

Funda GÜLTEPE

CONTACT INFORMATION

Department of Mathematics & Statistics
University of Toledo
Toledo, Ohio, 43606

Funda.Gultepe@utoledo.edu
<http://www.math.utoledo.edu/~fgultepe>
Phone: 419 530 2996

ACADEMIC POSITIONS

- Assistant Professor, University of Toledo. 2018-present.
- Postdoctoral Researcher, University of Luxembourg. 2017-2018.
- MSRI postdoctoral fellow, Geometric Group Theory Program. Fall 2016.
- Visiting Scholar, University of California, Berkeley. Fall 2016.
- Visiting Assistant Professor, University of Illinois at Urbana-Champaign. 2013-2017.
- Graduate Teaching Assistant, University of Oklahoma. 2007-2013.

RESEARCH INTERESTS

Low dimensional topology and geometric group theory and their applications in computational geometry, optimization and robotics.

EDUCATION

- Ph.D., Mathematics, University of Oklahoma, USA. August 2013.
Dissertation: Normal tori in $\sharp_n(S^2 \times S^1)$ and the Dehn twist automorphisms of the free group.
Advisor: Kasra Rafi, Professor of Mathematics, University of Toronto.
- M.Sc., Mathematics, Ankara University (Ankara, Turkey), 2005.
Dissertation: Totally umbilical lightlike submanifolds of semi-Riemannian manifolds.
Advisor: Arif Sabuncuoglu, Emeritus Professor of Mathematics, Ankara University.
- B.Sc., Mathematics, Ankara University (Ankara, Turkey), 2002.

PUBLICATIONS

- Funda Gültepe, Christopher J. Leininger and Witsarut Pho-on. A universal Cannon-Thurston map and the surviving curve complex. *Trans. Amer. Math. Soc. Ser. B* 9 (2022), 99–143.
- Funda Gültepe and Christopher J. Leininger. An arc graph distance formula for the flip graph. *Proc. Amer. Math. Soc.*, 145(7): 3179–3184, 2017.
- Funda Gültepe. Fully irreducible automorphisms of the free group via Dehn twisting in $\sharp_n(S^2 \times S^1)$. *Algebr. Geom. Topol.*, 17(3): 1375–1405, 2017.
- Funda Gültepe. Normal tori in $\sharp_n(S^2 \times S^1)$. *Topology Appl.*, 160(8):953–959, 2013.

PREPRINTS

- Funda Gültepe and Hugo Parlier. The coarse geometry of hexagon decomposition graphs. [Arxiv Preprint](#), submitted.
- Pritam Ghosh and Funda Gültepe. Geometry of extensions of free groups via automorphisms with fixed points on the complex of free factors. [Arxiv Preprint](#), submitted.
- Pritam Ghosh and Funda Gültepe. Relative hyperbolicity of free extensions of free groups. [Arxiv Preprint](#), submitted.
- Pritam Ghosh and Funda Gültepe. A combination type construction of convex cocompactness in $\text{Out}(F_n)$ (Submitted)

IN PREPARATION

- Funda Gültepe. Hyperbolicity and non-hyperbolicity of some $\text{Aut}(F_n)$ graphs.

TEACHING EXPERIENCE

- Topics in Mathematical Sciences: Computational Topology and Geometry (Fall 2022), Toledo.
- Topology (Masters level) (Fall 2021, Spring 2022, Fall 2023, Spring 2024), Toledo.
- Calculus I, (Summer 2021), Toledo.
- Algebra (Phd level) (Fall 2020, Spring 2021), Toledo.
- Topics in Mathematical Sciences: Combinatorial Optimization on Surfaces, (Summer 2019), Toledo.
- Topics in Mathematical Sciences: Surfaces, Mapping Class group and Curve Complex (Spring 2019), Toledo.
- Introduction to Algebra (Spring 2019, Spring 2024), Toledo.
- Abstract Algebra I (Fall 2018, Fall 2019), Toledo.
- Analysis 1 (Fall 2017), Luxembourg.
- Honors Calculus 3 (Spring 2017), UIUC.
- Introduction to Differential Equations (UIUC: Fall 2015, Spring 2016, Toledo: Fall 2020, Spring 2021, Fall 2022, Fall 2023).
- Fundamentals of Mathematics (Spring 2015, Summer 2016), UIUC.
- Applied Complex Variables (Summer 2014, Fall 2014), UIUC.
- Calculus 3, Calculus 2 (UIUC: Fall 2013, Spring 2014, Toledo: Spring 2020, Spring 2022).
- College Algebra (Fall 2010, Spring 2011, Spring 2013), OU.
- Business Calculus (Spring 2009), OU.

