Çağrı Karakurt

CONTACT INFORMATION

Department of Mathematics
Boğaziçi University
Bebek, İstanbul, TR-34342, Turkey

Phone: + 90 (212) 359 4526
E-mail: cagri.karakurt@boun.edu.tr

EDUCATION

Ph.D. in Mathematics,
Michigan State University, East Lansing, Michigan, USA, May 2010
Thesis Supervisor: Selman Akbulut

M.S. in Mathematics,
Middle East Technical University, Ankara, Turkey, 2005.
Thesis Supervisor: Turgut Önder

B.S. in Mathematics Middle East Technical University, 2003.
Ranked first in the Faculty of Arts and Sciences

B.S in Physics Middle East Technical University, 2003.

RESEARCH INTERESTS

Low dimensional topology, symplectic geometry, contact geometry, Heegaard-Floer homology.

POSITIONS

Professor, Boğaziçi University, 2022-Present

Visiting Researcher, The University of Texas at Austin, 2021-2022.

Associate Professor, Boğaziçi University, 2016-2022

Assistant Professor, Boğaziçi University, 2014-2016

Simons Instructor, The University of Texas at Austin, 2010-2014

Teaching Assistant, Michigan State University, 2005-2010

Teaching Assistant, Middle East Technical University, 2003-2005

PUBLICATIONS

1. (Joint with S. Akbulut) *Every 4-Manifold is BLF*, J. Gökova Geom. Topol. GGT 2 (2008), 83–106.
2. *Contact Structures on Plumbed 3-manifolds.* Kyoto J. Math., 54(2):271–294, 2014.
3. (Joint with S. Akbulut) *Action of the Cork Twist on Floer Homology*, Proc. of GGT/2011, Int. Press (2012) 42-52.
4. (Joint with S. Akbulut) *Heegaard Floer Homology of Some Mazur Type Manifolds.* Proc. Amer. Math. Soc. 142 (2014), no. 11, 4001-4013.
5. (Joint with M. B. Can) *Calculating Heegaard Floer Homology by Counting Lattice Points in Tetrahedra* Acta Math. Hungar., 144 no. 1, (2014), 43-75. DOI: 0.1007/s10474-014-0432-2.

6. (Joint with T. Lidman) *Rank Inequalities for the Heegaard Floer Homology of Seifert homology spheres*, Trans. of AMS 367 (2015) no. 10, 7291-7322. http://dx.doi.org/10.1090/S0002-9947-2014-06451-9. (Awarded by BUVAK and TUBITAK)

7. (Joint with L. Starkston) *Surgery along star shaped plumbings and exotic smooth structures on 4-manifolds*, Algebraic & Geometric Topology 16-3 (2016), 1585–1635. DOI 10.2140/agt.2016.16.1585. (Awarded by BUVAK and TUBITAK)

8. (Joint with J. Hom and T. Lidman) *Surgery obstructions and Heegaard Floer homology*, Geometry & Topology 20-4 (2016), 2219–2251. DOI: 10.2140/gt.2016.20.2219. (Awarded by BUVAK and TUBITAK)

9. (Joint with T. Oba and T. Ukida) *Planar Lefschetz fibrations and Stein structures with distinct Ozsvath-Szabo invariants on corks*, Topology and its Applications 221C (2017) pp. 630-637. DOI: 10.1016/j.topol.2017.02.072. (2 citations, SCI-E)

10. (Joint with F. Öztürk) *Contact structures on AR singularity links.* Int. J. Math. 29, 1850019 (2018) [21 pages] https://doi.org/10.1142/S0129167X18500192

11. (Joint with E. Tweedy and T. Lidman) *Heegaard Floer Homology and Splicing Homology Spheres* Math. Res. Lett. 28 (2021), no. 1, 93–106

12. (Joint with A. Çengel) *Partial Fiber Sum Decompositions and Signatures of Lefschetz Fibrations*, Topology Appl. 270 (2020), 106937, 17 pp.

