

CONTACT INFORMATION	Mathematical Sciences Carnegie Mellon University Wean Hall 8123 Pittsburgh, PA 15213	Website: http://math.cmu.edu/~jsimone Email: jsimone@andrew.cmu.edu
RESEARCH INTERESTS	Low-dimensional topology Constructions of exotic 4-manifolds Symplectic 4-manifolds and contact 3-manifolds Knot theory	
EMPLOYMENT	Carnegie Mellon University (CMU) , Pittsburgh, PA Assistant Teaching Professor, Mathematics	2024 – present
	Georgia Institute of Technology (GaTech) , Atlanta, GA Visiting Assistant Professor, Mathematics	2021 – 2024
	University of Massachusetts Amherst (UMass) , Amherst, MA Visiting Assistant Professor, Mathematics	2018 – 2021
EDUCATION	University of Virginia (UVa) , Charlottesville, VA Doctor of Philosophy in Mathematics Advisor: Thomas E. Mark	May 2018
	Hunter College , New York, NY Master of Arts in Pure Mathematics	June 2011
	New York University , New York, NY Bachelor of Arts in Mathematics, Cum Laude Minor in Business Studies, Minor in Computer Applications	May 2009
AWARDS	Student Recognition of Excellence in Teaching, GaTech Distinguished Teaching Award Finalist, UMass All University Graduate Teaching Award, UVa	2023 2020, 2021 2017
PUBLICATIONS	<p>Tight contact structures on toroidal plumbed 3-manifolds with Tanushree Shah <i>Topology Appl.</i> 377(2026), Paper No. 109602, 17 pp.</p> <p>On χ-slice pretzel links with Sophia Fanelle, Evan Huang, Benjamin Huenemann, Weizhe Shen, and Hannah Turner. <i>Topology Appl.</i> 377(2026), Paper No. 109578, 35 pp.</p> <p>On chain link surgeries bounding rational homology balls and χ-slice 3-braid closures with Vitalijs Brejevs. to appear in <i>Transactions of the AMS</i></p> <p>On the nonorientable 4-ball genus of torus knots with Fraser Binns, Sungkyung Kang, and Paula Truöl. Submitted <i>Algebr. Geom. Topol.</i> 25 (2025), no. 4, 2209-2251.</p> <p>Geography of symplectic Lefschetz fibrations and rational blowdowns with R. Inanc Baykur and Mustafa Korkmaz.</p>	

Trans. Amer. Math. Soc. 377 (2024), 6771-6792

Classification of torus bundles that bound rational homology circles

Algebraic & Geometric Topology 23-6 (2023), 2449–2518

Using rational homology circles to construct rational homology balls

Topology and its Applications, Vol. 291 (2021)

Symplectically replacing plumbings with Euler characteristic 2 4-manifolds

Journal of Symplectic Geometry, Vol. 18, No. 5 (2020), pp. 1285-1318

PREPRINTS

Cubiquitous lattices and branched covers bounding rational balls

with Erica Choi, Nur Saglam, Katerina Stuopis, and Hugo Zhou

Tight contact structures on some plumbed 3-manifolds

SELECT

AMS Fall Southeastern Section Meeting, University of South Alabama

Oct 2023

RESEARCH

Knot Online Seminar, Virtual

Apr 2023

TALKS

Tech Topology Conference, GaTech

Dec 2022

Math Seminar, Spelman College

Oct 2022

Math Club, Agnes Scott College

Sep 2022

Topology Seminar, University of Georgia

Apr 2022

Algebra-Topology Seminar, University of Alabama

Oct 2021

Geometry Topology Seminar, GaTech

Sep 2021

Low-dimensional Topology and Symplectic Geometry Weekend (remote)

