

CONTACT            Department of Mathematical Sciences    *Cell Phone:* (512) 913-1171  
 INFORMATION      University of Wisconsin-Milwaukee    healyb@uwm.edu  
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                          Milwaukee, WI 53211 USA                    burnshealy.com

CITIZENSHIPS      Ireland, United States of America

APPOINTMENTS    **University of Wisconsin-Milwaukee**  
                          Visiting Assistant Professor, September 2018 to Present

EDUCATION        **Tufts University**, Medford, Massachusetts, USA  
                          Ph.D., Department of Mathematics, May 2018  
                          *Advisor: Professor Genevieve Walsh*  
                          Dissertation title: Non-positive Curvature in Groups  
                          Master of Science, Mathematics, January 2014  
                          **University of Texas**, Austin, Texas, USA  
                          Bachelor of Science, Mathematics, May, 2012

RESEARCH            Geometric Group Theory, Low Dimensional Topology, Differential Geometry  
 INTERESTS

- PUBLICATIONS    1. Quasi-Isometries and Quasi-Symmetries for Relatively Hyperbolic Pairs  
 AND PREPRINTS    (In Preparation), joint with Chris Hruska
2.  $\mathcal{Z}$ -Structures for Cyclic Extensions (In Preparation),  
 joint with Craig Guilbault and Brian Pietsch
3. Metrics of Pinched Curvature on Heintze Spaces of Carnot-type  
 (In submission), <https://arxiv.org/abs/2002.04594>
4. Nano-Engineered Composites for 3D Printing of Concrete Auxetic Structures  
 joint with Aparna Deshmukh and Konstantin Sobolev  
 To appear in the proceedings of the 2nd RILEM International Conference on  
 Concrete and Digital Fabrication, 2020
5. Sectional Curvature in Riemannian Manifolds,  
 joint with Elliott Fairchild\* and Francis Owen\*  
*The Mathematica Journal*, 2020. <https://doi.org/10.3888/tmj.221>.
6. Acylindrical Hyperbolicity of  $\text{Out}(W_n)$ ,  
 Top. Proc. 58 (2021) pp. 23-35. (E-published on April 6, 2020)
7. Rigidity Properties for Hyperbolic Generalizations  
*Canadian Mathematical Bulletin*, 2020 ,  
 63(1), 66-76. doi:10.4153/S0008439519000377

\* indicates undergraduate coauthor

UPCOMING  
TALKS

- Beyond Hyperbolicity Conference (Delayed to 2021)
- AMS Sectional Meeting at Tufts University
- Marquette University Mathematics Seminar

INVITED TALKS

- Ohio State University Geometric Group Theory Seminar, April 2, 2020  
Talk title: Model Spaces for Relatively Hyperbolic Pairs
- Tufts Geometric Group Theory and Topology Seminar, February 27, 2020  
Talk title: Pinched Curvature in Generalizations of Hyperbolic Space
- Topology Seminar, University at Albany, September 5, 2019  
Talk title: Quasi-Isometries of Cusped Spaces for Relatively Hyperbolic Pairs
- Spring Topology and Dynamical Systems, March 14-16, 2019  
Talk title: Horospherical Distortion as an Obstruction to Quasi-isometry
- Junior Geometry and Topology in the Midwest, October 13, 2018
- 2018 Summer Conference on Topology and its Applications, July 20, 2018  
Talk title: Rigidity Properties for Hyperbolic Generalizations
- Joint Math Meetings, San Diego, California, January 10-13, 2018  
Talk title: Non-positive Curvature in Groups
- Brandeis University Topology Seminar, January 24, 2017  
Talk title: Acylindrical Hyperbolicity and CAT(0) Groups
- Temple GSCAGT, Temple University, Philadelphia, May 14-15, 2016  
Talk title: Acylindrical Hyperbolicity and CAT(0) Groups
- Workshop in Geometric Topology, Texas Christian University, June 25, 2015.  
Talk title: On groups with the RFRS property

MENTORSHIP

Summer 2019

Supervised a research project conducted with two undergraduate students at the University of Wisconsin-Milwaukee. This project used the program Mathematica to compute sectional curvature in Riemannian and pseudo-Riemannian manifolds. The work has been published at the *Mathematica Journal*, which is a peer-reviewed publication.

Spring 2020

Supervised a Capstone project, in which the undergraduate studied the topological properties of the graphs of certain complex exponential maps.

TEACHING

**University of Wisconsin-Milwaukee**

Differential Geometry - Spring 2020

Introduction to Proofs - Spring 2020, Spring 2019

Elementary Topology - Fall 2019

Survey in Calculus and Analytic Geometry - Summer 2019

Calculus and Analytic Geometry 2 - Spring 2019

Calculus and Analytic Geometry 1 - Fall 2018, Fall 2019

**Tufts University**

Finite Math - Spring 2015

Calculus 1 - Summer 2014, Fall 2016

Calculus 2 - Summer 2015, Summer 2017  
Applied Calculus 2 - Fall 2014  
Calculus 3 - Fall 2013, Fall 2015, Summer 2016

**Graduate Institute for Teaching**

Fellow of the Graduate Institute for Teaching (GIFT) program at Tufts University in 2017.

DEPARTMENTAL  
AND UNIVERSITY  
SERVICE

**University of Wisconsin-Milwaukee**

Member: Dissertation Committee for Hoang Nguyen  
Helped host the 36th Annual Workshop in Geometric Topology  
Member: Mathematical Sciences Calculus Curriculum Committee

**Tufts University**

Member: Search Committee for Tufts Dean of Arts and Sciences  
Member: Committee for Student Life  
President: Graduate Student Council, 2014-2015.  
Vice President: Graduate Student Council, 2013-2014.  
Vice President: Tufts Organization of Graduate Students in Mathematics, 2013-2014.

**University of Texas**

Editor-in-Chief: Catalyst Newsletter, 2009-2010.

REFEREE

Topology Proceedings

HONORS AND  
AWARDS

Distinguished Teaching Award, Tufts University Math Department, 2017.  
Graduate Institute for Teaching Fellow, Tufts University, 2017.  
National Merit Scholarship, University of Texas, 2008-2012.  
Dedman Merit Scholarship, University of Texas, 2008-2012.

MEMBERSHIPS

American Mathematical Society  
Society for Industrial and Applied Mathematics

SELECTED  
MEDIA  
APPEARANCES

Advanced Bracketology: UWM math professor weighs in on the best bracket strategies  
CBS 58, March 17, 2019  
Can you increase your Mega Millions chances?  
TMJ4, October 23, 2018