Paul Apisa

Contact Information	Office 321, Van Vleck Hall, 480 Lincoln Dr, Madison, WI 53706 e-mail: paul.apisa@gmail.com	Phone: 937 469 2330 Citizenship: US				
Research Interests	Dynamics, geometry, Teichmüller theory					
Academic Appointments	University of Wisconsin - Madison, Department of Mathema Assistant Professor	tics August 2022 - present				
	University of Michigan, Department of MathematicsDonald J. Lewis Research Assistant ProfessorNSF Postdoctoral Fellow	August 2021 - August 2022 July 2020 - August 2021				
	Yale University, Department of Mathematics Gibbs Assistant Professor NSF Postdoctoral Fellow	July 2019 - July 2020 July 2018 - June 2019				
Education	The University of Chicago, Department of Mathematics <i>Ph.D Thesis: Dynamics on the moduli space of translation surfaces</i> <i>M.S.</i>	Advisor: Alex Eskin June 2018 September 2014				
	The Ohio State University					
	Bachelor of Science in Mathematics; with distinction and honors resea	arch distinction June 2012				
Papers	 High rank invariant subvarieties (with Alex Wright) Ann. of Math. (2) 198 (2023), no. 2, 657–726. 					
	 GL(2, ℝ) orbit closures in hyperelliptic components of strata. Duke Math J. (2018), Vol. 167, No. 4, 679-742. 					
	3. Rank one orbit closures in $\mathcal{H}^{hyp}(g-1,g-1)$. Geom. Funct. Anal. (GAFA) 29 (2019), no. 6, 1617-1637.					
	 GL(2, ℝ)-invariant measures in marked strata: Generic marked points, Earle-Kra for strata, and illumination. Geom. Topol. 24 (2020), no. 1, 373-408 					
	 Exceptional directions for the Teichmüller geodesic flow and Hausdorff dimension (with Hamid al-Saqban, Alena Erchenko, Osama Khalil, Shahriar Mirzadeh, and Caglar Uyanik). J. Eur. Math. Soc. (JEMS) 23 (2021), no. 5, 1423–1476. 					
	6. Marked points on translation surfaces (with Alex Wright). Geom. Topol. 25 (2021), no. 6, 2913–2961.					
	 Divergent on average directions of Teichmüller geodesic flow (with Howard Masur). J. Eur. Math. Soc. (JEMS) 24 (2022), no. 3, 1007–1044. 					
	 Generalizations of the Eierlegende-Wollmilchsau (with Alex Wright) Camb. J. Math. 10 (2022), no. 4, 859–933. 					
	 Moduli spaces of complex affine and dilation surfaces (with Matt Bainbridge and Jane Wang) J. Reine Angew. Math. 796 (2023), 229–243. 					
	10. Reconstructing orbit closures from their boundaries (with Alex $% \mathcal{A}$	Wright)				
	Mem. Amer. Math. Soc. 298 (2024), no. 1487, v+141 pp.					
	11. Invariant subvarieties of minimal homological dimension, zero L odromy	yapunov exponents, and mon-				
	 Geom. Funct. Anal. (GAFA), 35 (2025), no. 1, 113–160 12. Periodic points in genus two: Holomorphic sections over Hilbert dynamics, and billiards. Int. Math. Res. Not. (IMRN), to appear. 	modular varieties, Teichmüller				
	 Periodic points on the regular and double n-gon surfaces (with Ra Zhang). Geom. Dedicata 216 (2022). no. 6. Paper No. 69. 17 nn. 	afael Saavedra and Christopher				
	 14. A generalization of the Burnside basis theorem (with Benjamin J. of Alg. 400 (2014), 8-16. 	Klopsch).				

