

Curriculum Vitae

BÜLENT TOSUN

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Education/Employment

2022 – Associate Professor of Mathematics, University of Alabama
2016 – 2021 Assistant Professor of Mathematics, University of Alabama
2013 – 2017 Whyburn Research Instructor in Mathematics, University of Virginia
2012 – 2013 CRM Postdoc, UQAM, Montreal
2009 – 2012 Research/Teaching Assistant Georgia Institute of Technology, Mathematics
2009 – 2012 Ph.D. Georgia Institute of Technology, Mathematics (advisor: John B. Etnyre)
2001 Sc.B Yüzüncü Yil University, Mathematics (rank first in Arts & Sciences)

Appointments / Visiting positions

2023-2024 Member, Institute for Advanced Study, Princeton, USA.
Fall 2019 Visiting Scholar, CRM/CIRGET, Montreal, Canada.
Summer 2014 Visiting Researcher, Max-Planck Institute, Bonn, Germany.
Spring 2007 Member, Mathematical Sciences Research Institute, UC Berkeley, USA.

Scientific/Academic honors, grants

2023 – 2024 Simons Fellow in Mathematics (~ \$120,000)
2022 – 2027 National Science Foundation CAREER Grant (\$440,428)
2021 – 2024 National Science Foundation Grant (\$156,405, DMS-2105525)
2019 – 2024 Simons Foundation Collaboration Grant (\$42000, BT-636841)
9/2019 CRM-Simons Scholar-in-Residence in Montreal, Canada.
2018 The 2018 Lewis-Parker Lecture.
2018 – 2019 SEC Faculty Travel Grant
2014 – 2017 AMS-Simons Travel Grant
2009 Turkish Scientific and Technological Research Council (TUBITAK) Scholarship

Research interests

Low dimensional topology, Symplectic and contact geometry, Heegaard-Floer homology. Symplectic and holomorphic convexity.

Publications

Published or to appear or submitted

1. Fillable contact structures from positive surgeries (with T. Mark). Submitted, 2023.
2. On contact type hypersurfaces in 4-space (with T. Mark).
Inventiones Mathematicae **228**, 493-534, 2022.
3. Homology spheres bounding acyclic manifolds and symplectic fillings (with J. Etnyre).
Michigan Mathematical Journal. DOI : 10.1307/mmj/20206003, 2022.

4. Stein Domains in \mathbb{C}^2 with prescribed boundary.
Advances in Geometry **22(1)**, 9-22, 2022.
5. Mazur-type manifolds with L -space boundary (with J. Conway).
Math Research Letters, **27(1)**, 35-42, 2020.
6. Tight small Seifert fibered spaces with $e_0 = -2$.
Algebraic & Geometric Topology **20(1)**, 1-27, 2020.
7. Symplectic fillings, contact surgeries and Lagrangian discs (with J. Conway and J. Etnyre).
International Mathematics Research Notices, **2021(8)**, 6020-6050, 2021.
8. Obstructing pseudo-convex embeddings and contractible Stein fillings of Brieskorn spheres (with T. Mark).
Advances in Mathematics **335**, 878-895, 2018.
9. Naturality of Heegaard Floer invariants under positive rational contact surgery (with T. Mark).
Journal of Differential Geometry, **110(2)**, 281-344, 2018.
10. Hyperbolic rational homology spheres not admitting fillable contact structures (with A. Kaloti).
Math Research Letters **24(6)**, 1693-1705, 2017.
11. On the Legendrian and transverse classification of cablings.
Math Research Letters **20(4)**, 787-803, 2013.
12. Legendrian and transverse cables of positive torus knots (with J. Etnyre and D. LaFountain).
Geometry & Topology **16**, 1639-1689, 2012.

In progress

1. (**REU paper**) Unknotted curves on Seifert surfaces (with V. King, C. Shaw, S. Dey).
2. Legendrian knots in overtwisted manifolds (with P. Cahn).
3. Tight surgeries on torus knots (with J. Etnyre and H. Min).
4. Contact geometry of Seifert fibered spaces (with J. Etnyre).
5. Symplectic convexity in complex projective plane with prescribed boundary (with T. Mark).
6. (Book Project) Lectures on convex surface theory (with J. Etnyre).

