C. PFAFF, Ph.D.

Appointments		
Queen's University Tenure-Track Assistant Professor		July 2018 - Present
University of California Santa Barbara Ky Fan Visiting Assistant Professor		July 2015 - June 2018
Universität Bielefeld Postdoctoral Research Fellow		July 2014 - August 2015
Université d'Aix-Marseille Laboratoire d'Excellence Postdoctoral Research Fellow		January 2013 - June 2014

Visiting positions

Fields Institute — Fall 2018
Thematic Program on Teichmüller Theory and its Connections to Geometry, Topology and Dynamics

Centre de Recerca Matemàtica — Fall 2012
Research Programme on Automorphisms of Free Groups

Bard College at Simon's Rock — Fall 2011 - Spring 2012
Visiting Assistant Professor of Mathematics

Mathematical Sciences Research Institute — Fall 2007
Associate Member (as a graduate student)

Education

Rutgers University, Ph.D. in Mathematics, — October 2012
Advisor: Lee Mosher

University of Chicago, Honors B.A. in Mathematics — May 2004

Honors/Awards

eCampus Ontario Virtual Learning Strategy Grant ($144,812 CAD), *2021-2022*.

"Colleague" in CANSSI Collaborative Research Team Project: Sports Analytics ($200,000 CAD), *2021-2024*.

Nominated for W.J. Barnes Teaching Award, Queen's University, *2019-2020*.

Fields Institute Conference Grant ($14,250 CAD), *2019-2020*.

NSERC Early Career Launch Supplement ($12,500 CAD), *2019-2024*.

NSERC Discovery Grant ($80,000 CAD), *2019-2024*.

Queen's University Research Initiation Grant ($25,000 CAD), *2018*.

Ky Fan Visiting Assistant Professorship, UCSB, *2015 - 2018*.

GEAR Conference Grant ($26,500), *2017*.

GEAR Travel Awards ($13,610), *2016-2017*.

Humboldt Research Fellowship for Postdoctoral Researchers, not utilized, *2015*.

NSF Conference Grant DMS - 1331129 ($33,000), *2013*.

Labex Archimède Research in Residence Grant (for Lee Mosher), *2013*.

NSF Graduate Research Fellowship Honorable Mention, *2006*.

NSF Graduate Research Fellowship Honorable Mention, *2005*.

Henry C. Torrey Graduate Fellowship (recruitment fellowship), *2004 - 2006*.

Weill Fellowship (summer funding fellowship), *2004*.

1) *Controlling ball progression in soccer.* w. E. Hunter*, H. Hong*, D. Forestell*, Z. Drassinower*, A. Fialkov*, T. Chan
arXiv:2210.16474, Submitted

2) *Taking the High-Edge Route Through Outer Space in Rank 3.* w. D. Gagnier*
arxiv: 1904.10026, Submitted

3) *Random trees in the boundary of Outer space.* w. I. Kapovich, J. Maher, S. Taylor
Geometry & Topology, 26 (2022) 127–162

4) *Random outer automorphisms of free groups: Attracting trees and their singularity structures.* w. I. Kapovich, J. Maher, S. Taylor
Transactions of the American Mathematical Society, 375 (2022), 525-557

5) *Counting conjugacy classes of fully irreducibles: double exponential growth.* w. I. Kapovich
arxiv: 1801.07471, Submitted

6) *Stable Strata of Geodesics in Outer Space.* w. Y. Algom-Kfir, I. Kapovich
International Mathematics Research Notices, Vol. 2019, Issue 14, July 2019, pp. 4549–4578.

7) *Normalizers and centralizers of cyclic subgroups generated by lone axis fully irreducible outer automorphisms.* w. Y. Algom-Kfir
New York Journal of Mathematics 23 (2017), 365–381.

8) *A Dense Geodesic Ray in Reduced Outer Space.* w. Y. Algom-Kfir
Groups, Geometry, & Dynamics, vol. 12, no. 2, pp. 571–613.

9) *A Train Track Directed Random Walk on $Out(F_r)$.* w. I. Kapovich
Inter. Journal of Algebra and Computation (IJAC). Volume No.25, Issue No. 5.

10) *Lone Axes in Outer Space.* w. L. Mosher
Algebraic & Geometric Topology 16.6 (2016): 3385-3418.

11) *$Out(F_3)$ Index Realization.*
Math. Proc. of the Cambridge Phil. Society, vol. 159, issue 03, pp. 445-458 (2015).

12) *Ideal Whitehead Graphs in $Out(F_r)$ IV.*
arxiv: arXiv:1511.08933, Submitted

13) *Ideal Whitehead Graphs in $Out(F_r)$ III.*
Journal of Topology & Analysis, Volume No.08, Issue No. 02 (2016).

