

Nicholas Miller

CONTACT INFORMATION	Department of Mathematics 601 Elm Avenue, Room 423 Norman, OK 73019-3103	<i>Office:</i> PHSC 801 <i>Website:</i> math.ou.edu/~nmmiller <i>E-mail:</i> nickmbmiller@gmail.com
RESEARCH INTERESTS	Hyperbolic geometry, low-dimensional topology, homogeneous dynamics, and arithmetic lattices.	
POSITIONS	Villanova University , Villanova, Pennsylvania Visiting Research Assistant Professor	Fall 2025 - present
	University of Oklahoma , Norman, Oklahoma Assistant Professor	Fall 2022 - present
	UC Berkeley , Berkeley, California Morrey Visiting Assistant Professor	Fall 2019 - Spring 2022
	Mathematical Sciences Research Institute , Berkeley, California McDuff Postdoctoral Fellow	Fall 2020
	Indiana University , Bloomington, Indiana Zorn Postdoctoral Fellow	Fall 2017 - Spring 2019
EDUCATION	Purdue University , West Lafayette, Indiana Ph.D., Mathematics (Advisor: David Ben McReynolds)	2017
	University of California, San Diego , La Jolla, California B.S., Mathematics B.S., Physics	2011
GRANTS	NSF Standard Grant, DMS-2405264, PI <i>Rigidity Theorems for Lattices</i> , \$394,473	2024 - present
	NSF Standard Grant, DMS-2005438/2300370, PI <i>Hyperbolic Manifolds, Geodesic Submanifolds, & Rigidity for Rank-1 Lattices</i> , \$146,424	2020 - 2024
	NSF Conference Grant, DMS-2000885, Co-PI <i>Beyond Hyperbolicity at the Ohio State University</i> , \$30,000	2020
AWARDS	Distinguished Undergraduate Teaching Award (UC Berkeley)	2022
	Max Zorn Teaching Award (Indiana University)	2019
	Purdue Bilsland Dissertation Fellowship (Purdue University)	Fall 2016 - Spring 2017
	Purdue Teaching Academy, Graduate Teaching Award (Purdue University)	2017
	Purdue Mathematics Department, Excellence in Teaching Award (Purdue University)	2016
PUBLICATIONS & PREPRINTS	B. Linowitz, D. B. McReynolds, and N. Miller. Locally equivalent correspondences. <i>Ann. Inst. Fourier (Grenoble)</i> 67 (2017), no. 2, 451–482.	
	J. DeBlois, N. Miller, and P. Patel. Effective virtual and residual properties of some arithmetic hyperbolic 3-manifolds. <i>Trans. Amer. Math. Soc.</i> 373 (2020), no. 11, 8219–8257.	
	S. Garibaldi, D. B. McReynolds, N. Miller, and D. Witte Morris. Appendix to Quasi-isometric embeddings of non-uniform lattices , by D. Fisher and T. Nguyen. <i>Comment. Math. Helv.</i> 95 (2020), no. 1, 37–78.	