Lecture series and presentations (78 total)

Lecture series

- 2019 Oct. CIRGET, Montreal: Stein domains in \mathbb{C}^2 with prescribed boundary and Symplectic Rigidity [3 lectures]
- 2019 May. Louisiana State University: Stein domains in \mathbb{C}^2 . [2 lectures]
- 2016 Oct. University of Alabama: Symplectic and contact geometry in low dimensions [5 lectures]
- 2012 Aug. Georgia Institute of Technology: Geometry and topology of 3-manifolds, Heegaard-Floer homology and interactions [15 lectures]

Invited conferences

- 2022 Apr. ICERM at Brown University: Braids in Low Dimensional Topology
- 2022 Mar. (VIRTUAL) Banff International Research Station, Canada: Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4.
- 2021 Apr. (VIRTUAL) Cincinnati, USA: Legendrian Knots and Surfaces, AMS Meeting.
- 2020 Jun. Dubrovnik, Croatia: Holomorphic Curves and Low Dimensional Manifolds (Cancelled due to COVID-19).
- 2020 Jun. Banff International Research Station, Canada: Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4 (Done virtually due to COVID-19).
- 2018 Jul. Austin, USA: The Topology and Geometry of Low Dimensional Manifolds: A Celebration of the Mathematics of Bob Gompf.
- 2018 Jun. Dubrovnik, Croatia: Geometric Structures on 3- and 4- Manifolds.
- 2018 Feb. Alabama, USA: The Lewis-Parker Lecturer at the 68th Annual Meeting of the AACTM.
- 2017 Jun. Gökova, Turkey: 24th Gökova Geometry and Topology Conference.
- 2016 Apr. Arkansas, USA: The 41st Spring Lecture Series at the University of Arkansas.
- 2016 Mar. Georgia, USA: Low-Dimensional Topology, AMS Meeting, UGA.
- 2015 Apr. Nevada, USA: Contact Geometry and Low-Dimensional Topology, AMS Meeting, UN.
- 2014 Mar. Virginia, USA: 48th Spring Topology and Dynamics Conference.
- 2013 Oct. Pennsylvania, USA: Contact and Symplectic Topology, AMS Meeting, Temple U.
- 2011 Dec. Georgia, USA: 1st Tech Topology Conference, Georgia Tech.
- 2011 Oct. North Carolina, USA: Low Dimensional Topology, AMS Meeting, WFU.
- 2011 Apr. Michigan, USA: 9th Graduate Student Topology and Geometry Conference, MSU.

Invited seminar talks

- 2023 March. University of South Alabama, Geometry-Topology Seminar
- 2023 March. University of South Alabama, Colloquium
- 2021 Apr. Western Hemisphere Symplectic Geometry Seminar.
- 2021 Apr. Northern California Symplectic Geometry Seminar–Joint seminar of Berkeley-Santa Cruz-Davis-Stanford
- 2020 Dec. METU Geometry Seminar
- 2020 Nov. Brandeis University –Brandeis Topology Seminar
- 2020 Nov. The Renyi Institute, Budapest. Algebraic Geometry and Differential Topology Seminar
- 2020 Mar. Georgia Joint Topology Seminar – joint seminar of Georgia Tech and UGA
- 2019 Dec. University of Virginia, Geometry Seminar

