Joel Louwsma

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EDUCATION

California Institute of Technology, Pasadena, California

Ph.D. in Mathematics   2011

- Advisor: Danny Calegari
- Thesis: *Extremality of the rotation quasimorphism on the modular group*

University of Michigan, Ann Arbor, Michigan

B.S. with Highest Honors in Mathematics   2005

- Fall 2004 and Spring 2005 spent at the Math in Moscow program.
- Spring 2003 spent at the Budapest Semesters in Mathematics program.

EMPLOYMENT

Niagara University, Lewiston, New York

Associate Professor   2021–present
Assistant Professor   2015–2021

Smith College, Northampton, Massachusetts

Visiting Assistant Professor   2014–2015

The University of Oklahoma, Norman, Oklahoma

Visiting Assistant Professor (Postdoc)   2011–2014

PUBLICATIONS

Critical groups of arithmetical structures under a generalized star-clique operation, with Alexander Diaz-Lopez, Linear Algebra Appl. **656** (2023), 324–344.

Arithmetical structures on bidents, with Kassie Archer, Abigail C. Bishop, Alexander Diaz-Lopez, Luis D. García Puente, and Darren Glass, Discrete Math. **343** (2020), no. 7, Paper No. 111850, 23 pp.

On arithmetical structures on complete graphs, with Zachary Harris*, Involve **13** (2020), no. 2, 345-355.

Digital fixed points, approximate fixed points, and universal functions, with Laurence Boxer, Ozgur Ege, Ismet Karaca, and Jonathan Lopez, Appl. Gen. Topol. **17** (2016), 159–172.

Stable commutator length in Baumslag–Solitar groups and quasimorphisms for tree actions, with Matt Clay and Max Forester, Trans. Amer. Math. Soc. **368** (2016), no. 7, 4751–4785.

Immersed surfaces in the modular orbifold, with Danny Calegari, Proc. Amer. Math. Soc. **139** (2011), no. 7, 2295–2308.

A new computation of the codimension sequence of the Grassmann algebra, with Adilson Eduardo Presoto and Alan Tarr, Rose–Hulman Undergrad. Math. J. **6** (2005), no. 2, Art. 7, 1–16.

*undergraduate co-author

PREPRINTS

Critical groups of arithmetical structures on star graphs and complete graphs, with Kassie Archer, Alexander Diaz-Lopez, and Darren Glass, arXiv:2301.02114.

GRANTS AND AWARDS

Collaborate@ICERM
(with C-Y. Jean Chan, Thomas Hagedorn, and Michael Wijaya)   2023
(with Kassie Archer, Alexander Diaz-Lopez, and Darren Glass)   2022

Summer Research Award   2016, 2017, 2020, 2022
Niagara University

Academic Innovation Fund   Fall 2018, Spring 2019, Fall 2019
Niagara University   Spring 2022, Fall 2022

Undergraduate Student–Faculty Research Collaboration Award 2022
Niagara University

Research Support Grant   2016–2017, 2019–2020
Niagara University

REUF Continuation Award   2018
(with Kassie Archer, Abigail Bishop, Alexander
Diaz-Lopez, and Luis García Puente)

Undergraduate Student Summer Support Grant   2018
Niagara University

Committee on College Teaching and Learning Grant
Niagara University   2016–2017, 2017–2018

Fund for the Improvement of Teaching Award   2016–2017
Niagara University

INVITED HOUR-LONG RESEARCH TALKS

Workshop on Bounded Cohomology
Ruprecht–Karls–Universität Heidelberg, Germany   August 2019

University of Pittsburgh, Pittsburgh, Pennsylvania
Analysis, Geometry, and Topology Seminar   October 2017

State University of New York at Buffalo, Amherst, New York
Geometry and Topology Seminar   October 2015

University of Massachusetts, Amherst, Amherst, Massachusetts
Geometry and Topology Seminar   February 2015

Brandeis University, Waltham, Massachusetts
Topology Seminar   October 2014

Yale University, New Haven, Connecticut
Geometry and Topology Seminar   September 2014

Cornell University, Ithaca, New York
Topology and Geometric Group Theory Seminar   November 2013

Fall Redbud Topology Conference
University of Arkansas, Fayetteville, Arkansas   November 2011

The University of Sydney, Sydney, Australia
Infinite Groups Seminar   August 2011

Workshop on Geometric Group Theory
Louisiana State University, Baton Rouge, Louisiana   July 2011

The Ohio State University, Columbus, Ohio
Geometric Group Theory Seminar   April 2011

CIRGET, Montréal, Canada
Geometry and Topology Seminar   November 2010

Claremont Colleges, Claremont, California
Claremont Topology Seminar   March 2010

University of Southern California, Los Angeles, California
Geometry and Topology Seminar   March 2010

