

Nicholas Miller

CONTACT INFORMATION	Department of Mathematics 601 Elm Avenue, Room 423 Norman, OK 73019-3103	<i>Office:</i> PHSC 801 <i>E-mail:</i> nickmbmiller@ou.edu
RESEARCH INTERESTS	Hyperbolic geometry, low-dimensional topology, arithmetic lattices, and homogeneous dynamics.	
POSITIONS	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-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. <i>Ann. of Math. (2)</i> 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.

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]

C. Abbott, N. Miller, and P. Patel. **Infinite-type loxodromic isometries of the relative arc graph.**

Available at: arXiv: 2109.06106 [math.GT]

T. Aougab, M. Lahn, M. Loving, and N. Miller. **Unmarked simple length spectral rigidity for covers.**

Available at: arXiv: 2210.16706 [math.GT]

T. Aougab, M. Lahn, M. Loving, and N. Miller. **A note on an effective characterization of covers with an application to higher rank representations.**

Available at: arXiv: 2307.09643 [math.GT]

C. Abbott, N. Miller, and P. Patel. **Shift maps are not type preserving.**

Available at: arXiv: 2212.09156 [math.GT]

N. Miller. **Azumaya algebras and once punctured torus bundles.**

Available at arXiv: 2303.16309 [math.GT].

G. Baldi, N. Miller, M. Stover, and E. Ullmo. **On the superrigidity of rich representations of rank one lattices.**

In preparation.

J. Athreya, S. Dyatlov, and N. Miller. **Semiclassical measures for complex hyperbolic quotients.**

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.

LOG(IU), Laboratory of Geometry, Indiana University

Spring 2019

Faculty Mentor

– Was one of two inaugural faculty mentors for this semester-long course aimed at helping undergraduates transition from coursework into modern research level topics in mathematics, especially in geometry. Past projects listed at: <https://sites.google.com/view/laboratory-of-geometry-iub>.

Research Experience for Undergraduates, Indiana University **Summer 2018**
Research Mentor (Student: Eric Albers)
 – Advised and curated an eight week research program for an undergraduate summer student.
 – Provided support on cultivating best research practices, effectively developing and maintaining work/life balance, and establishing healthy time management skills.

TEACHING
EXPERIENCE

Instructor of Record, University of Oklahoma **Fall 2022 - Present**
 M4653, Introduction to Differential Geometry I, Fall 2023
 M5900, Graduate Mathematics Readings (Mostow Rigidity), Fall 2023
 M5900, Graduate Mathematics Readings (Hyperbolic Geometry), Fall 2023
 M2423 Calculus & Analytic Geometry II, Spring 2023
 M2443 Calculus & Analytic Geometry IV, Fall 2022

Instructor of Record, UC Berkeley **Fall 2019 - Spring 2022**
 M104 Real Analysis, Spring 2022
 M185 Complex Analysis, 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, 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 **Fall 2023 - present**
Organizer

Surfaces in 3-manifolds, Log Cabin Workshop **Spring 2023**
Workshop Co-organizer

Topology Seminar, UC Berkeley **Fall 2019 - Fall 2022**
Organizer

Beyond Hyperbolicity at OSU, Ohio State University **Summer 2020**
Scientific Committee

Member's Research Seminar, MSRI **Fall 2020**
Organizer

Bloomington Geometry Workshop, Indiana University **Spring 2018 & Spring 2019**
Workshop Co-Organizer

Colloquium Committee, Indiana University **Fall 2018 - Spring 2019**

	<i>Co-Organizer</i>	
	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:	Referee Work	2018-present
OTHER	<i>Refereed for Algebr. Geom. Topol., Ann. Fac. Sci. Toulouse Math., Comment. Math. Helv., Compos. Math., Geom. Dedicata, J. Mod. Dyn., Math. Ann., and Proc. Amer. Math. Soc.</i>	
	Association for Women in Mathematics , University of Oklahoma <i>Faculty mentor</i>	Spring 2023-present
	Postdoc search committee , University of Oklahoma <i>Committee member</i>	Spring 2023-present
	Math Day , University of Oklahoma <i>Committee member/volunteer</i>	Fall 2022–present
	Problem of the Month , University of Oklahoma <i>Committee Chair</i>	Fall 2022-present
	Math Circle , University of Oklahoma <i>Committee member/volunteer</i>	Fall 2023-present
	Problem of the Week , Purdue University <i>Organizer</i>	Fall 2015 - Spring 2017