14) *Ideal Whitehead Graphs in $Out(F_r)$ II.*
Journal of Homotopy and Related Structures: Volume 10, Issue 2 (2015), pp 275-301.

15) *Ideal Whitehead Graphs in $Out(F_r)$ I.*
New York Journal of Mathematics, Volume 21 (2015) 417-463.

* Indicates an undergraduate student co-author.

ORGANIZATIONAL SERVICE	**Scientific Committee** "Young Geometric Group Theory X" (Conference)	*2020*
	Co-Organizer "Random walks in math, physics, and society" (Conference)	*Summer '20*
	Co-Organizer Queen's Interdisciplinary Topological Data Analysis Learning Seminar	*Fall '19 - Present*
	Co-Organizer Queen's University Dynamics, Geometry, & Groups Seminar	*Fall '18 - Present*
	Scientific Committee "Groups explored through geometry & dynamics" (Conference)	*Fall 2017*
	Co-Organizer "Groups explored through geometry & dynamics" (Conference)	*Fall 2017*
	Co-Organizer University of California Santa Barbara Topology Seminar	*Fall '16 - Spring '18*
	Co-Organizer Universität Bielefeld Oberseminar Gruppen & Geometrie	*Fall '14 - Spring '15*
	Organizer & Co-PI "Special Program on Geometry of Outer Space"	*Summer 2013*
	Organizer Graduate Student Geometric Group Theory Seminar	*Fall '08 - Spring '09*
	Organizer Graduate Student Mapping Class Group & Teichmüller Theory Seminar	*Spring 2008*
	Committee Head Rutgers Directed Reading Program Committee	*2005 - 2008*
	A Primary Organizer Asha for Education International Conference	*Spring 2007*
	University of Chicago Math Club President	*2002 - 2003*

QUEEN'S SERVICE	Departmental EDI Committee Representative	*2022-2023*
	Colloquium Co-Chair	*2021-2023*
	Departmental Graduate Committee	*2020-2022*
	Departmental Postdoctoral Committee	*2018-2020*
	Departmental Ontario Graduate Scholarship Committee	*2019*

THESIS COMMITTEE	Brennan Cruse, Computing Masters	*Spring 2022.*
	Colin Lewis, Physics, Engineering Physics and Astronomy PhD	*Fall 2019.*

2nd Canadian Geometry-Topology Seminar,
l'Université du Québec a Montréal (Montreal, QC), *Fall 2022*

36th Summer Topology Conference,
University of Vienna (Vienna, Austria), *Summer 2022*

Workshop on Random walks beyond hyperbolic groups,
AIM (California), *April 2022*

**Fall Eastern Sectional Meeting - Special Session on Effective and Quantitative
Advances in Low Dimensional Topology and Geometric Group Theory**,
Binghamton University (Binghamton, NY), *Fall 2019*

**Fall Eastern Sectional Meeting - Special Session on Group actions on manifolds
and related spaces**,
Binghamton University (Binghamton, NY), *Fall 2019*

Outer Space in Bielefeld,
Universität Bielefeld (Bielefeld, Germany), *Fall 2019*

Large Scale Geometry and Applications,
Fields Institute (Toronto, Canada), *Spring 2018*

**Spring Southeastern Sectional Meeting - Special Session Interactions between
Geometry, Group Theory and Dynamics**,
Vanderbilt (Nashville, TN), *Spring 2018*

Joint Mathematics Meetings - Special Session Boundaries for groups and spaces,
San Diego, CA, *Winter 2017*

Groups explored through geometry and dynamics,
Princeton University (Princeton, NJ), *Fall 2017*

Fall Eastern Sectional - Special Session on Geometric Group Theory,
University at Buffalo (Buffalo, NY), *Fall 2017*

Spring Eastern Sect. - Special Session on Comp. & Algorithmic Group Theory,
Hunter College (New York City, NY), *Spring 2017*

**Spring Eastern Sectional - Special Session on Infinite Permutation Groups, To-
tally Disconnected Locally Compact Groups, & Geometric Group Theory**,
Hunter College (New York City, NY), *Spring 2017*

AWM Research Symposium - Special Session in Geometric Group Theory,
University of California, Los Angeles (Los Angeles, CA), *Spring 2017*

Southern California Women in Mathematics Symposium,
University of Southern California (Los Angeles, CA), *Winter 2017*

Dubrovnik VIII - Geom. Topology, Geom. Group Theory and Dyn. Systems,
Inter-University Centre (Dubrovnik, Croatia), *Summer 2015*

Bielefeld-Münster Seminar on Groups, Geometry and Topology,
Universität Bielefeld (Bielefeld, Germany), *Winter 2014*

Geometric Group Theory in Bonn,
Max Planck Institute (Bonn, Germany), *Fall 2014*