Papers (cont.)	15. Billiards in right triangles and orbit closures in genus zero strata preprint arXiv:2110.07540.					
	16 Hurwitz-Hecke invariant subvarieties					
	preprint arXiv:2310.13776.					
	17. Algebra Aulicino	17. Algebraically primitive invariant subvarieties with quadratic field of definition (with David Aulicino)				
	preprint	t arXiv:2404.10273.				
	18. A short	proof of the classification of higher rank invariant subvarieties in genus three				
	preprint	<i>preprint</i> arXiv:2409.07603.				
	19. Invariar surfaces	19. Invariant measures on moduli spaces of twisted holomorphic 1-forms and strata of dilation surfaces (with Nick Salter)				
	preprint					
	20. Holonomy of affine surfaces (with Matt Bainbridge and Jane Wang) preprint arXiv:2508.00100					
Awards	2025	NSF Conference Grant: Dynamics and Rigidity, (\$20,000)				
	2023 - prese	nt NSF DMS Award No. 2304840 (\$250,000)				
	2018 - prese	nt NSF Mathematical Sciences Postdoctoral Research Fellowship				
	2013 - 2018	NSF Graduate Research Fellowship				
	2012 - 2013	McCormick Graduate Fellowship (University of Chicago)				
Seminar Series	JanFeb. 20	J21 Pacific Dynamics Winter 2021 Seminar Series				
and Mini-Courses	Sept. 2019	Mini-course on the Moduli Space of Translation Surfaces at Symbolic Tools in Mathematics and their Application - Around Moduli Spaces Joint program of Saarbrücken, Kaiserslautern and Aachen.				
Invited Talks	Apr. 2025	Institut de Mathématiques de Toulouse - Structures on Surfaces Conference				
AND COLLOQUIA	Feb. 2025	Univ. California - San Diego Dynamics Seminar				
	Nov. 2024	University of Chicago Dynamics Seminar				
	Juno 2024	University of Illinois at Unicago Dynamics Seminar Simon's Contor for Coometry and Physics - Moduli of Meromerphic				
	June 2024	Quadratic Differentials				
	Apr. 2024	Indiana University Dynamics Seminar				
	Mar. 2024	Cornell Geometry and Topology Seminar				
	Oct. 2023	Binghamtom Geometry and Topology Seminar				
	M 2022	Notre Dame Geometry and Topology Seminar				
	May 2023	Groups and Dynamics in Geometry Conference (Ascona)				
	Apr. 2025 Ian 2023	AMS Special Section on Coometry and Billiards				
	Oct. 2023	Finiteness results for special subvarieties: Hodge theory, o-minimality, dynamics				
	0000 2022	workshop (Expository talk on affine invariant subvarieties)				
	Sept. 2022	Combinatorics, Dynamics and Geometry on Moduli Spaces				
	Mar. 2022	Purdue University Colloquium				
	Feb. 2022	Pennsylvania State University Colloquium				
		Arizona State University Colloquium				
	Jan. 2022	Northwestern University Colloquium				
		Nice University Colloquium Michigan State University Colloquium				
		Auburn University Colloquium				
		Texas State University Colloquium				
	Dec. 2021	University of Wisconsin Colloquium				
		University Illinois at Chicago Colloquium				
	Nov. 2021	University of Washington Colloquium				
		Midwest Dynamics Conference				
		University of Michigan Geometry Seminar				
	Oct. 2021	Pennsylvania State University Dynamics Seminar				
	Sept. 2021	Indiana University Dynamics Seminar				

INVITED TALKS	Apr. 2021	Midwest Dynamics Seminar Pennsylvanja State University Dynamics Seminar	
(CONT.)	Sept. 2020	BiSTRO - Billiards and Surfaces à la Teichmüller and Riemann. Online	
()	May 2020	Harvard Informal Geometry and Dynamics Seminar	
		Nearly Carbon Neutral Geometry and Topology Conference	
	Oct. 2019	Boston College Dynamics Seminar	
	Sept. 2019	University of Maryland Dynamics Seminar	
	May 2019	Fudan University Seminar	
	Apr. 2019	Geometry and Topology at Brown and Yale (GATSBY) Seminar Pre-talk	
		University of Chicago Dynamics Seminar	
	Dec. 2018	California Institute of Technology - Geometry/Topology Seminar	
	Nov. 2018	University of Michigan - Geometry Seminar	
	Oct. 2018	Yale University - Group Actions and Dynamics Seminar	
	Sept. 2018	Yale University - Geometry and Topology Seminar	
		Oberwolfach - Workshop on Flat Surfaces and Algebraic Curves	
	June 2018	Teichmüller Dynamics, Mapping Class Groups and Applications Institut Fourier, Grenoble	
	Apr. 2018	AMS Sectionals - Vanderbilt University Interactions between Geometry, Group Theory and Dynamics Special Section	
		Bloomington Geometry Workshop	
	Mar. 2018	EPSRC Symposium on Geometry, Topology, and Dynamics in Low Dimensions	
	Aug. 2017	The 13th William Rowan Hamilton Geometry and Topology Workshop	
	May 2017	Chicago Action Now Dynamics Conference - Northwestern University	
	May 2016 Apr. 2016	BIRS (Oaxaca) - Flat Surfaces and Dynamics on Moduli Spaces Program Stanford University - Informal Geometry and Topology Seminar	
	Mar. 2016	AMS Sectionals - University of Georgia	
	Mar. 2016	University of Utah - Max Dehn Seminar	
	Sept. 2015	Indiana University Bloomington - Geometry Seminar	
	July 2015	Dynamics and Geometry in Teichmüller Space Conference at CIRM, Luminy	
	Mar. 2012	AMS Sectionals - University of Kansas	
PhD Students Ruo		heng Yang (current)	
	la Brown (current)		
Inho Gottlieb-Fenves (nending: meeting weekly)			
	Xiyu Z	hang (pending; meeting weekly)	

RESEARCH EXPERIENCES FOR UNDERGRADUATES (REUS)