- 2019 Nov. PATCH – Philadelphia Area Topology Seminar – joint seminar of UPenn, Bryn Mawr and Temple
- 2019 Oct. Dartmouth College, Topology Seminar
- 2019 Sep. CIRGET/UQAM, Topology Seminar
- 2019 July. IAS Park City Summer School for Undergraduate Faculty Program (2 talks)
- 2019 Apr. University of Texas, Austin Topology Seminar
- 2019 Feb. Duke University, Triangle Topology Seminar
- 2018 Dec. Middle East Technical University, Topology Seminar
- 2018 Nov. University of Buffalo, Topology Seminar
- 2018 Jun. MSGSU, Istanbul, General Seminar
- 2018 May. Georgia Institute of Technology, Geometry-Topology Seminar
- 2018 Mar. University of Virginia, Geometry Seminar
- 2018 Mar. Louisiana State University, Topology Seminar
- 2017 Nov. University of Massachusetts, Amherst, Topology Seminar
- 2017 Mar. University of California Berkeley, Topology Seminar
- 2017 Mar. University of California Berkeley, Introductory Topology Seminar
- 2016 Dec. Middle East Technical University, Topology Seminar
- 2016 Nov. University of Iowa, Topology Seminar
- 2016 Nov. University of Buffalo, Topology Seminar
- 2016 Oct. Georgia Institute of Technology, Geometry-Topology Seminar
- 2016 Oct. University of Virginia, Geometry Seminar
- 2016 Apr. University of Alabama, Colloquium
- 2016 Mar. Michigan State University, Topology Seminar
- 2016 Feb. University of Virginia, Geometry Seminar
- 2015 Aug. University of Virginia, Geometry Seminar
- 2015 Apr. Georgia Institute of Technology, Geometry-Topology Seminar
- 2015 Feb. University of Virginia, Geometry Seminar
- 2014 May. Max-Planck institute, Geometry-Topology Seminar
- 2013 Dec. Middle East Technical University, Topology Seminar
- 2013 Nov. University of Virginia, Geometry Seminar
- 2013 Oct. Georgia Institute of Technology, Geometry-Topology Seminar
- 2013 Apr. Université de Montréal, Symplectic Geometry Seminar
- 2012 Oct. LSU/Iowa/Rice Joint Virtual Topology Seminar (at LSU)
- 2012 Oct. Louisiana State University, Topology Working Seminar
- 2012 Oct. CIRGET, Low Dimensional Topology Seminars (4 talks)
- 2012 Apr. Massachusetts Institute of Technology, Geometry-Topology Seminar
- 2011 Nov. University of Texas, Austin Topology Seminar
- 2011 Nov. University of Minnesota, Differential Geometry Seminar
- 2011 May. Middle East Technical University, Topology Seminar
- 2011 Apr. Duke University, Topology Seminar
- 2011 Mar. Columbia University, Symplectic and Gauge Theory Seminar

2010 Dec. Middle East Technical University, Topology Seminar

2009 Nov. University of Buffalo, Topology Seminar

Outreach talks

2019 Feb GREX Research Talk: Low Dimensional Geometric Topology

2018 Feb GREX Research Talk: Smooth Manifold Topology

2018 Apr. Pi Mu Epsilon talk at UA: Knots and their invariants

2016 Sep. Undergrad Math Club at UA: A glimpse of knot theory in arts, sciences and mathematics

Professional Service

Administrative

2022 Panelist–Simons Foundation Collaboration Grants

2022 Panelist/Reviewer–National Science Foundation

2021 Panelist–Simons Foundation Collaboration Grants

Organizing activities (conferences, meetings)

2023 April Co-organizer (with Tom Mark and Laura Starkston): An international workshop on “Symplectic and Holomorphic Convexity” at Banff International Research Station, Banff, Alberta, Canada, from April 9-14, 2023

2022 June-July Organizer “2022 Topology REU at the University of Alabama”

2022 October Co-organizer (with Hannah Turner and Jon Simone): A special session on “Interactions between 3-manifolds and 4-manifolds”, AMS Fall meeting at University of Tennessee.

2021 November Co-organizer (with Angela Wu and Sam Lisi): A special session on “Low dimensional symplectic and contact topology, their invariants and interactions”, AMS Fall meeting at University of South Alabama.

2019 March Organizer of a Public Lecture at the University of Alabama– the distinguished speaker was Prof. Karen Parshall–Commonwealth Professor of History and Mathematics at the University of Virginia.

2019 February Co-organizer of a Public Lecture at the University of Alabama– the distinguished speaker was Prof. Ken Ono–Jefferson Professor of Mathematics at the University of Virginia.

2019 March Co-organizer (with John Etnyre and Shea Vela-Vick): A special session on “Geometry and Topology of low dimensional manifolds and their invariants”, AMS Spring meeting at Auburn University.

2015 March Co-organizer (with Tom Mark and Cagatay Kutluhan): A special session on “Geometric structures on low dimensional manifolds and their invariants”, AMS Spring meeting at Georgetown.