Geometry on Groups and Spaces ICM Satellite Conference,
KAIST (Daejeon, Korea), *Summer 2014*

KAIST Geometric Topology Fair,
Jeonju, Korea, *Summer 2013*

Cool-down Workshop for Conference on Automorphisms of Free Groups,
Centre de Recerca Matemática (Barcelona, Spain), *Fall 2012*

Opening Workshop on Automorphisms of Free Groups,
Centre de Recerca Matemática (Barcelona, Spain), *Fall 2012*

46th Spring Topology and Dynamics Conference Special Session,
Universidad Nacional Autonoma de Mexico (Mexico City, Mexico), *Spring 2012*

Workshop on Geometric Group Theory, Part II,
Louisiana State University (Baton Rouge, LA), *Summer 2011*

Geometric Group Theory Conference,
Technion (Haifa Israel), *Summer 2011*

OSU Workshop on the Torelli Group, Mapping Class Group, and $Out(F_n)$,
Ohio State University (Columbus, OH), *Summer 2011*

<table>
<tr><td>C<small>OLLOQUIUM</small>
T<small>ALKS</small></td><td>

University of Waterloo, Colloquium, *Fall 2022*

Wellesley College, Colloquium, *Fall 2018*

Vassar College, Colloquium, *Fall 2018*

Amherst College, Colloquium, *Fall 2018*

UCSB, AWM Colloquium, *Spring 2018*

College of Charleston, Colloquium, *Winter 2018*

Manhattan College, Colloquium, *Winter 2018*

Queen's University, Colloquium, *Winter 2018*

University of Florida, Colloquium, *Winter 2018*

Hofstra, Colloquium, *Fall 2017*

University of California Riverside, Colloquium, *Spring 2017*

California Polytechnic State University, San Luis Obispo, Colloquium, *Winter 2017*

California State University at Long Beach, Colloquium, *Fall 2016*

San Jose State University, Colloquium, *Fall 2016*

Montana State University, Colloquium, *Spring 2015*

SUNY Buffalo, Colloquium, *Spring 2015*

Haifa University, Colloquium, *Winter 2014*

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S<small>ELECT</small> S<small>EMINAR</small>
T<small>ALKS</small>

l'Université du Québec a Montréal, CIRGET Working Group Seminar *Summer 2022*

McGill University, Geometric Group Theory Seminar, *Fall 2021*

University of Washington, Rainwater Seminar, *Spring 2019*

Hunter College, GRECS Seminar, *Fall 2018*

CUNY Graduate Center, Algebra Seminar, *Fall 2018*

UIUC, Geometry, Groups & Dynamics/GEAR Seminar, *Spring 2018*

University of Pennsylvania, Geometry-Topology Seminar, *Winter 2017*

CUNY, Topology Seminar *Fall 2017*

University of Virginia, Algebra Seminar, *Fall 2017*

San Francisco State University, Geometry & Topology Seminar, *Spring 2017*

University of South California, Geometry & Topology Seminar, *Spring 2017*

UIUC, Geometry, Groups & Dynamics/GEAR Seminar, *Spring 2017*

Claremont Topology Seminar, *Fall 2016*

University of Virginia, Geometry Seminar, *Fall 2016*

University of Illinois Chicago, Geometry, Topology, and Dynamics Seminar, *Winter 2015*

Wawrick University, Geometry & Topology Seminar, *Spring 2015*

SUNY Buffalo, Topology Seminar, *Spring 2015*

Univ. of Utah, Max Dehn Seminar on Geom., Top., Dyn., & Groups, *Winter 2014*

UIUC, Geometry, Groups & Dynamics/GEAR Seminar, *Winter 2014*

University of Oklahoma, Geometry and Topology Seminar, *Winter 2014*

Technion, Geometry and Topology Seminar, *Winter 2014*

École Normale Supérieure de Lyon, Séminaire de Géométrie et Dynamique, *Summer 2014*

Hebrew University, Algebra seminar, *Spring 2014*

Université de Rennes 1, Séminaire de théorie ergodique, *Spring 2014*

Institut de Mathématiques de Toulouse, Séminaire de Géométrie, *Spring 2014*

Yale University, Geometry and Topology Seminar, *Fall 2013*

University of Chicago, Geometry/Topology Seminar, *Fall 2013*

University of Illinois at Chicago, Geometry, Topology, and Dynamics Seminar, *Winter 2013*