13. (Joint with O. Şavk) *Ozsváth-Szabó d-invariants of almost simple linear graphs*, J. Knot Theory Ramifications 29 (2020), no. 5, 2050029, 17 pp.

14. (Joint with A. Akhmedov and S. Sakallı) Generalized Chain Surgeries and Applications. J. Symplectic Geom. 19 (2021), no. 5, 1047–1069.

15. (Joint with O. Şavk)*Almost simple linear graphs, homology cobordism and connected Heegaard Floer homology*, preprint 2022. Accepted by Acta Mathematica Hungarica.

PROJECTS

As Principal Investigator
- TUBITAK BIDEB-2219 Fellowship, 2021.
- Boğaziçi University Research Grant BAP, Feb 2017- Jan. 2020.
- TUBITAK BIDEB-2232 Fellowship, Dec. 2014 - Nov. 2016.
- NSF Focused Research Group Grant:*Topology and Invariants of Smooth 4-Manifolds*, 2011-2014. (Co-PI with S. Akbulut, A. Akhmedov, F. Arikan, W. Chen, Y. Eliashberg, T-J Li, D. Ruberman, N. Saveliev).

Other Projects Involved
- (as host at Boğaziçi) TUBITAK BIDEB-2236, 2021-Present, Principal Investigtor: Umut Varolgüneş
- (as mentor of post-doc) TUBITAK BIDEB-2218, July 2018-August 2020, Principal Investigator: Adalet Çengel.
- (as outside researcher) TUBITAK ARDEB-3001, June 2018- May 2020, Principal Investigator: A. S. Demir.

ICTP Associate 2022.

Fulbright Fellowship, 2021.

Science Academy's Young Scientist Award (BAGEP), 2018

BUVAK akademik teşvik Ödülü, 2016.

Associate professorship from YÖK, October 2015.

MSU CNS Dissertation Completion Fellowship, Summer 2010.

Waiver of teaching duties (under NSF grant of Selman Akbulut), Spring 2006, Spring 2007.

Turkish Scientific and Technological Research Council (TUBITAK) Undergraduate Scholarship 2000-2003

- Max Planck Institute, 2011, 2014, and 2020.
- Institut des Hautes Études Scientifiques, 2012.

- Topology Seminar, University of Alabama, March 2022.
- Topology Seminar, University of Texas at Austin, September 2021.
- Max Planck Institute, Bonn, January 2019.
- Ulusal Matematik Sempozyumu, September 2017, and 2018.
- CMC-2, Van, August 2017.
- BIRS Workshop "Low Dimensional Topology and Gauge Theory", in Oaxaca, August 2017.
- Geometry/ Topology Working Day VI, December 2016.
- General Seminar, Mimar Sinan University, April 2015, October 2016, November 2016.
- Research Seminar, Galatasaray University, December 2015
- Mathematics Colloquium, Koç University, April 2015.
- Math department seminar, İstanbul Ticaret Üniversitesi, February 2015.
- Workshop on Algebraic and geometric topology (Turgut Önder's 65th Birthday), ODTÜ, January 2015.
- Algebraic geometry and differential topology seminar, Alfred Rényi Institute, November 2014.
- Workshop on contact topology, Hacettepe University, October 2014.
- Topology Seminar, The University of Virginia, February 2014
- Geometry Seminar, Tulane University, February 2014
- Gökova Geometry Topology Conference, May 2008, 2012, 2013, and 2014.
- Topology Seminar, Caltech, April 2013, and April 2011.
- FRG Workshop on Topology and Invariants of Smooth 4-Manifolds, Miami, March 2012, 2013, and 2014.

- Workshop on Invariants in Low-Dimensional Topology and Knot Theory, MFO Oberwolfach June 2012.
- Postdoctoral Meeting, Simons Center for Geometry and Physics, April 2012.
- Topology Seminar, Rice University, March 2012.
- Texas Geometry and Topology Conference, UT Austin, October 2011.
- Topology Seminar, UGA, April 2011.
- Geometry Topology Seminar, Georgia Tech, April 2011.
- Differential Geometry and Symplectic Topology, University of Minnesota, February 2011.
- Institut für Mathematik, Universität Zürich, December 2009.
- Topology Seminar, MSU, September 2009.
- Student Geometry Topology Seminar, MSU, April 2009.

