Curriculum Vitae – Çağatay Kutluhan

Contact Information

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Research Interests Low-dimensional topology, contact and symplectic geometry, gauge theory.

Education

2004 - 2009 Ph.D. in Mathematics, The University of Michigan, Ann Arbor
2000 - 2003 B.S. in Physics, Middle East Technical University (METU), Turkey
1999 - 2003 B.S. in Mathematics, Middle East Technical University (METU), Turkey

Appointments

2013 - Assistant Professor, University at Buffalo, NY
2015 - 2016 Member, Institute for Advanced Study, Princeton NJ
2011 - 2013 NSF Postdoctoral Fellow at Harvard University, MA
2010 - 2011 Ritt Assistant Professor at Columbia University, NY
2009 - 2010 Postdoctoral Research Fellow at MSRI, Berkeley CA
2003 - 2004 Research Assistant, Department of Mathematics, METU, Turkey

Visiting Positions

Institute for Advanced Study, Princeton NJ (July 2017)
Max Planck Institut für Mathematik, Bonn, Germany (July 2011)
Simons Center for Geometry and Physics, Stony Brook, NY (June 2011)

Publications (10) (Joint with Jonathan Hanselman and Tye Lidman) *A remark on the geography problem in Heegaard Floer homology.* **Accepted** for publication in *AMS Proceedings of Symposia in Pure Mathematics.* Preprint available at `arXiv:1506.05020`.

(9) (Joint with Gordana Matić, Jeremy Van Horn-Morris, and Andy Wand) *Algebraic torsion via Heegaard Floer homology.* **Accepted** for publication in *AMS Proceedings of Symposia in Pure Mathematics.* Preprint available at `arXiv:1503.01685`.

(8) (Joint with Steven Sivek, an appendix by Clifford H. Taubes) *Sutured ECH is a natural invariant.* **Accepted** for publication in *Memoirs of the American Mathematical Society.* Preprint available at `arXiv:1312.3600`.

(7) (Joint with Yi-Jen Lee and Clifford H. Taubes) *HF=HM V : Seiberg–Witten Floer homology and handle addition.* **Submitted**. Preprint available at `arXiv:1204.0115`.

(6) (Joint with Yi-Jen Lee and Clifford H. Taubes) *HF=HM IV : The Seiberg–Witten Floer homology/ech correspondence.* **Submitted**. Preprint available at `arXiv:1107.2297`.

(5) (Joint with Yi-Jen Lee and Clifford H. Taubes) *HF=HM III : Holomorphic curves and the differential for the ech/Heegaard Floer homology correspondence.* **Accepted** for publication in *Geometry & Topology*. Preprint available at `arXiv:1010.3456`.

(4) (Joint with Yi-Jen Lee and Clifford H. Taubes) *HF=HM II : Reeb orbits and holomorphic curves for the ech/Heegaard Floer homology correspondence.* **Accepted** for publication in *Geometry & Topology*. Preprint available at `arXiv:1008.1595`.

(3) (Joint with Yi-Jen Lee and Clifford H. Taubes) *HF=HM I : Heegaard Floer homology and Seiberg–Witten Floer homology.* **Accepted** for publication in *Geometry & Topology*, preprint available at `arXiv:1007.1979`.

(2) *Lectures on the equivalence of Heegaard Floer and Seiberg–Witten Floer homologies.* **Published** in *Proceedings of the Gökova Geometry-Topology Conference 2012*, 1–42, Int. Press, Somerville, MA, 2013.

(1) (Joint with Clifford H. Taubes) *Seiberg–Witten Floer homology and symplectic forms on $S^1 \times M^3$*, with Clifford H. Taubes. **Published** in Geom. Topol. **13** (2009), no. 1, 493–525 (electronic).

Preprints

(4) (Joint with Gordana Matić, Jeremy Van Horn-Morris, and Andy Wand) *Spectral order for contact manifolds with convex boundary.* In progress.

(3) (Joint with Gordana Matić, Jeremy Van Horn-Morris, and Andy Wand) *Detecting tightness via spectral order.* In preparation.

(2) (Joint with Gordana Matić, Jeremy Van Horn-Morris, and Andy Wand) *Filtering the Heegaard Floer contact invariant.* Under revision. Current version available at `arXiv:1603.002673`.

(1) *Holonomy filtration and knots in 3-manifolds.* In preparation.