University of Illinois Urbana-Champaign, Group Theory Seminar, *Winter 2013*

CUNY Graduate Center, Algebra Seminar, *Fall 2013*

Seoul National University, *Summer 2013*

Universite Paris-Sud 11, Higher Teichmüller-Thurston spaces, *Spring 2013*

Brown University, Geometry Topology Seminar, *Spring 2013*

University of Michigan, Topology Seminar, *Spring 2012*

Michigan State University, Low Dimensional Topology Seminar, *Spring 2012*

University at Albany, SUNY Geometry and Topology Seminar, *Spring 2012*

University of Illinois Urbana-Champaign, Group Theory Seminar, *Winter 2012*

Rutgers-Newark, Topology/Geometry Seminar, *Spring 2010*

CUNY Graduate Center, Geometry and Topology Seminar, *Spring 2010*

ADVISING, MENTORING	**Masters Co-advisor for Sana Arastehfar**	*Fall 2022- Present*
	PhD Co-advisor for Rebecca Carter	*Fall 2020-Present*
	PhD Advisor for Luke Steverango	*Winter 2020-Present*
	USRA Summer Research Advisor for Damara Gagnier	*Summer 2020*
	Geometric Soccer Modeling Research Group Advisor (Advising 10 Queen's undergraduate students)	*Summer 2020-Present*
	Masters Co-advisor for Troy Zeier	*Fall 2019- Summer 2020*
LEARNING SEMINARS ORGANIZED	**Queen's Virtual Geometry Sports Analytics Seminar**	*Spring '20- Present*
	Interdisciplinary Topological Data Analysis Learning Seminar	*Fall '19 - Winter '20*
INSTRUCTIONAL OUTREACH	**Co-Host of Friends of Tracking Youtube Channel (19k subscribers, educational soccer analytics youtube channel)**	*2021-Present*
	VLS eCampus Ontario 2 semester course "Gentle Approach to Math, Excel, Stats: Useful Tools for Business, Economics, and the Social Sciences" (with 2 economics professors, my role included videos, embedded questions, practice problems for 10 modules)	*2021-2022*
	Four Directions Indigenous Student Centre Math Tutor	*2020-Present*
	Advanced Mathematics Bootcamp videos, self-quizzes, notes	*Summer 2020-Present*
	Illuminating Mathematics via Sweet potatoes and sports youtube series	*Summer 2020-Present*
	Faculty Advisor for Queen's Directed Reading Program in Math	*2019-Present*
	Mathquest Instructor (high school girl's math camp)	*Summer 2019*
	Smith College Lunch Talk	*Fall 2018*
	Bryn Mawr Distressing Math Collective Lecture	*Fall 2018*
	UCSB AWM Chapter Special Lecture	*Spring 2018*
	Academic Advisor for 2 College Students	*Fall 2011- Spring 2012*
	Founder & Committee Head - Rutgers Directed Reading Program	*2005-2008*
	Mentor in Rutgers Directed Reading Program in Mathematics	*2005-2008*
	University of Chicago Young Scholars Program Counselor	*Summer 2003*
	University of Chicago Young Scholars Program Assistant	*2001-2004*
	Bard College at Simon's Rock Mathclub Faculty Advisor	*Fall 2011- Spring 2012*
TEACHING HONORS/AWARDS	Nominated for **W.J. Barnes Teaching Award**, Queen's University, *2019-2020*.	
	Student Submitted Essay About as "Math Hero" for Association for Women in Mathematics Essay Contest, Queen's University, *2019*.	

Queen's University

Algebraic Topology Reading Course	Fall '22
Math 499 (Introduction to Topology Metric Spaces)	Fall '22
Math 126A (Diff. and Int. Calculus for Econ. & Soc. Sci.)	Fall '22
Math 126B (Diff. and Int. Calculus for Econ. & Soc. Sci.)	Winter '21,22,23
Math 341 (Differential Geometry)	Fall '20
Math 121B (Diff. and Int. Calculus)	Winter '20
Math 499 (Introduction to Topology)	Fall '19
Math 210 (Rings and Fields)	Winter '19,20,21,22
Math 387 (Adv. Persp. on Elementary Geometry)	Winter '19

University of California Santa Barbara

Math 3A (Calculus I)	Spring '17, Winter '18
Math 3B (Calculus II)	Fall '15, Fall '16, Spring '17
Math 34B (Calculus for Social & Life Sciences II)	Spring '17
Math 8 (Transition to Higher Mathematics)	Winter '16, Spring '17, Fall '17
Math 108A (Advanced Linear Algebra I)	Spring '18
Math 108B (Advanced Linear Algebra II)	Fall '17
Math 117 (Methods of Analysis)	Spring '16

Universität Bielefeld

Graph Theory I	Fall 2014
Graph Theory II	Spring 2015

Bard College at Simon's Rock

Elementary Functions (Precalculus)	Fall '11, Spring '12
Calculus	Spring '12
Geometric Group Theory	Fall '11

Rutgers University

Calculus I	Summer '08
Multivariable Calculus (Calculus III)	Summer '07
Differential Equations for Engineers	Summer '09