Journals and AMS publications refereed

Geometry & Topology
 Journal of Differential Geometry
 Geometry & Topology Monographs
 Quantum Topology
 Pacific Journal of Mathematics
 Michigan Mathematical Journal
 Algebraic & Geometric Topology
 Proceedings of the American Math Society
 Topology and Its Applications
 Proceedings of the Gökova Geometry-Topology Conference
 Proceedings of Knots in Poland
 Journal of Knot Theory and Its Ramifications
 Journal of Symplectic Geometry

Teaching awards/recognition

- 2022 My teaching was highlighted in the book: “Inclusive College Classrooms” by Drs. Cardon and Womack.
 2012 Award from the “Thank a Teacher” program at Georgia Institute of Technology, Center for the Enhancement of Teaching and Learning (Math 2403)
 2011 Award from the “Thank a Teacher” program at Georgia Institute of Technology, Center for the Enhancement of Teaching and Learning (Math 1712)

Teaching activities**Courses taught at Alabama**

- 2023 Spring Discrete Mathematics (Math 301)
 2022 Fall Introduction to General Topology (Math 465/565)
 2022 Spring Applied ODE (Math 238)
 2022 Spring Introduction to Algebraic Topology (Math 466/566)
 2021 Fall Discrete Mathematics (Math 301)
 2021 Fall Applied ODE (Math 238)
 2021 Spring Discrete Mathematics (Math 301)
 2021 Spring Topics in Topology (Math 661)
 2020 Fall Discrete Mathematics (Math 301) (Course Coordinator)
 2020 Fall Introduction to General Topology (Math 465/565)
 2020 Summer Discrete Mathematics (Math 301)
 2020 Spring Topics in Topology (Math 661)
 2020 Spring Discrete Mathematics (Math 301)
 2019 Spring Discrete Mathematics (Math 301)
 2019 Spring Introduction to Algebraic Topology (Math 466/566)
 2018 Fall Honors Calculus II (Math 146)
 2018 Fall Discrete Mathematics (Math 301)

- 2018 Spring Discrete Mathematics (Math 301)
- 2018 Spring Applied ODE (Math 238)
- 2017 Fall Applied ODE (Math 238)
- 2017 Fall Calculus II (Math 126)
- 2017 Spring Introduction to Algebraic Topology (Math 466/566)
- 2017 Spring Calculus I (Math 125)
- 2016 Fall Calculus II (Math 126)

Courses taught at Virginia

- 2016 Spring Calculus on Manifolds (Math 5331)
- 2016 Spring Linear Algebra (Math 3351)
- 2016 Fall Topics in Geometry and Topology (Math 8850)
- 2015 Spring Calculus on Manifolds (Math 5331)
- 2015 Fall Differential Equations (Math 3250)
- 2013 Fall Complex Analysis and Its Applications (Math 3340)

Courses taught at McGill

- 2013 Winter Honors Algebra (Math 326)

Courses taught at Georgia Tech

- 2012 Spring Differential Equations (Math 2403)
- 2011 Fall Survey of Calculus II (Math 1712)

Recitations led at Georgia Tech

- 2012 Summer Calculus II (Math 1502)
- 2010 Fall Calculus III (Math 2401)
- 2009 Spring Differential Equations (Math 2403)

Seminars organized

- 2017 Spring Algebra-Topology Seminars (at University of Alabama)
- 2013 Fall Low dimensional topology working seminars (at University of Virginia)
- 2012 Fall Low dimensional topology working seminars (at CIRGET – Montreal)
- 2012 Spring Research Horizons Seminar (at Georgia Institute of Technology)
- 2011 Fall Research Horizons Seminar (at Georgia Institute of Technology)
- 2009 Fall Topology graduate student seminar (at Georgia Institute of Technology)

Mentoring activities**Postdoc mantees**

- 2021– Subhankar Dey

Ph.D. Dissertation Committees

- 2020–2021 (Co-chair) Michael Vaughan (jointly with Dr. Kyungyong Lee)
- 2022– (Member) Blake Jackson – University of Alabama
- 2022– (Member) Brittany Burdette – Joint Applied PhD Program UA/UAB/UAH
- 2018–2019 (Member) Tim Homan – University of Alabama
- 2020–2021 (Member) Sandeep Vejandla – Joint Applied PhD Program UA/UAB/UAH
- 2019–2021 (Member) Evan Lee – University of Alabama
- 2020– (Member) Anna Keefe – University of Alabama

Accelerated Masters Program Projects

- 2021-2022 Ricky Johnson

College/University service

- 2020–2023 Elected member of Faculty Senate (2020–2023)

Departmental service**Departmental committees at Alabama**

- 2018–2020 Faculty Mentor for Putnam Exam
- 2016–2017 Action Plan Committee
- 2018– Colloquium Committee
- 2017– Organizer of Algebra-Topology Seminars
- 2020– Co-Advisor for Accelerated Masters Program Students

Departmental committees at Virginia

- 2013–2016 Faculty Mentor for Putnam Exam