Rylee Alanza Lyman

Contact	Department of Mathematics and Computer Science	*E-mail:* `rylee.alanza@gmail.com`
	Smith Hall, Rutgers University at Newark	*Mobile:* 952.465.6895
	Newark, NJ 07102	*Webpage:* `https://ryleealanza.org`

Research Interests	Geometric group theory, geometric topology, outer automorphism groups, mapping class groups, Coxeter groups, deformation spaces of group actions, hyperbolic and CAT(0) geometry.

Appointments	**Rutgers University at Newark,** Assistant Professor	2024
	Rutgers University at Newark, Postdoctoral Associate, NSF Postdoctoral Fellow	2020–2024

Education	**Tufts University,** PhD in Mathematics (Advisor: Kim Ruane)	May 2020
	Tufts University, MS in Mathematics	May 2017
	Columbia University, BA in Mathematics (honors) & Music, *cum laude*	May 2015

Research

Étale Groupoids and Mapping Class Groups of Orbifolds and Graphs of Groups
In preparation. (with Tyrone Ghaswala)

Exponential Dehn Functions for Deformation Groups of Free Splittings
In preparation. (with Lee Mosher)

Conformal Dimension for Coxeter group boundaries
In preparation. (with E. Field, R. Gupta and E. Stark)

One-Endedness of Outer Automorphism Groups of Free Products of Finite and Cyclic Groups
Submitted.
Available at arXiv:2305.04986 [Math.GR]

A Family of CAT(0) Outer Automorphism Groups of Free Products
Submitted.
Available at arXiv:2209.04711 [Math.GR]

On Whitehead's Cut Vertex Lemma
J. Group Theory.
Available at arXiv:2205.06071 [Math.GR]

Lipschitz Metric Isometries Between Outer Spaces of Virtually Free Groups
Illinois J. Math.
Available at arXiv:2203.09008 [Math.GR]

CTs for Free Products
Submitted.
Available at arXiv:2203.08868 [Math.GR]

Train Track Maps on Graphs of Groups
Groups Geom. Dyn. **16(4)** (2022), 1389–1422
Available at arXiv:2102.02848 [Math.GR]

Extensions of Hyperbolic Groups Have Locally Uniform Exponential Growth
Submitted. (with Robert Kropholler and Thomas Ng)
Available at arXiv:2012.14880 [Math.GR]

Folding-like Techniques for CAT(0) Cube Complexes
Math. Proc. Camb. Philos. Soc. **173(1)** (2022), 227-238
(with Michael Ben-Zvi and Robert Kropholler)
Available at arXiv:2011.05374 [Math.GR]

Some New CAT(0) Free-by-Cyclic Groups
Mich. Math. J.
Available at: arXiv:1909.03097 [Math.GR]

Nielsen Realization for Infinite-Type Surfaces
Proc. Amer. Math. Soc. **149** (2021), 1791–1799 (with S. Afton, D. Calegari and L. Chen)
Available at arXiv:2002.09760 [Math.GT]

Train Tracks on Graphs of Groups and Outer Automorphisms of Hyperbolic Groups
PhD thesis. Available at arXiv:2005.00164 [Math.GR]

Talks

Talks	**Special Session, CMS Summer Meeting**	Jun 2023
	Geometric Topology, pseudo-Anosov Maps, and Complex Dynamics, University of Ottawa	

Geometry of Subgroups   May 2023
    Centre de Recherches Mathématiques, Montréal

Special Session, AMS Sectional Meeting   Apr 2023
    Ends and Boundaries of Groups, University of Cincinnati

Redbud Topology Conference   Mar 2023
    University of Oklahoma

Special Session, AMS Sectional Meeting   Mar 2023
    Geometric Group Theory, Georgia Institute of Technology

Topology and Group Theory Seminar   Mar 2023
    Vanderbilt University

Topology Seminar   Mar 2023
    Princeton University

Young Geometric Group Theory XI   Feb 2023
    Westfälische Wilhelms-Universität Münster

