sciences** November 2020  
**Mastery Grading Conference** June 2020  
**Joint Math Meetings** January 2020  
Denver, Colorado.  
**Workshop in Dynamical Systems and Related Topics** Sept 2019, Oct 2018  
Pennsylvania State University.  
**Women in Mathematics in New England** September 2017-2019  
Smith College.  
**AIM Workshop on Equilibrium States of Dynamical Systems Arising from Geometry.** July 2019  
American Institute of Mathematics.  
**Graduate Student Conference in Algebra, Geometry and Topology.** June 2017, 2019  
Temple University.  
**Midwest Dynamical Systems Early Career Conference** May 2019  
Ohio State University.  
**Graduate Student Topology and Geometry Conference** March 2019  
University of Illinois at Urbana Champagne.  
**Midwest/McGehee Dynamical Systems Conference** November 2018  
University of Minnesota.  
**AMS Fall Western Sectional Meeting** October 2018  
San Francisco State University.  
**Northeast Analysis Network Conference** September 2018  
University at Albany SUNY.  
**Topology Students Workshop** June 2018  
Georgia Institute of Technology.  
**Séminaire de Mathématiques Supérieures 2017** July 2017

Contemporary Dynamical Systems. Université de Montréal.  
**Graduate Student Topology and Geometry Conference**  
Michigan State University.

April 2017