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| CONTACT INFORMATION | School of Arts and Sciences Holy Family University 9801 Frankford Ave. Philadelphia, PA 19114 | https://www.wtworden.org wworden@holyfamily.edu |
| RESEARCH INTERESTS | Hyperbolic Geometry, Low-Dimensional Topology | |
| APPOINTMENTS | Assistant Professor of Mathematics, Holy Family University, 2022–present G.C. Evans Instructor, Rice University, 2018–2022 | |
| EDUCATION | Temple University Ph.D. Mathematics, May 2018 (Advisor: Dave Futer) Teaching in Higher Education Certificate, August 2015 M.S. Mathematics, May 2014 The City College of New York B.S. Mathematics, May 2012 | |
| HONORS AND AWARDS | Temple University <i>Doctoral Dissertation Completion Grant</i> – Spring 2018 <i>2015-2016 Excellence in Service by a Graduate Student Award</i> <i>Summer Research Grant</i> , Summer 2016 <i>Teaching Assistantship</i> , Fall 2014 – Spring 2016 <i>University Fellowship</i> , Fall 2012 – Spring 2014 The City College of New York <i>Summa Cum Laude</i> , 2012 <i>Belden Medal</i> , 2012 <i>Emil L. Post Memorial Award</i> , 2012 <i>Dr. Barnett and Jean Hollander Rich Mathematics Summer Internship Grant</i> , 2011 <i>Mazur Award</i> , 2010 | |
| PUBLICATIONS/ PREPRINTS | D. Cooper, S. Tillmann, and W. Worden, <i>The Thurston norm via spun normal surfaces</i> . arXiv: 2109.04498. E. Chesebro, J. Deblois, N. Hoffman, C. Millichap, P. Mondal, and W. Worden, <i>Dehn surgery and hyperbolic knot complements without hidden symmetries</i> . To appear in International Mathematics Research Notices. arxiv: 2009.14765. N. Hoffman, C. Millichap, and W. Worden, <i>Symmetries and hidden symmetries of (ϵ, d_L)-twisted knot complements</i> . Algebraic & Geometric Topology 22-2 (2022), 601– 656. DOI 10.2140/agt.2022.22.601. Preprint via arXiv: 1909.10571. | |

W. Worden, *Small knots of large Heegaard genus*, to appear in Communications in Analysis and Geometry. arXiv:1907.06820.

D. Futer, S.J. Taylor, and W. Worden, *Random veering triangulations are not geometric*. Groups, Geometry, and Dynamics, Vol. 14 (2020), No. 3, 1077–1126. arXiv:1808.05586.

W. Worden, *Experimental statistics of veering triangulations*. Experimental Mathematics, Vol. 29 (2020), No. 1, 101-122, DOI:10.1080/10586458.2018.1437850.

C. Millichap and W. Worden, *Hidden symmetries and commensurability of 2-bridge link complements*. Pacific Journal of Mathematics, Vol. 285 (2016), No. 2, 453-484. DOI: 10.2140/pjm.2016.285.453. arXiv:1601.01015 [math.GT]

W. Worden, *Iterations of quadratic polynomials over finite fields*. Involve, a Journal of Mathematics 6-1 (2013), 99-112. DOI 10.2140/involve.2013.6.99

COMPUTER
SOFTWARE

W. Worden, *Tnorm (program for computing Thurston norm balls of hyperbolic manifolds)*. Available at <https://pypi.org/project/tnorm>, 2019–2021, Version 1.0.2.

W. Worden, *Lifty (implementation of an algorithm of Belk–Lanier–Margalit–Winarski to determine Thurston equivalence of topological polynomials)*. In development.

INVITED
TALKS

Classifying arithmetic fully augmented links, Geometry, Arithmetic, and Groups, UT Austin (June 2022).

From knots to hyperbolic 3-manifolds, Rice Undergraduate Mathematics Colloquium (October 2021).

The Thurston norm via spun-normal surfaces, Australian Geometric Topology Webinar (June 2021).

Symmetries and hidden symmetries of (ϵ, d_L) -twisted knot complements, AMS Special Session on Geometry and Topology in Dimension 3 and 4, JMM (January 2021).

Dehn filling and knots that don't irregularly cover, Geometry and Topology Online, Warwick Mathematics Institute (June 2020).