- University of Wisconsin Madison Experimental Mathematics Lab Research Project Organizer (Fall 2024). Created and mentored two research projects in Teichmüller dynamics for two undergraduates and paired them with graduate student mentors.
- University of Wisconsin Undergraduate Research Organizer (Summer 2024). Ran three research projects in Teichmüller dynamics and flat surfaces for three undergraduates, two of whom were paired with graduate mentors.
- Summer@ICERM 2021 REU Organizer (Summer 2021). Along with Diana Davis and Jane Wang, organized an REU focusing on computational aspects of flat surfaces. We ran nine projects for 19 students and organized a team of five other mentors.
- Laboratory of Geometry Winter 2021 Project Organizer (Winter 2021). Along with Chaya Norton designed and ran a course directing a team of four undergraduates in a research problem on a computational question in the study of flat surfaces.
- University of Michigan REU Organizer (Summer 2020). Along with Chaya Norton, Alex Wright, and Becca Winarski, ran an REU program for three students on Teichmüller dynamics and flat surfaces.
- Cornell University REU Project Leader (Summer 2013). Along with Keith Dennis, mentored six students on a project on finite group theory.

- 2026 Co-organizer of a workshop on flat surfaces at Skye.
- 2025 Co-organizer of a workshop for graduate students at University of Wisconsin Madison
- 2025 Co-organizer of a conference in honor of Alex Eskin
- $\bullet~2024\mathchar`-2025$ Undergraduate mathematics advisor
- 2024 NSF Panelist
- 2023 Co-organizer of the Riemann Surfaces Session of the 8th Iberoamerican Congress on Geometry
- 2023-2024 Undergraduate curriculum committee
- 2023 Graduate admissions committee
- 2022-2024 Co-organizer of the University of Wisconsin Madison Putnam Club

Seminars Organized	All seminars n Fall 2022 - pr Summer 2024 Spring 2024 Fall 2023 Spring 2023 Fall 2019 - Sp Fall 2018 - Sp	net weekly. resent 4 pring 2020 pring 2019	University of Wisconsin - Dynamics Teichmüller dynamics undergradua Patterson-Sullivan Theory RTG ser Teichmüller dynamics RTG semina Margulis superrigidity RTG semina Yale Geometry & Topology Semina Mirzakhani's Thesis Seminar (co-or	s Seminar (co te/graduate ninar r r r (co-organiz rganizer)	o-organizer) seminar zer)
Mentoring and Directed Reading	• Directed Reading Mentor (Spring 2014, Winter - Spring 2015; Fall 2017 - Spring 2018; Fall 2022; Spring 2023; Spring 2024; Fall 2024). Met weekly with undergraduate and graduate students and designed reading programs and problem sets for them to assist them in studying advanced topics of their choosing				
	• Univ. of Michigan Postdoc-Grad Mentoring Program (Fall 2020). Mentored two graduate students				
	• Univ. or tored a l are allow	f Chicago Bi ower-year grac red to observe,	g Sibling Mentoring Program (We duate student and volunteered for a program, and ultimately teach, classes of olde	Vinter 2017 program in w r graduate st	-Spring 2017). Men- which younger students tudents.
TEACHING	Course Instructor at the University of Wisconsin				
	Winter 2025 Fall 2024 Winter 2024 Fall 2023 Winter 2023 Fall 2022	Dynamics Modern A Intro. to Modern A Linear Al Linear Al	s on Moduli Spaces (graduate) Algebra 1 Ergodic Theory and Dynamics (graduate) Algebra 2 Igebra Igebra	uate)	Math 858 Math 541 Math 758 Math 542 Math 341 Math 341
	Course Instructor at the University of Michigan				
	Winter 2022 Fall 2021	Differenti Calculus	al Geometry		Math 433 Math 115
	Course Instructor at Yale University				
	Spring 2020	Introduction Topics: vect	to Algebraic Topology 2 (graduate) or bundles, K-theory, characteristic c	lasses	Math 545b
	Fall 2019	Introduction Note: Passin Topics: hom	a to Algebraic Topology 1 (graduate) ing this course was equivalent to passis notopy, homology, and cohomology.	ng a qualifyi	Math 544a ng exam
	Course Instructor at the University of Chicago				
	2016 - 2017 2015 - 2016	Calculus Calculus, Mu	ıltivariable Calculus, Linear Algebra	Math 151 Math 153,	- 153 Math 195-196

TEACHING (CONT.) College Fellow at the University of Chicago - Led problem sessions and taught several classes.

Spring 2014	Partial Differential Equations	Instructor: Luis Silvestre
Winter 2014	Functional Analysis	Instructor: Panagiotis Souganidis
Fall 2013	Complex Analysis	Instructor: Sidney Webster

Mathematical Outreach

- Assn. of Women in Mathematics Symposium Speaker (February 2017). Delivered a talk for a general audience on the work of Marina Ratner and Maryam Mirzakhani. The goal of the symposium was to increase awareness of the work of women in mathematics and to increase the participation of women in mathematics.
 - Math Circles (Fall 2020). Led a Math Circles, an enrichment activity for middle and high school students, on planar graphs and Euler characteristic.