Mathematics Colloquium   Dec 2022
    Rutgers University at Newark

Geometry & Topology Seminar   Sep 2022
    City University of New York

Wasatch Topology Conference   Aug 2022
    University of Utah, Brigham Young University

Big Mapping Class Groups at BC   Aug 2022
    Boston College

Mathematics Colloquium   May 2022
    State University of New York at Albany

Joint Mathematics Meetings   Mar 2022
    Topics and Generalizations in Geometric Group Theory, Seattle
    Low-Dimensional Manifolds, Seattle

Special Session, AMS Sectional Meeting   Mar 2022
    Subgroups in Nonpositive Curvature, Tufts University

Spring Topology and Dynamical Systems Conference   Mar 2022
    Baylor University

Tetrahedral Geometry/Topology Seminar   Mar 2022
    West Chester University

Joint Geometry & Topology Seminar   Nov 2021
    Bowling Green State University, University of Toledo

Geometry & Topology Seminar   Nov 2021
    Temple University

Mathematics & Statistics Colloquium   Nov 2021
    Swarthmore College

North British Geometric Group Theory Seminar   Nov 2021
    Newcastle University

Bi-College Math/Stat Colloquium   Oct 2021
    Haverford College

World of Geometric Group Theory   Aug 2021

Groups and Geometry in the South East   June 2021
    Oxford University

Nearly Carbon Neutral Geometric Topology   June 2021

Dynamics and Group Geometry Early Researchers Seminar   May 2021
    Warwick University

Geometric Group Theory and Topology Seminar   Mar 2021
    Tufts University

MAXIMALS Algebra, Geometry and Topology Seminar   Mar 2021
    Heriot-Watt University

Geometry and Topology Seminar   Feb 2021
    Bristol University

Geometry and Topology Seminar   Feb 2021
    Yale University

Random and Arithmetic Structures in Topology Seminar		Dec 2020
Mathematical Sciences Research Institute		
Geometry and Topology Seminar		Nov 2020
City University of New York		
Geometry and Topology Seminar		Oct 2020
Binghamton University		
Pure Math Seminar		Oct 2020
University of North Carolina–Greensboro		
Big Surf(aces) Seminar		Oct 2020
Mathematics Colloquium		Sep 2020
Rutgers University–Newark		
Geometric Group Theory without Boundaries		July 2020
Mini-course on Bass–Serre Theory		
Trends in Low-Dimensional Topology		June 2020
Geometry and Topology Online		June 2020
Warwick Mathematics Institute		
Topology Seminar		May 2020
University of California Riverside		
Geometric Topology Seminar		Apr 2020
Columbia University		
Topology Seminar		Mar 2020
University of Wisconsin at Milwaukee		
Pick My Brain Seminar		Feb 2020
Northeastern University		
Geometric Group Theory Seminar		Jan 2020
McGill University		
Hyperbolic Lunch		Jan 2020
University of Toronto		
Dynamics, Geometry and Groups Seminar		Jan 2020
Queens University		
Boston Topology Seminar		Jan 2020
Brandeis University		
Special Session, AMS Sectional Meeting		Oct 2019
Effective and Quantitative Advances in Low Dimensional Topology and Geometric Group Theory, Binghamton University		
Algebra/Topology Seminar		Oct 2019
State University of New York at Albany		
Graduate Seminar		Sep 2019
Temple University		
Geometry and Topology Seminar		Sep 2019
Temple University		
LG&TBQ		June 2019
University of Michigan		
Graduate Student Conference in Algebra, Geometry and Topology		June 2019
Temple University		
Spring Topology and Dynamical Systems Conference		Mar 2019
University of Alabama at Birmingham		
Geometric Group Theory and Topology Seminar		Nov 2018
Tufts University		
Eminar Tufts Student Seminar, *6 talks*		2017–2019