Fellowships and Grants

- Simons Foundation Collaboration Grant for Mathematicians, Award No. 519352 (September 2017 - August 2022)
- American Institute of Mathematics SQuaRE, (January 2017 - December 2019)
- IAS von Neumann Fellowship, (September 2015 - July 2016)
- National Science Foundation Research Grant, NSF DMS-1360293 (August 2013 - July 2017)
- National Science Foundation Postdoctoral Research Fellowship, NSF DMS-1103795 (July 2011 - July 2013)
- MSRI Postdoctoral Research Fellowship, (August 2009 - May 2010)

- The University of Michigan Rackham Graduate School Graduate Student Research Grant, (January - April 2009)
- The University of Michigan Rackham Graduate School Pre-Doctoral Fellowship, (September 2008 - August 2009)

Conference talks / lecture series

2015 Low-dimensional Topology Workshop at Princeton University

2014 CMS Winter Meeting, McMaster University

2013 Workshop "*Interactions of gauge theory with contact and symplectic topology in dimensions* 3 *and* 4", Banff International Research Station

2012 CAST Summer School and Conference, Renyi Institute of Mathematics
Gökova Geometry and Topology Conference (4-hour lecture)
Georgia Topology Conference
FRG Workshop "*Topology and invariants of smooth 4-manifolds*" (4-hour lecture), University of Miami

2011 Conference on Contact and Symplectic Topology, University of Nantes
Istanbul Center for Mathematical Sciences/Koç University Geometry and Topology Seminar (6-hour lecture)
Workshop "*Interactions between contact symplectic topology and gauge theory in dimensions* 3 *and* 4", Banff International Research Station
The University of Michigan Department of Mathematics Geometry RTG Lectures (4-hour lecture)
Izmir Algebraic Geometric Topology Days (2-hour talk)

2010 Special session "*Topology and Symplectic Geometry*", AMS Sectional Meeting at UCLA (1-hour talk)

2009 Workshop "*Interactions of geometry and topology in dimensions* 3 *and* 4", Banff International Research Station

2008 Special session "*Low Dimensional Topology*", AMS Sectional Meeting at Wesleyan University
MSRI Hot Topics Conference "*Contact structures, dynamics and the Seiberg–Witten equations in dimension* 3"

Seminars/ Colloquia

2019 Harvard University Gauge Theory, Topology, and Symplectic Geometry Seminar
The University of Michigan Geometry Seminar

2017 Cornell–Penn State Joint Symplectic Topology Seminar
MIT Geometry and Topology Seimnar
McMaster University Geometry and Topology Seminar

2016 Princeton University/IAS Symplectic Geometry Seminar

2015 Princeton University Topology Seminar
Stony Brook University Seminar on Topology and Symplectic Geometry

Harvard University Gauge Theory, Topology, and Symplectic Geometry Seminar
University of Virginia Mathematics Department Colloquium
Brandeis University Topology Seminar

2013 University of Virginia Geometry Seminar

2012 University at Buffalo Mathematics Department Colloquium
Harvard University Gauge Theory and Topology Seminar

2011 Michigan State University Mathematics Department Colloquium
Koç University Mathematics Department Colloquium

2010 Columbia University Gauge Theory and Symplectic Geometry Seminar

2008 Middle East Technical University Geometry and Topology Seminar
New York Area Joint Symplectic Geometry Seminar at Columbia University
Harvard University Gauge Theory and Topology Seminar
Joint Topology Seminar of UCLA and USC at UCLA
Michigan State University Topology Seminar
Purdue University Geometric Analysis Seminar
The University of Michigan Geometry Seminar

Teaching Experience

- MTH 628: Algebraic Topology, Spring 2019
- MTH 743: Topics in Differential Geometry (Symplectic Geometry), Fall 2018
- MTH 835: Topics in Geometry (Instanton Floer homology), Fall 2017
- MTH 241: College Calculus III, Spring 2017, Spring 2018
- MTH 627: Differential Topology, Fall 2016, Fall 2017, Fall 2018
- MTH 827: Topics in Topology (Seiberg–Witten theory), Fall 2014
- MTH 636: Differential Geometry, Spring 2014
- MTH 142: College Calculus II, Fall 2013, Fall 2014

Service

- Referee for *Geometry & Topology*, *Inventiones Mathematicae*, and *Proceedings of the National Academy of Sciences*. Reviewer for *AMS Mathematical Reviews*.
- Organizer of the Geometry and Topology Seminar at the University at Buffalo (since Fall 2013).
- Co-organizer of CMS Winter Meeting 2016 Special Session "*Geometry and Topology in Low Dimensions: Interactions with Floer theory*" .
- Co-organizer of AMS Special Session in March 2015 "*Geometric Structures on Low-dimensional Manifolds and Their Invariants*" at Georgetown University.

- Co-organizer of "*Knots, braids, and mapping classes*" a conference in honor of Bill Menasco's 60th birthday in May 2015.
- Graduate Studies Committee member at UB Mathematics Department (since Fall 2013).
- PhD thesis advisor of Subhankar Dey and Hakan Doğa.
- PhD thesis committee member of Watchareepan Atiponrat (defended April 2015), Xiao Wang (defended May 2017), Charles Cain (ongoing), Xifeng Jin (ongoing), Minh Quang-Le (ongoing), and Mark Sullivan (ongoing).

References

Bernard Badzioch	badzioch@buffalo.edu (Teaching)
Peter Kronheimer	kronheim@math.harvard.edu
Ciprian Manolescu	cm@math.ucla.edu
Peter Ozsváth	petero@math.princeton.edu
Clifford H. Taubes	chtaubes@math.harvard.edu