

Aaron Calderon

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Research Interests

Teichmüller theory, flat surfaces, mapping class groups, geometric group theory

Education

Yale University, New Haven, CT 2016 –
Ph.D. Candidate. Advisor: Yair Minsky
M.S., M. PHIL. in Mathematics (2020)
Lang Fellowship

The University of Nebraska–Lincoln, Lincoln, NE 2016
B.S. in Mathematics, minor in Philosophy, University Honors Program
Highest Distinction, Phi Beta Kappa, Chair’s Prize for Mathematics

Other Educational Experiences

The Independent University of Moscow, Moscow, Russia Spring 2015
Math in Moscow
AMS Math in Moscow Scholarship, Diploma with Distinction

The Pennsylvania State University, University Park, PA Fall 2013
Mathematics Advanced Study Semesters
MASS Fellowship, Diploma with Distinction

Honors & Awards

NSF Graduate Research Fellowship 2016 – 2022
Barry Goldwater Scholar 2015
Dean H. and Floreen G. Eastman Scholarship 2012 – 2016

Publications & Preprints

Framed mapping class groups and the monodromy of strata of Abelian differentials

(with N. Salter)

Preprint (2020).

Relative homological representations of framed mapping class groups

(with N. Salter)

Preprint (2020).

Higher spin mapping class groups and strata of Abelian differentials over Teichmüller space

(with N. Salter)

Submitted (2019). arXiv:1906.03515.

Connected components of strata of Abelian differentials over Teichmüller space.

Comment. Math. Helv. Accepted (2019). arXiv:1901.05482.

How to hear the shape of a billiard table

(with S. Coles, D. Davis, J. Lanier, and A. Oliveira)
Submitted (2018). arXiv:1806.09644.

Generalized bipyramids and hyperbolic volumes of alternating k -uniform tiling links

(with C. Adams and N. Mayer)
Topology Appl. **271**:1–28 (2020). arxiv:1709.00432.

Volume and determinant densities of hyperbolic rational links

(with C. Adams, X. Jiang, A. Kastner, G. Kehne, N. Mayer, and M. Smith)
J. Knot Theory Ramifications **26** (2017), No. 1 1750002. arXiv:1510.06050

Conjugacy geodesics of Coxeter groups

(with S. Hermiller and T. Susse)
Senior Thesis (2016).

Selected Presentations

INVITED TALKS

USC Teichmüller theory and quantum topology seminar	November 2019
Michigan Topology and RTG seminars	October 2019
Flat Surfaces and Dynamics on Moduli Space, II, Oaxaca, Mexico.	May 2019
AMS Graduate Student Conference in Geometry and Topology Brown University	April 2019
AMS Special Session on Mapping Class Groups Auburn University	March 2019
Columbia Geometric Topology Seminar	February 2019
Tufts Geometric Group Theory and Topology Seminar	February 2017

CONTRIBUTED TALKS

Graduate Student Topology & Geometry Conference The University of Illinois at Urbana-Champaign	March 2019
Topology Students Workshop, Georgia Tech	June 2016
AMS Special Session in Topological and Smooth Dynamics, North Dakota State University	April 2016
Undergraduate thesis defense, University of Nebraska-Lincoln	March 2016
AMS-MAA Joint Meetings Poster Session, Seattle (with N. Mayer) Outstanding Student Presenter	January 2016
Univ. of Nebraska-Lincoln Groups, Semigroups and Topology Seminar	October 2015
Univ. of Nebraska-Lincoln Groups, Semigroups and Topology Seminar	December 2014

Teaching Experience

Yale University

Math 120 Calculus 3	Fall 2018
Coach (group tutor), Math 120 Calculus 3	Fall 2016
The University of Nebraska–Lincoln	
Teaching assistant, Math 106 Calculus 1	Spring 2016
Teaching assistant, Math 106 Calculus 1	Fall 2015
Teaching assistant, Math 208 Calculus 3	Fall 2014

Workshops & Programs Attended

Holomorphic differentials in mathematics and physics (future) MSRI, Berkeley.	August, November 2019
Combinatorial and algebraic aspects of geometric structures (future) Chiang Mai University, Thailand.	July 2019
Flat surfaces and dynamics on moduli space, II Casa Matemática Oaxaca, Mexico.	May 2019
Workshop on dynamics and moduli spaces of translation surfaces Fields Institute, Toronto.	October 2018
Teichmüller dynamics, mapping class groups and applications Summer school and conference at the Institut Fourier, Grenoble.	June 2018
Geometry and topology of 3-manifolds workshop Okinawa Institute of Science and Technology.	May 2018
Introduction to geometry, dynamics, and moduli in low dimensions LMS–CMI Research School at the University of Warwick.	September 2017
Polygonal Billiards Research Cluster, Tufts University	July – August 2017
Workshop in Geometric Topology, Provo, UT	June 2017
Topology Students Workshop, Georgia Tech.	June 2016

Undergraduate Research Experience

Undergraduate Research , The University of Nebraska–Lincoln NSF grant [DMS–1313559], Nebraska UCARE grant Research in geometric group theory under the direction of Professor Susan Hermiller	2014 – 2016
SMALL REU , Williams College Research in hyperbolic knot theory under the direction of Professor Colin Adams	2015
Penn State REU , Penn State University Research on lattice tilings under the direction of Professor Viorel Nitica	2013

Service & Outreach

Graduate student mentor, SUMRY, Yale Univ.	Summer 2019
Mentor, Directed Reading Program, Yale Univ.	2018–2019
Graduate student mentor, SUMRY, Yale Univ.	Summer 2018
Invited graduate student, CeSMUR Conference, Univ. of Nebraska–Lincoln	April 2018
Co-organizer of Yale Graduate Student Seminar	Fall 2017

Actor in Mathematically Bent Theater, AMS-MAA Joint Meetings.	January 2016
Played the roles of Mathematicus in <i>Mathematicus</i> and Cratchitch in <i>A Pi Day Carol</i> .	
Univ. of Nebraska–Lincoln Academic Program Review student representative	2015
Pi Mu Epsilon National Mathematics Honorary Society	2012 – 2016