<table>
<tr><td rowspan="6">Conference Participation</td><td>Semester Program in Geometric Group Theory</td><td>Feb–Jun 2023</td></tr>
<tr><td>Centre de Recherches Mathématiques, Montréal</td><td></td></tr>
<tr><td>Nearly Carbon Neutral Geometric Topology</td><td>Sep 2022</td></tr>
<tr><td>Communicating Mathematics</td><td>Aug 2022</td></tr>
<tr><td>Cornell University</td><td></td></tr>
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	Geometry, Arithmetic and Groups	Jun 2022
	Lightning Talk, University of Texas at Austin	
	Sage Days Duluth	Jun 2022
	Lightning Talk, University of Minnesota at Duluth	
	YGGT X	July 2021
	Lightning Talk, Newcastle University	
	Artin Groups, CAT(0) Geometry and Related Topics	July 2021
	The Ohio State University	
	ParaDIGMS Spring Conference	April 2021
	AMS, IMSI	
	Tech Topology Conference	Dec 2020
	Lightning Talk, Georgia Institute of Technology	
	RTG Mini-Conference	Feb 2020
	University of Utah	
	Tech Topology Conference	Dec 2019
	Lightning Talk, Georgia Institute of Technology	
	Algorithms in Complex Dynamics and Mapping Class Groups	Nov 2019
	ICERM, Brown University	
	Junior Geometry and Topology in the Midwest	Oct 2019
	University of Wisconsin at Madison	
	Wasatch Topology Conference	Aug 2019
	University of Utah, Brigham Young University	
	Aspects of Geometric Group Theory	July 2019
	Institut des Hautes Études Scientifiques	
	Young Geometric Group Theory VIII	July 2019
	Lightning Talk, Colegio Mayor Miguel de Unamuno	
	Spring Opportunities Workshop	Apr 2019
	American Institute of Mathematics	
	Graduate Student Topology and Geometry Conference	Mar 2019
	Lightning Talk, University of Illinois at Urbana-Champaign	
	Junior Geometry and Topology in the Midwest	Oct 2018
	University of Wisconsin at Madison	
	Women and Mathematics Program	May 2016
	Institute for Advanced Study	

OUTREACH	Panelist, "US-Based Jobs Panel," YGGT X	July 2021
	Co-organizer, Geometric Group Theory Without Boundaries Summer School	July 2021
	Participant, ParaDIGMS Diversity in Graduate Mathematical Sciences conference	Apr 2021
	Panelist, "Gender in Mathematics" Rutgers University	Mar 2021
	Co-organizer, Geometric Group Theory Without Boundaries Summer School	July 2020
	Co-organizer, Tufts Directed Reading Program	AY 2018–20
	Mentor, Tufts Directed Reading Program	Fall 2019
	Mentor, Tufts Directed Reading Program	Summer 2016

TEACHING	**Rutgers University**	
	Calculus II	Spring 2022
	Calculus II	Fall 2021
	Basic Linear Algebra	Fall 2021
	Calculus II	Spring 2021
	Topology	Fall 2020
	Tufts University	
	Co-organizer, Graduate Development Seminar	Spring 2020
	Co-organizer, Graduate Development Seminar	Fall 2019
	Math of Social Choice	Summer 2019
	Math of Social Choice	Spring 2019

Awards	Robert P. Guertin Student Leadership Award finalist	2020
	Head Teaching Assistant	AY 2019–20

Service	Referee work for *Groups, Geom. Dyn., New York J. Math., Proc. Amer. Math. Soc., J. London Math. Soc., Rev. Mat. Iberoam., Topology Proceedings*	
	Reviewing work for zbMath, MathSciNet	
	Organizer, Geometric Group Theory Reading Seminar	AY 2019–20
	Treasurer, Tufts Organization of Graduate Students in Mathematics	AY 2018–19
	Mathematics Department Graduate Union Steward	AY 2017–19
	Mathematics Department Representative, Tufts Graduate Student Council	AY 2017–18
	Graduate Student Member, Tufts Committee on Curricula	AY 2017–18

Other	**Languages:** English (native), German (intermediate), Japanese (intermediate)
	Citizenship: United States of America