- U. Bader, D. Fisher, N. Miller, and M. Stover. **Arithmeticity, superrigidity, and totally geodesic submanifolds.**
Ann. of Math. (2) 193 (2021), no. 3, 837–861.
- D. Fisher, J.-F. Lafont, N. Miller, and M. Stover. **Finiteness of maximal geodesic submanifolds in hyperbolic hybrids.**
J. Eur. Math. Soc. (JEMS) 23 (2021), no. 11, 3591–3623.
- B. Linowitz, D. B. McReynolds, and N. Miller. **Areas of totally geodesic surfaces of hyperbolic 3-orbifolds.**
Pure Appl. Math. Q. 17 (2021), no. 1, 1–25.
- U. Bader, D. Fisher, N. Miller, and M. Stover. **Arithmeticity, superrigidity and totally geodesic submanifolds of complex hyperbolic manifolds.**
Invent. Math. 233 (2023), no. 1, 169–222.
- T. Aougab, M. Lahn, M. Loving, and N. Miller. **A note on an effective characterization of covers with an application to higher rank representations.**
Groups, Geometry, and Dynamics (2024), online: DOI 10.4171/GGD/836.
- C. Abbott, N. Miller, and P. Patel. **Infinite-type loxodromic isometries of the relative arc graph.**
Algebr. Geom. Topol. 25 (2025), no. 1, 563–644.
- T. Aougab, M. Lahn, M. Loving, and N. Miller. **Unmarked simple length spectral rigidity for covers.**
Math. Ann. 392 (2025), no. 1, 861–898.
- G. Baldi, N. Miller, M. Stover, and E. Ullmo. **Rich representations and superrigidity.**
Ergodic Theory Dynam. Systems 45 (2025), no. 8, 2249–2272.
- J. Athreya, S. Dyatlov, and N. Miller. **Semiclassical measures for complex hyperbolic quotients.**
Geom. Funct. Anal. 35 (2025), no. 4, 979–1050.
- C. Abbott, N. Miller, and P. Patel. **Shift maps are not type preserving.**
 To appear in *Geometriae Dedicata*.
- N. Miller. **Arithmetic progressions in the primitive length spectrum.**
 Available at arXiv:1602.01869 [math.GT].
- E. Albers and N. Miller. **On the genus of congruence surfaces from maximal orders.**
 Available at arXiv:1901.07934 [math.GT].
- N. Miller. **Azumaya algebras and once punctured torus bundles.**
 Available at arXiv: 2303.16309 [math.GT].
- J.-F. Lafont, N. Miller, and L. Ruffoni. **On signatures of the atoroidal bundles of Kent–Leininger.**
 Available at arXiv: 2410.18029 [math.GT].
- E. Kim and N. Miller. **Semiclassical measures on hyperbolic manifolds.**
 Available at arXiv: 2503.01528 [math.AP].
- A. Ekanayake, M. Forester, and N. Miller. **Minimal complexity cusped hyperbolic 3-manifolds with geodesic boundary.**
 Available at arXiv: 2508.18524 [math.GT].
- N. Miller and M. Stover. **Thin stabilizers in nonarithmetic lattices.**
In preparation.

H. Cho, J.-F. Lafont, N. Miller, and B. Minemyer. **Hyperplane complements in hyperbolic products.**
In preparation.

MENTORSHIP
EXPERIENCE

Postdoctoral mentoring, University of Oklahoma **Fall 2023 - present**
Faculty co-mentor
– Serving as co-mentor for 3-year postdoctoral fellow Anuradha Ekanayake along with faculty member Max Forester.

Association for Women in Mathematics, University of Oklahoma **Spring 2023 - Spring 2025**
Faculty advisor
– One of two inaugural faculty mentors for the newly created University of Oklahoma chapter of the Association for Women in Mathematics.

LOG(IU), Laboratory of Geometry, Indiana University **Spring 2019**
Faculty Mentor
– One of two inaugural faculty mentors for a semester-long course aimed at helping undergraduates transition from coursework into modern topics in mathematics, especially in geometry.

Research Experience for Undergraduates, Indiana University **Summer 2018**
Research Mentor (Student: Eric Albers)
– Lead an eight week learning/research project and was one on one mentor to undergraduate student over summer semester.

TEACHING
EXPERIENCE

Instructor of Record, Villanova University **Fall 2025 - Present**
MAT1500 Calculus I, Fall 2025
MAT2500 Calculus III, Fall 2025

Instructor of Record, University of Oklahoma **Fall 2022 - Spring 2025**
M2423 Calculus & Analytic Geometry III, Spring 2025
M6823, Algebraic Topology II, Spring 2025
M3333, Linear Algebra I (Honors), Fall 2024
M6813, Algebraic Topology I, Fall 2024
M4853, Introduction to Topology, Spring 2024
M4653, Introduction to Differential Geometry I, Fall 2023
M5900, Graduate Mathematics Readings (Mostow Rigidity), Spring 2024
M5900, Graduate Mathematics Readings (Hyperbolic Geometry), Fall 2023
M2423 Calculus & Analytic Geometry II (2 sections), Spring 2023
M2443 Calculus & Analytic Geometry IV (2 sections), Fall 2022