GRADUATE STUDENTS

Ph. D. Students
- Oğuz Şavk

M. Sc. Students
- Doğancan Karabaş, Fall 2015.
- Feride Ceren Köse, Spring 2016.
- Fulya Taştan, Fall 2017.
- Oğuz Şavk, Spring 2018.
- Ferhat Karabatman, Spring 2020.

TEACHING

At Boğaziçi University
- Advanced Calculus I,II (Math 231-234), Fall 2018, 2022 & Spring 2019
- Real Analysis I, II (Math 531-532), Fall 2017 & Spring 2018.
- Calculus II (Math 102), Summer 2017,2019, 2020 Spring 2018, 2019,2021 & Fall 2020.
- Complex Analysis I (Math 338), Spring 2017.
- Topics in Differential Geometry (Math 586), Fall 2015.
- Real analysis I-II (Math 331-332), Fall 2015, Spring 2016.
- Matrix theory (Math 201), Summer 2015, Fall 2017.
- Calculus for math students (Math 131), Spring 2015, 2016, & 2017, Fall 2019.
- Geometric topology (Math 48B), Spring 2015.
- Calculus I (Math 101), Fall 2014, 2015, & 2016.

At UT Austin.
- Matrices and Matrix Calculations (M340L), Summer 2014.
- Advanced Calculus for Applications (M427L), Fall 2012, and Fall 2013.
- Multivariable Calculus (M408M), Fall 2011, and Spring 2014.
- Topology I (M367K), Fall 2010.

As Primary Instructor at Michigan State University

- Survey of Calculus II (MTH 126), Spring 2009, Summer 2009.
- Calculus II (MTH 133), Fall 2008, Summer 2007.
- Differential Equations (MTH 235), Summer 2008.
- College Algebra (MTH 103), Fall 2006 (two sections), Fall 2005.

As Teaching Assistant at Michigan State University
- Calculus II (MTH 133), Fall 2009
- Calculus III (MTH 234), Spring 2008, Fall 2007

As Teaching Assistant at Middle East Technical University
- Calculus II (MATH 120), Spring 2005
- Calculus I (MATH 119), Fall 2004
- Calculus for Math Students II (MATH 154), Spring 2004
- Calculus for Math Students I (MATH 153), Spring 2003

SERVICE   Co-organizer of Silk Road Geometry Conference, June 2017 (with Turgut Önder).

Organizer of GGTI Winter Workshop, December 2017.

Member of "Kantin ve Kafeteryaları Denetleme Komisyonu" in Boğaziçi University, 2017-Present.

Faculty advisor for undergraduate students (class of 2019) of department of mathematics at Boğaziçi University.

Co-organizer of weekly colloquium of department of mathematics at Boğaziçi University 2016-2019 (with Olcay Coşkun ,Ümit Işlak, & Ayhan Günaydın).

Co-organizer of various IMBM geometry-topology workshops.

Co-organizer of Conference on *the Topology and Invariants of 4-Manifolds* , Simons Center for Geometry and Physics, New York, August 2014 (Co-organized with other FRG members).

Co-organizer of Conference on *the Topology and Invariants of Smooth 4-Manifolds* , University of Minnesota, Twin Cities, August 2013. (Other co-organizers: S. Akbulut, A. Akhmedov, W. Chen, T. J. Li)

Co-organizer of Conference on *Holomorphic Curves and Low Dimensional Topology*, Stanford University, August 2012. (Other co-organizers: S. Akbulut, A. Akhmedov, D. Auroux, Y. Eliashberg, P. Ozsváth)

Referee for JEMS, JGGT, PGGT, Quantum Topology, Transactions of AMS, Advances in Mathematics, Topology and Its Applications, Geometry & Topology, Proceedings of the Conference on Low-dimensional Manifolds and Higher-dimensional Categories, Letters in Mathematical Physics.