AWARDS, GRANTS AND HONORS

- City of Toledo Youth Programming Grant (For Math Corps UToledo Super Saturdays Data Science Program, as PI), Spring 2024, \$30,000.
- Greater Toledo Community Foundation Grant (For MathCorps UToledo Summer Camp), Summer 2024, \$61,649.00
- AMS Young Scholars Program Epsilon grant (For MathCorps UToledo Program, as PI), Summer 2023, \$4500 (PI Declined to accept).
- Connecting Kids to Meals, free lunch and breakfast to support MathCorps UToledo Summer camp, 2022.
- City of Toledo Youth Programming Grant (For Math Corps Toledo Summer Program, as PI), Summer 2022, \$20,000.
- NSF LEAPS-MPS Research grant DMS-2137611 January 2022- December 2024, \$165,590.
- MSRI postdoctoral Fellowship, 2016.
- University of Oklahoma Graduate College Robberson Travel Grant, 2013.
- University of Oklahoma Lissa Cy Wagner Scholarship, 2012.
- University of Oklahoma Mathematics Department Graduate Achievement Award, 2012.
- University of Oklahoma College of Arts and Sciences Fellowship, 2007–2012.
- University of Oklahoma Department of Mathematics Fellowship, 2007–2010.
- Scientific and Technological Research Council of Turkey (TUBITAK) Ph.D. Scholarship, 2006.

STUDENTS AND MENTEES

- Jagerynn Verano, University of Illinois in Chicago, 2022-2023, AWM mentoring program mentee (Graduate student).
- Deanna Perez, California State University, Fullerton, 2021-2022, AWM mentoring program mentee (Undergraduate student).
- Amanda Cowell, University of Toledo, 2019–2020, Topological Data Science (Masters student)

CONFERENCE TALKS

- AMS sectional meeting, University of Wisconsin Milwaukee, April 2024.
- Spring Topology and Dynamics Conference, UNC Charlotte, March 6-9, 2024.
- Beyond Hyperbolicity Conference, OSU, Ohio, June 30, 2021
- AMS sectional meeting, Binghamton, October 12-13, 2019.
- Conference on Outer Space, University of Bielefeld, Germany, September 2019.

- Joint Mathematical Meeting, Baltimore, January 2019.
- ANR Structures on Surfaces (ANRSoS) meeting, University of Luxembourg. November 21-22, 2018.
- Mini course: Introduction to mapping class group I &II, ANRSoS kickstart meeting, Nancy, France. May 2-3, 2018.
- Iberoamerican Congress of Mathematics, Valladolid, Spain. January 21-24, 2018.
- Canadian Mathematical Society (CMS) winter meeting 2017, University of Waterloo. December 8-11, 2017.
- Weihnachtsworkshop, University of Saarlandes, Germany. December 18-20, 2017.
- IAS Women and Mathematics Program, Research Seminar talk, May 2017
- Tech Topology Conference Lightning Talks, Georgia Institute of Technology. December 2016.
- Tech Topology Conference Lightning Talks, Georgia Institute of Technology. December 2015.
- Groups, Geometry and Dynamics Day, Purdue University. November 21, 2015.
- Geometric and Probabilistic Methods in Group Theory and Dynamical Systems, Texas A&M University. November 9-12, 2015.
- Spring Topology and Dynamics Conference, Bowling Green University. May 14, 2015.
- Midwest Young Geometric Group Theory Workshop, University of Wisconsin, Madison. November 1, 2014.
- Spring Topology and Dynamics Conference, CCSU, Connecticut. March 23-25, 2013.
- G^3 conference, South Padre Island, Texas March 21-24, 2013.
- Cooldown workshop on groups of automorphisms of free group, CRM Barcelona. November 19-23, 2012.
- Redbud Topology Conference, University of Oklahoma. November 3, 2012.
- Topology Students workshop, Georgia Institute of Technology. June 10-15, 2012.
- OSU Workshop on the Torelli group, Mapping class group, and $\text{Out}(F_n)$, Columbus, Ohio. May 2-6, 2011.