Apr 2021

Geometry Seminar, University of Virginia

Dec 2020

Topology Seminar, Brandeis University

Oct 2020

MENTORING

At Carnegie Mellon University

EXPERIENCE

SUAMI Mentor

Links, lattices, and rational homology 4-balls

Summer 2025

Undergraduate Independent Study

General Topology

Spring 2026

General Topology

Spring 2025

At Georgia Tech

REU Mentor

Cubiquitous lattices and Branched Covers bounding rational balls

Summer 2023

On χ -slice links pretzel links

Summer 2022

Directed Reading Program

Riemannian Geometry

Spring 2024

Hyperbolic Geometry

Spring 2023

Knot Theory

Fall 2022

At UMass Amherst

Doctoral Dissertation Committee Member

2021

Equivariant surgeries and irreducible embeddings of surfaces in dimension four

Andrew Havens

Undergraduate Senior Thesis Co-Chair

2020-2021

Knot Theory and Invariants

Undergraduate Independent Study

Complex Variables Spring 2020
Theory of Manifolds Spring 2020
Theory of Surfaces Fall 2019

TEACHING
EXPERIENCE

Carnegie Mellon University, Pittsburgh, PA

Concepts of Mathematics Spring 2026
Differential Geometry of Curves and Surfaces Spring 2025
Matrices and Linear Transformations Fall 2024, Spring 2025

Georgia Institute of Technology, Atlanta, GA

Abstract Algebra I Spring 2024
Discrete Mathematics Fall 2023
Number Theory Spring 2023
Linear Algebra Spring 2022, Fall 2022
Differential Calculus Fall 2021

University of Massachusetts Amherst, Amherst, MA

Complex Variables Spring 2020
Advanced Calculus Fall 2019
Linear Algebra Spring 2019, 2020 & Fall 2020
Multivariable Calculus Fall 2018

University of Virginia, Charlottesville, VA

Financial Mathematics Spring 2015
Applied Calculus I Fall 2013, Spring 2014
Applied Calculus II Fall 2016
Calculus I Fall 2014
Calculus I (flipped) Fall 2017, Spring 2018
Calculus II Spring 2017
Calculus III Fall 2015

CUNY John Jay College of Criminal Justice, New York, NY

College Algebra Fall 2010, Spring 2012
Finite Mathematics Spring 2011, Fall 2011
Pre-Calculus Fall 2011
Calculus I Spring 2011

Opportunity Programs at NYU, New York, NY

Calculus I Workshop Summer 2011, 2012, 2013, 2014
Fall 2010, 2011, Winter 2012, Spring 2012

Quantitative Reasoning Workshop Summer 2010, 2012, 2013
(Probability, Statistics) Fall 2011, Spring 2011

Opportunity Programs at Barnard College, New York, NY

Pre-calculus Summer 2014

SERVICE

Editorial:

Reviewer for Mathematical Reviews (AMS)

As a journal referee:

AMS Reviewer
Journal of Topology
Algebraic & Geometric Topology
Journal of Differential Geometry

Mathematical Research Letters
Journal of Knot Theory & its Ramifications
Michigan Mathematical Journal
Proceedings of the AMS

As a conference and seminar (co-)organizer:

Joint GT-UGA Topology Seminar	August 2022 – present
Tech Topology Conference, GaTech	Dec 2023
Tech Topology Summer School, GaTech	Jul 2023
AMS Southeastern Sectional Meeting Special Session	Mar 2023
Tech Topology Conference, GaTech	Sep 2022
AMS Southeastern Sectional Meeting Special Session	Oct 2022
Tech Topology Conference, GaTech	Dec 2021
UMass Geometry and Topology Seminar Co-organizer	Sep 2018 – May 2021

Departmental Service:

GaTech School of Mathematics Diversity, Equity, and Inclusion Committee	2021-2022
UVa Math Teaching Seminar Presentation	Oct 2017
UVa <i>Teaching as a Graduate Student</i> Workshop Facilitator	Aug 2017
UVa flipped Calculus I material developer	Summer 2017
UVa Math Teaching Mentor	2015 – 2016

Outreach:

UVa Math Circle Teaching Assistant	Fall 2017
UVa Math Outreach Ambassador	Fall 2014 – Spring 2017