Dehn filling and knots that don't irregularly cover, Nearly Carbon Neutral Geometry and Topology (June 2020).

Small knots of large Heegaard genus, Redbud Topology Conference, University of Arkansas (March 2020).

The Thurston norm via spun normal surfaces, Topology Seminar, Oklahoma State University (March 2020).

Visualizing mathematics through 3D modeling and printing, Construct 3D Conference, Rice University (February 2020).

The Thurston norm via spun normal surfaces, 2019 Southeastern Sectional Meeting of the AMS, University of Florida (November 2019).

Small knots of large Heegaard genus, Topology Seminar, UC Berkeley (September 2019).

Small knots of large Heegaard genus, Topology Seminar, Oklahoma State University (September 2019).

Non-geometric veering triangulations and the Thurston norm ball, Topology Seminar, Yale University (April 2019).

Non-geometric veering triangulations and the Thurston norm ball, Classical and Quantum 3-Manifold Topology Conference, Monash University - Clayton (October 2018).

Non-geometric veering triangulations and the Thurston norm ball, Topology Seminar, University of Texas at Austin (October 2018).

Random veering triangulations are not geometric, Geometry and Topology Seminar, Michigan State University (October 2018).

Random veering triangulations are not geometric, Fall 2018 Indiana-Illinois Geometry, Groups, and Dynamics, Rose-Hulman Institute of Technology (October 2018).

Random veering triangulations are not geometric, Topology Seminar, Rice University (September 2018).

Veering triangulations: theory and experiment, Spring 2018 Redbud Geometry and Topology Conference, Oklahoma State University (April 2018).

Hidden symmetries and commensurability of 2-bridge link complements, Geometry and Topology Seminar, Rutgers - New Brunswick (April 2018).

Veering triangulations: theory and experiment, Geometry and Topology Seminar, University of Sydney (March 2018).

Genericity of non-geometric veering triangulations, 2017-2018 Warwick EPSRC Symposium: Geometry, Topology, and Dynamics in Low Dimensions – Computation in geometric topology, University of Warwick (December 2017).

Experimental statistics of veering triangulations, Geometry Topology Seminar, Georgia Tech (June 2017).

Hidden symmetries and commensurability of 2-bridge link complements, AMS Sectional Meeting: Special Session on Invariants in Low-Dimensional Topology, Hunter College (May 2017).

Experimental statistics of veering triangulations, CUNY Geometry and Topology Seminar, CUNY Graduate Center (April 2017).

Hidden symmetries and commensurability of 2-bridge link complements, Geometry Topology & Physics Seminar, University of Pittsburgh (November 2016).

Hidden symmetries and commensurability of 2-bridge link complements, Redbud Triangulations Conference, Oklahoma State University (November 2016).

OTHER TALKS

Experimental statistics of veering triangulations, Geometry and Topology Seminar, Temple University (February 2017).

Hidden symmetries and commensurability of 2-Bridge link complements, Topology Student Workshop, Georgia Institute of Technology (June 2016).

Hidden symmetries and commensurability of 2-bridge link complements, Binghamton University Graduate Conference in Algebra and Topology, SUNY Binghamton (November 2015).

Iterations of quadratic polynomials over finite fields, Mid-Hudson Mathematics Conference for Undergraduates, Bard College (October 2011).

What is it like to live in a 3-dimensional torus?, Undergraduate Math Club seminar, Temple University (November 2017).

Minkowski space: where hyperbolic geometry meets special relativity, Graduate Student Seminar, Temple University (October 2015).

The Hopf fibration of the 3-sphere, Graduate Student Seminar, Temple University (October 2014).