SEMINAR TALKS

- Geometry and Topology seminar, Middle East Technical University, May 20, 2023.
- General seminar, Middle East Technical University, December 21, 2023.
- American Legion Toledo Chapter, Invited talk about Math Corps at UToledo. November 2022.
- Geometry and Topology Seminar, Columbia University, October 28, 2022.
- Dynamics Seminar, University of Wisconsin, Madison, November 15, 2021
- Geometry and Topology Seminar, University of Virginia, September 7, 2021.
- Topology Seminar, Middle East Technical University, Ankara, Turkey, December 23, 2019.
- Geometry and topology seminar, SUNY Buffalo, November 15, 2019.
- Geometry and Analysis Seminar, University of Central Michigan, November 8, 2019.
- Geometry Seminar, University of Luxembourg, Luxembourg, September 30, 2019.
- Colloquium, Bowling Green State University, April 2019.
- Algebra Seminar, University of Toledo, November 22 and 29, 2018.
- Differential Equations and nonlinear analysis seminar, University of Toledo. November 22 and 29, 2018.
- Hyperbolic Lunch talk, University of Toronto, Canada. December 13, 2017.
- Geometry and Topology seminar, University of Luxembourg. November 29, 2017.
- Geometry and Topology seminar, Middle East Technical University, Turkey. November 6, 2017.
- University of Toledo, Colloquium, April 2017.
- Rice University Topology Seminar, April 2017.
- Post-doc seminar, MSRI. October 14, 2016.
- Geometry Seminar, Indiana University Bloomington, Indiana. April 7, 2016.
- Geometry and Topology seminar, University of Oklahoma. March 25, 2015.
- Geometry and Topology Seminar, Brown University, Rhode Island. January 30, 2013.

RESEARCH VISITS

- AIM Invariants of free by cyclic groups, October 2023.
- SLMath (MSRI), August 2023.
- ICERM, Brown University, July 2023.
- CIRM Marseille, France, May 2022.
- Rice University, March 2022.
- ICERM, Brown University, November 2019.
- University of Luxembourg, September 2019.
- University of Illinois, Urbana–Champaign, March 2019.
- CIRM Marseille, France, May 2018.
- Warwick University, March 2018 and April 2018.
- University of Toronto, December 2018

SYNERGISTIC ACTIVITIES AND OUTREACH

- Co-organizer of Korkmaz Birthday Conference: Mapping class groups and beyond, Middle East Technical University, Ankara, Turkey. May 2025.
- Co-organizer of Special Session at the AMS Fall 2024 Central Sectional meeting: The gateway to Social Justice, September 14-15, 2024.
- Co-organizer of Buckeye Metric Geometry Workshop; Ohio State University, August 16-18, 2024.
- Founding and Executive director of MathCorps Super Saturdays Data Science Program for high school students, Spring 2024.
- Judge, data challenge at Rowdy Datathon 28-29 October 2023, University of Texas San Antonio.
- NSF panelist, 2023.
- Co-Organizer of Saturday Morning Science meetings, 2023–
- Founding Director of the Toledo site of Math Corps, a mathematics enrichment program for middle school and high school students, Starting Summer 2022. (Sponsored by Math Corps non-profit, NSF grant DMS-2137611, the City of Toledo, Connecting Kids to Meals and Greater Toledo Community Foundation.)
- Team head of the project “Shortest Paths for Robots” in NSF University of Akron/University of Toledo I-Corps Program, Spring 2022. Mentored by Priscilla Diem, NASA.
- Co-Organizer of 55th Spring Topology and Dynamics Conference, Geometric group Theory Session, March 9-13, 2022.
- Co-Organizer of BGSU-UT Joint Geometry and Topology Seminar.

- Mentor for Association of Women in Mathematics (AWM) mentorship program.
- Referee for journals Algebraic and Geometric Topology, European Journal of Combinatorics, Proceedings for Beyond Hyperbolicity/ Artin groups, CAT(0) geometry and related topics, Reviewer for MathSciNet and Zentralblatt.

LANGUAGES

- Turkish(Native), English (Fluent), Spanish (Advanced), French (Intermediate).