INVITED SHORT
RESEARCH
TALKS

Joint Mathematics Meetings
AMS Special Session on Research in Graph
Theory and Combinatorics by Research
Experience for Undergraduate Faculty (REUF)
Alumni and Their Students   January 2020
Denver, Colorado

AMS Fall Eastern Sectional Meeting
Special Session on Infinite Groups and Geometric
Structures: A Session in Honor of Andrew Nicas   September 2017
University at Buffalo, Amherst, New York

AMS Fall Eastern Sectional Meeting
Special Session on Geometric Group Theory   September 2016
Bowdoin College, Brunswick, Maine

50th Spring Topology and Dynamics Conference
Special Session on Geometric Topology   March 2016
Baylor University, Waco, Texas

AMS Spring Southeastern Sectional Meeting
Special Session on Geometric Topology and Number Theory   March 2014
University of Tennessee, Knoxville, Tennessee

48th Spring Topology and Dynamics Conference
Special Session on Geometric Group Theory   March 2014
University of Richmond, Richmond, Virginia

Joint Mathematics Meetings
AMS Special Session on Geometric Group Theory   January 2014
Baltimore, Maryland

AMS Spring Central Sectional Meeting
Special Session on Geometric Topology and Group Theory   April 2012
University of Kansas, Lawrence, Kansas

AMS Spring Western Sectional Meeting
Special Session on Asymptotic Group Theory   March 2012
University of Hawai'i at Mānoa, Honolulu, Hawaii

The Triennial Ahlfors–Bers Colloquium
Dynamics Workshop   March 2011
Rice University, Houston, Texas

45th Spring Topology and Dynamics Conference
Special Session on Geometric Group Theory   March 2011
Special Session on Geometric Topology   March 2011
The University of Texas at Tyler, Tyler, Texas

Joint Mathematics Meetings
AMS Special Session on Geometric Group Theory   January 2011
New Orleans, Louisiana

Workshop on Geometric Group Theory
Goa University, Goa, India   August 2010

SELECTED
OTHER
PRESENTATIONS

MAA Southeastern Section Meeting
Special Session on Inquiry Based Learning in
Online and Socially Distanced Classrooms   March 2021

MAA Seaway Section Meeting
IBL Panel Discussion   November 2019
Ithaca College, Ithaca, New York

Research on the Ridge
Niagara University   October 2019

Joint Mathematics Meetings
AMS Session on Combinatorics and Graph Theory   January 2019
Baltimore, Maryland

Utica College Math Club
Utica, New York   March 2018

MAA Seaway Section Meeting
Special Session on "IBL for All" in Action   October 2017
SUNY Broome Community College, Binghamton, New York

33rd Workshop in Geometric Topology
Colorado College, Colorado Springs, Colorado   June 2016

Joint Mathematics Meetings
MAA General Contributed Paper Session on Research
in Teaching or Learning Calculus   January 2015
San Antonio, Texas

Joint Mathematics Meetings
MAA Session on Assessing Student Learning:
Alternative Approaches   January 2014
Baltimore, Maryland

TEACHING EXPERIENCE	**Primary Instructor**, Niagara University	2015–present

- **Introductory Statistics**, Fall 2015 (two sections), Spring 2017 (two sections), Fall 2019 (two sections), Spring 2020 (two sections), Spring 2021, Fall 2021 (two sections), Fall 2022 (two sections)
- **Business Calculus I**, Spring 2022
- **Calculus I**, Fall 2015, Spring 2017, Fall 2017, Spring 2018 (two sections), Fall 2018, Spring 2019 (two sections)
- **Calculus II**, Fall 2020, Spring 2022
- **Calculus III**, Fall 2021, Fall 2022
- **Foundations of Mathematics**, Fall 2020
- **Linear Algebra**, Spring 2016, Spring 2018, Spring 2020
- **Probability and Statistics I**, Fall 2017, Fall 2018, Fall 2019, Fall 2020
- **Probability and Statistics II**, Spring 2019, Spring 2021
- **Algebraic Structures I**, Spring 2021
- **Euclidean Geometry**, Spring 2016
- **Point-Set and Algebraic Topology**, Summer 2017 (independent study)

Primary Instructor, Smith College	2014–2015

- **Calculus I**, Fall 2014 (two sections)
- **Calculus II**, Spring 2015 (two sections)
- **Calculus III**, Fall 2014

Primary Instructor, The University of Oklahoma	2011–2014

- **Calculus and Analytic Geometry III**, Fall 2011, Fall 2012
- **Calculus and Analytic Geometry IV**, Spring 2014 (two sections)
- **Introduction to Ordinary Differential Equations**, Spring 2012 (two sections), Fall 2012, Spring 2013
- **Linear Algebra I**, Fall 2013

TEACHING AWARDS	**Apostol Award for Excellence in Teaching in Mathematics**	
	California Institute of Technology	May 2010