TEACHING EXPERIENCE

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| Spring 2022 | Instructor – Calculus II |
| Spring 2022 | Instructor – Honors Calculus IV |
| Fall 2021 | Instructor – Calculus: Differentiation |
| Spring 2021 | Instructor – Calculus II |
| Fall 2020 | Instructor – Multivariable Calculus |
| Spring 2020 | Instructor – Calculus II |
| Spring 2020 | Instructor – Topics in Topology: Hyperbolic 3-Manifolds |
| Fall 2019 | Instructor – Calculus II |
| Spring 2019 | Instructor – Calculus II |
| Fall 2018 | Instructor – Abstract Algebra II |
| Fall 2018 | Instructor – Calculus II |
| Fall 2017 | Instructor – Calculus II |
| Summer 2017 | Instructor – Calculus I |
| Spring 2017 | Teaching Assistant – Senior Problem Solving |
| Fall 2016 | Instructor – Calculus I |
| Spring 2016 | Teaching Assistant – Modern Algebra |
| Fall 2015 | Instructor – Calculus II |
| Summer 2015 | Instructor – Calculus I |
| Spring 2015 | Instructor – Calculus I |
| Fall 2014 | Teaching Assistant – Calculus I |

SERVICE/
OUTREACH

Professional Advancement through Career Education (PACE) mentor – Fall 2021

Rice Geometry Lab faculty mentor, Rice University, Spring 2019 – Fall 2021

Graduate Committee — Graduate Student Conference in Algebra, Geometry and Topology, Temple University, June 2018

Volunteer — Sonia Kovalevsky Mathematics Day for Girls, Temple University, April 2018

Visiting Mentor — 2017 Georgia Tech REU in Geometric Group Theory, May 2017

Graduate Advisor — Temple Undergraduate Math Club, Fall 2017 and Spring 2018

Graduate Committee — Graduate Student Conference in Algebra, Geometry and Topology, Temple University, June 2017

Volunteer — Sonia Kovalevsky Mathematics Day for Girls, Temple University, April 2017

Volunteer — Philadelphia pre-K Math Circles, March 2017

Volunteer/Teaching Assistant — Sonia Kovalevsky Mathematics Day for Girls, Temple University, April 2016

Co-Organizer — Graduate Student Conference in Algebra, Geometry and Topology, Temple University, May 2016

Graduate Committee — Graduate Student Conference in Algebra, Geometry and Topology, Temple University, May 2015

CONFERENCES/
WORKSHOPS

Redbud Topology Conference, University of Arkansas, March 2020 (speaker)

Nearly Carbon Neutral Geometry and Topology, Online, June 2020 (speaker)

Perspectives on Dehn Surgery Workshop, ICERM (Brown University), July 2019

Classical and quantum 3-manifold topology, Monash University, December 2018 (speaker)

Fall 2018 Indiana-Illinois Geometry, Groups, and Dynamics, Rose-Hulman Institute of Technology, October 2018 (speaker)

Thin Groups in Number Theory, Geometry, and Topology, Rice University, May 2018

2017-2018 Warwick EPSRC Symposium: Geometry, Topology, and Dynamics in Low Dimensions – Computation in geometric topology, University of Warwick, December 2017 (speaker)

Shanks Conference on Low-Dimensional Topology and Geometry, Vanderbilt Univer-

sity, May 2017

AMS Sectional Meeting: Special Session on Invariants in Low-Dimensional Topology, Hunter College, May 2017 (speaker)

Redbud Triangulations Conference, Oklahoma State University, November 2016 (speaker)

Topology Student Workshop, Georgia Institute of Technology, June 2016

Advanced School of Geometric Group Theory and Low-Dimensional Topology: Recent Connections and Advances, International Centre for Theoretical Physics, May/June 2016

Graduate Student Conference in Algebra, Geometry and Topology, Temple University, May 2016

Graduate Student Topology and Geometry Conference, Indiana University, April 2016

Binghamton University Graduate Conference in Algebra and Topology, Binghamton University, November 2015 (speaker)

Workshop on Geometric Structures on 3-Manifolds, Institute for Advanced Study, October 2015

Classical and Quantum Hyperbolic Geometry and Topology in honor of Francis Bonahon, Université Paris-Sud (Orsay), July 2015

Graduate Student Conference in Algebra, Geometry and Topology, Temple University, May 2015

Graduate Student Topology and Geometry Conference, University of Illinois Urbana-Champaign, March 2015

Binghamton University Graduate Conference in Algebra and Topology, Binghamton University, October 2014

Graduate Student Topology and Geometry Conference, University of Texas at Austin, March 2014

Joint Mathematics Meetings, Baltimore MD, January 2014

Fall Eastern Sectional Meeting of the American Mathematical Society, Temple University, October 2013

Mid-Hudson Mathematics Conference for Undergraduates, Bard College, October 2011 (speaker)