Instructor of Record, UC Berkeley **Fall 2019 - Spring 2022**
M104 Real Analysis, Spring 2022
M185 Complex Analysis (2 sections), Fall 2021
M185 Complex Analysis, Spring 2021
M199 Directed Reading Course (Measure Theory), Spring 2020
M104 Real Analysis, Spring 2020
M185 Complex Analysis, Fall 2019
M104 Real Analysis, Fall 2019

Instructor of Record, Indiana University **Fall 2017 - Spring 2019**
M391 Introduction to Mathematical Reasoning, Spring 2019
M211 Calculus I (2 sections), Fall 2018
M211 Calculus I, Spring 2018
M118 Finite Mathematics, Fall 2017

	Instructor of Record , Purdue University	Fall 2013 - Spring 2017
	MA16010 Applied Calculus I, Fall 2015	
	MA26600 Ordinary Differential Equations, Summer 2014	
	MA22100 Calculus for Technology I, Spring 2014	
	MA22300 Introductory Analysis I, Fall 2013	
	Teaching Assistant , Purdue University	August 2011 - May 2013
	MA26200 Linear Algebra and Differential Equations, Spring 2013	
	MA16500 Analytic Geometry and Calculus II, Fall 2012	
	MA16200 Plane Analytic Geometry and Calculus II, Spring 2012	
	MA26100 Multivariate Calculus, Fall 2011	
SERVICE: CONFERENCES & SEMINARS	Geometry & Topology Seminar , University of Oklahoma <i>Co-organizer</i>	Fall 2023 - Spring 2025
	Surfaces in 3-manifolds , Log Cabin Workshop <i>Workshop Co-organizer</i>	Spring 2023
	Topology Seminar , UC Berkeley <i>Organizer</i>	Fall 2019 - Fall 2022
	Beyond Hyperbolicity at OSU , Ohio State University <i>Scientific Committee</i>	Summer 2020
	Member's Research Seminar , MSRI <i>Organizer</i>	Fall 2020
	Bloomington Geometry Workshop , Indiana University <i>Workshop Co-Organizer</i>	Spring 2018 & Spring 2019
	Colloquium Committee , Indiana University <i>Co-Organizer</i>	Fall 2018 - Spring 2019
	Geometry Seminar , Indiana University <i>Co-Organizer</i>	Fall 2017 - Spring 2019
	Basic Notions Seminar , Purdue University <i>Organizer</i>	Fall 2015 - Spring 2017
SERVICE: OTHER	Referee Work	2018 - present
	<i>Refereed for Algebr. Geom. Topol., Ann. Fac. Sci. Toulouse Math., Comment. Math. Helv., Compos. Math., Geom. Dedicata, J. Math. Soc. Japan, J. Mod. Dyn., J. Reine Angew. Math. (Crelle), Math. Ann., and Proc. Amer. Math. Soc.</i>	
	Conference proceedings: Beyond hyperbolicity <i>Co-editor – Séminaires et Congrès, 34. Société Mathématique de France, Paris, 2025. xxiii+316 pp</i>	
	Math Circle , University of Oklahoma <i>Committee member and volunteer</i>	Fall 2023 - Spring 2024
	Math Day , University of Oklahoma <i>Committee member and volunteer</i>	Fall 2022 - Spring 2024
	Problem of the Month , University of Oklahoma <i>Committee Chair</i>	Fall 2022 - Spring 2025
	Postdoc search committee , University of Oklahoma <i>Committee member</i>	Fall 2023 - Spring 2024
	Tenure Track search committee , University of Oklahoma <i>Committee member</i>	Fall 2024 - Spring 2025
	Candidacy committee, Tori Braun , University of Minnesota <i>External committee member</i>	Spring 2024 - Spring 2025

**Doctoral committee, Pratit Goswami, University of Oklahoma
2025**
Committee member

Summer 2023 - Spring

Dissertation committee, Leo Leiner, Temple University
External committee member

Fall 2024 - Spring 2025

Problem of the Week, Purdue University
Organizer

Fall 2015 - Spring 2017