MENTORING	**Supervised student research**	
	Joseph Martino, Niagara University	2022–2023
	Zachary Harris, Niagara University	Summer 2018
	Jasmine Van Exel, Smith College	Spring 2015

Mentor for Early Science Opportunities Program
Niagara University   2018–2019

Honors Thesis Committee
for Angela Kendt, Niagara University   2018
for Courtney Doxbeck, Niagara University   2017

PROFESSIONAL   **Greater Upstate New York Inquiry-Based**
DEVELOPMENT   **Learning Consortium**   Fall 2015–present

PCMI Undergraduate Faculty Program   August 2021
Virtual

Greater Upstate New York IBL Conference   October 2019
SUNY Oswego Metro Center, Syracuse, New York

Faculty Mentorship Program   2016–2019
Niagara University

IBL Workshop   October 2018
University of Toronto, Mississauga, Missisauga, Ontario, Canada

IBL Workshop   April 2018
State University of New York at Brockport, Brockport, New York

Seaway NExT Workshop   April 2018
State University of New York at Brockport, Brockport, New York

Research Experiences for Undergraduate Faculty   June 2017
ICERM, Brown University, Providence, Rhode Island

Seaway NExT Workshop   April 2017
State University of New York at Oswego, Oswego, New York

TIMES Summer Workshop   June 2016
North Carolina State University, Raleigh, North Carolina

Seaway NExT Workshop   April 2016
State University of New York at Geneseo, Geneseo, New York

PCMI Workshop for Mentors of Undergraduate Mathematics
Research by Minority Students   July 2015
Zermatt Resort, Utah

17th Annual Legacy of R.L. Moore Conference   June 2014
Denver, Colorado

MAA PREP Inquiry-Based Learning Workshop   June 2013
California State Polytechnic University, San Luis Obispo, California

Project NExT   2012–2013

EXTENDED   **Mathematical Sciences Research Institute**, Berkeley, California Fall 2016
VISITS   (program on Geometric Group Theory)

The Ohio State University, Columbus, Ohio   Spring 2011
(part of Special Year in Topology and Geometric Group Theory)

Centre de Recherches Mathématiques, Montréal, Canada   Fall 2010
(program on Geometric, Combinatorial and Computational Group Theory)

DEPARTMENT SERVICE AT NIAGARA UNIVERSITY	Mathematics Search Committee Chair	2019–2022
	Course coordinator for Introductory Statistics (MAT 102)	2019–2022
	Took students to MAA Seaway Section Meeting	Spring 2016, Spring 2018 Fall 2018, Spring 2019 Fall 2019, Fall 2022
	Took students to Hudson River Undergraduate Mathematics Conf.	Spring 2022
	Co-webmaster	2019–2021
	Organized Mathematical Association of America Seaway Section Distintguished Lecture	October 2018 November 2019
	Manager of WeBWorK system	2015–2019
	Created common final exam room and proctoring assignments	2015–2019
COLLEGE/ UNIVERSITY SERVICE AT NIAGARA UNIVERSITY	Academic Senate	2018–2022
	Senate Academic Policy Committee	2019–2020, 2021–2022
	Senate Standards and Reporting Committee	2020–2021
	Senate Academic Standards, Planning, and Support Services Committee	2018–2019
	Research Council Grants Evaluation Team	2018–2019
	STEM Advocacy Group	2017–2018
	Interviewer for Invitational Scholarship Program	2017, 2018
	Faculty Marshal at New Student Convocation	2017, 2018
PROFESSIONAL SERVICE WHILE AT NIAGARA UNIVERSITY	NSF reviewer	
	Referee for Bulletin of the London Mathematical Society	
	Reviewer for Fonds de recherche du Québec	
	MAA Seaway Section Distinguished Lecturer Committee	2020–present
	Co-organized Special Session on Geometric Group Theory AMS Fall Eastern Sectional Meeting	September 2017
	Volunteer for Mathematical Congress of the Americas	July 2017
PREVIOUS SERVICE	Took a group of Smith College students to Hudson River Undergraduate Math Conference	April 2015
	Co-organizer of Spring Redbud Topology Conference The University of Oklahoma	April 2014
	Organizer of Geometry and Topology Seminar The University of Oklahoma	Fall 2012–Spring 2014
	Led preparatory sessions for topology qualifying exam The University of Oklahoma	July 2013, May 2014
	Volunteer for Math Day for high school students The University of Oklahoma	November 2011, November 2013

Co-organizer of *How to make peer learning and small groups work in class*
    Panel discussion at Project NExT Workshop   July 2013
    Hartford, Connecticut

Co-organizer of Fall Redbud Topology Conference
    The University of Oklahoma   November 2012

Co-organizer of Special Session on Geometric Group Theory and Dynamics
    AMS Spring Western Sectional Meeting   April–May 2011
    University of Nevada, Las Vegas, Las Vegas, Nevada

CITIZENSHIP   **USA**