

Robert C. Haraway, III

Education

- 2010 to 2015 **Doctor of Philosophy**, *Boston College*, Chestnut Hill, MA, Dissertation: *Dehn paternity bounds and hyperbolicity tests*.
Advisor: G. Robert Meyerhoff
- 2006 to 2010 **Bachelor of Arts**, *Princeton University*, Princeton, NJ, Senior Thesis: *Tubes in hyperbolic space*.
Advisor: David Gabai

Employment

- 2017 to 2020 **Postdoctoral fellow**, *Oklahoma State University*, Stillwater, OK.
Investigating computational topology and geometry of 3-manifold triangulations.
- 2015 to 2017 **Postdoctoral research associate**, *University of Sydney*, Sydney, NSW.
Investigated Fock and Goncharov's moduli spaces of convex projective structures on surfaces.

Courses Taught

- Aug. 2019 to May 2020, Aug. 2017 to Dec. 2018 **Calculus I**, *Oklahoma State University*, Stillwater, OK.
Led a single-variable calculus course for sections of 20–30 undergraduate students.
- Jan. 2019 to May 2019 **General Topology**, *Oklahoma State University*, Stillwater, OK.
Designed and led the general topology course MATH5303 for six graduate students.
- Apr. to Jun. 2017 **Linear Algebra**, *University of Sydney*, Sydney, NSW.
Lectured to 70 students, composed and marked assignments, and oversaw tutorial for latter half of a semester for introductory linear algebra course MATH1002.
- 2013 to 2014 **Calculus II**, *Boston College*, Chestnut Hill, MA.
Led an integral calculus course for sections of 20–30 undergraduate students.
- 2012 to 2014 **Calculus I**, *Boston College*, Chestnut Hill, MA.
Led a single-variable calculus course for sections of 20–30 undergraduate students.

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Publications and preprints

Hyperbolic 3-manifolds of low cusp area, with D. Gabai, G. R. Meyerhoff, N. J. Thurston, and A. Yarmola, arXiv:2109.14570

On the complexity of cusped non-hyperbolicity, with N. Hoffman, submitted for publication.

Determining hyperbolicity of compact orientable 3-manifolds with torus boundary, JoCG **11** (1), 125–136, 2020.

Practical bounds for a Dehn parental test, Proc. Amer. Math. Soc. **147** (2019), 427–442.

On moduli spaces of convex projective structures on surfaces: outitude and cell-decomposition in Fock-Goncharov coordinates, with R. Löwe, D. Tate, and S. Tillmann, submitted for publication.

Tessellating the moduli space of strictly convex projective structures on the once-punctured torus, with S. Tillmann, Exp. Math. (2017), 1–16.

In Preparation

Link diagram recovery in EXPTIME, with N. Hoffman, S. Schleimer, and E. Sedgwick.

Tiling algorithm for length spectrum bounds, with M. Görner, N. Hoffman, and M. Trnková.

An alternative algorithm for closed surfaces in knot complements, with S. Tillmann, A. Wardak, and A. Zreika.

Mom-1.5 manifolds, with C. D. Hodgson and G. R. Meyerhoff.


Research Supervised

Jan. to Feb. 2017, **Research supervisor**, University of Sydney, Sydney, NSW.
Supervised undergraduate students in summer research on computational 3-manifold topology.
Nov. 2015 to Feb. 2016

Invited talks

Oct. 2020 AMS Southeastern Special Session: Interactions Between Algebra, Geometry and Topology in Low Dimensions
Jan. 2020 AMS Special Session: Applications and Computations in Knot Theory
Nov. 2019 Redbud Fall Topology Conference
Nov. 2018 Princeton Topology Seminar
Nov. 2017 Redbud Fall Topology Conference
May 2017 Monash University Topology Seminar

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- Mar. 2017 UC Davis, Department of Mathematics
- Dec. 2016 MATRIX Program: Interactions between topological recursion, modularity, quantum invariants and low-dimensional topology
- May 2016 Monash University Topology Seminar
- Apr. 2016 University of New South Wales Pure Maths Seminar
- 2015 to 2016 University of Sydney Geometric Structures Working Group (several talks)
- 2015 to 2016 University of Sydney Geometry and Topology Seminar (two talks)
- 2015 to 2016 University of Sydney MaPSS Seminar (several talks)

Submitted talks

- Jul. 2017 SoCG 2017: 6th Annual Minisymposium on Computational Topology
- Jul. 2017 SoCG 2017: Young Researchers Forum
- Dec. 2016 Australian Mathematical Society Annual Meeting 2016: Special Session on Topology
- Aug. 2016 International Workshop on Spatial Graphs 2016

Service and Outreach

- Sep. 2019 to Nov. 2018 **Fall 2019 Redbud Conference**, *Oklahoma State University*, Stillwater, OK.
Organized the Fall 2019 Redbud Conference, with Matt Clay, Max Forester, and Neil Hoffman.
- 1 Oct. 2019 **Oklahoma State University Mathematics Club**, *Oklahoma State University*, Stillwater, OK.
Gave a talk on isolating roots of polynomials to undergraduates.
- 30 Aug. 2019 **Mathematics Graduate Student Seminar: Jobs Panel**, *Oklahoma State University*, Stillwater, OK.
Served on a job application and career panel for graduate students near graduation.
- Feb. 2018 to Apr. 2018 **Redbud Spring 2018: Triangulations and Trisections**, *Oklahoma State University*, Stillwater, OK.
Organized the Spring 2018 international Redbud Conference, with Andy Eisenberg, Neil Hoffman, and Henry Segerman.
- Aug. 2017 to present **New faculty checklist**, *Oklahoma State University*, Stillwater, OK.
Prepare and maintain a checklist of important dates and things to do for new math faculty at Oklahoma State University, with Neil Hoffman.
- Jan. 2017 to Jun. 2017 **Computational and algorithmic topology in Sydney, 2017**, *University of Sydney*, Sydney, NSW.
Organized the CATS 2017 workshop and conference, with Stephan Tillmann and Joshua Howie.

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May 2016 to **AustMS Special Session on Topology**, *The Australian National Uni-*
Dec. 2016 *versity*, Canberra, ACT.

Organized the special session on topology at the national meeting of the Australian Mathematical Society in 2016, with Joan Licata and Clément Maria.

Continuing Education

12 Aug. 2019 **College of Arts and Sciences General Education Workshop**, *Ok-*
lahoma State University, Stillwater, OK.

Attended day-long workshop for service course instructors on first-year student demographics and on teaching and learning.

Aug. 2017 to **College of Arts and Sciences New Faculty Teaching Program**,
Nov. 2017 *Oklahoma State University*, Stillwater, OK.

Attended weekly classes on the theory and practice of teaching and learning with eight other new faculty members.

Other Endeavors

Church Choir director at St. James Orthodox Church in Stillwater, OK from 2018
music to 2020. Bellringer at Holy Trinity Orthodox Cathedral in Boston from 2013 to 2015. Choir member at various other churches since 2005.

Acoustic Have played the nylon-string guitar since 1995, steel-string since 2009.
guitar Featured on NPR's *From the Top* show no. 89.

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