

# Maggy Tomova

Department Executive Officer and Professor of Mathematics  
College of Liberal Arts and Sciences  
Curriculum Vitae

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## EDUCATION AND PROFESSIONAL HISTORY

### Higher Education

2005            **Ph.D.**, Mathematics, University of California, Santa Barbara  
1999            **B.S.**, Mathematics and Biochemistry, California Lutheran University

### Professional and Academic Positions

2017 – present    **Professor and DEO**, Mathematics, University of Iowa  
2012 – 2017      **Associate Professor**, Mathematics, University of Iowa  
2008 – 2012      **Assistant Professor**, Mathematics, University of Iowa  
2007 – 2008      **Evans Instructor**, Mathematics, Rice University  
2005 – 2007      **Visiting Assistant Professor**, Mathematics, University of Iowa

### Licensures and Certifications

2005            **Certificate in College and University Teaching**, University of California, Santa Barbara

### Honors and Awards

2012 – 2014      **Dean's Scholar**, University of Iowa

## ADMINISTRATIVE AND LEADERSHIP EXPERIENCE

2017 – present    **Department Executive Officer (Chair) of Mathematics, the University of Iowa**  
The Mathematics Department has 32 tenure-track faculty, eight instructional track faculty, eight to ten visiting faculty, and approximately 90 graduate students. We teach 36,000 semester credit hours per year and provide service classes to students in the College of Arts and Sciences as well as to students in Engineering, Business, and Nursing. Since becoming DEO in July 2017, I have implemented several new initiatives:

- **An incentive program to increase the research productivity of faculty:** I implemented a tiered system for the number of semester hours faculty teach based on their research productivity measured by the quantity and quality of their publications as well as by their external funding. The system has three tiers making it achievable for faculty to improve. This initiative has broad support amongst the faculty and the administration. The system was implemented in Fall 2019.

- **Recruitment of outstanding faculty with diverse backgrounds:** I have recruited three mathematicians for tenure-track positions, two of them female. This has improved tremendously the gender diversity in the Department (currently 30% of our tenure track faculty are women, nationally the number for large public math departments is 16.5%) and strengthened our research profile.
- **Fundraising:** I worked with the UI Foundation to secure a gift of \$350,000 for our graduate program and an additional bequest of several million dollars. I met with the donor to answer his questions and help him decide on how to best structure his gift. I also worked with a different donor to adjust the conditions on her gift to allow us to use it to meet our current needs.
- **Teaching responsibility of faculty:** I changed the instructors for several classes where teaching evaluations had been unsatisfactory for a number of years, and had discussions with several other faculty whose classes have poor outcomes. I encourage faculty to work with the Center for Teaching and Learning to update their classes and make use of new technology. Student success is my primary focus when making decisions about undergraduate offerings.
- **Handling tenure and promotion cases and faculty grievances:** I have overseen two tenure cases (both successful), four promotions to Full Professor (one unsuccessful and three pending), and four promotions to Associate Professor of Instruction (two successful and two pending). I have also worked with the Dean's office and the Ombuds office to successfully resolve faculty conflicts and grievances.

2011 – 2015

**Founder and Director, Summer Math Institute**

Created and directed a two-week program for local high school students who qualified for free or reduced lunches. Most of the students had parents who had not gone to college and most were members of underrepresented ethnic groups. The Institute was funded by the National Science Foundation and I was the Principal Investigator on the grant.

**EXTERNAL FUNDING****Grants funded**

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|----------------------|---|
| June 2019- June 2024 | NOYCE: Recruiting and Training Community College and University Students to Become Culturally Responsive and Proficient Mathematics Teachers in Iowa. Award Amount: (\$1,233,606). Co-Principal Investigator. |
| Jun 2017 – June 2020 | <i>FRG: Collaborative Research: Trisections – New Directions in Low-Dimensional Topology</i> . Funded by the National Science Foundation. Award Amount: (\$218,000). Principal Investigator.                  |
| Jun 2011 – Jun 2017  | <i>CAREER: New approaches to classical knot invariants</i> . Funded by the National Science Foundation. Award amount: (\$405,893.00). Principal Investigator.   |
| Mar 2016 – Jun 2016  | <i>Advances in Quantum and Low-Dimensional Topology</i> Award amount: (\$30,000.00). (with Caprau, Cooper, and Russel)  |
| Jan 2011 – Dec 2013  | <i>Applications of Thin Position to Uniqueness Problems</i> Funded by American Institute of Mathematics. (with Blair, Campisi, Johnson, and Taylor)   |

- Jan 2011 – Dec 2013 *USTARS (Underrepresented Students in Topology and Algebra Research Symposium)* Funded by NSF. Co-Principal Investigator.
- Jan 2007 – Dec 2011 *Special surfaces in knot complements.* Funded by the National Science Foundation. Award amount: (\$90,238.00). Principal Investigator.
- Dec 2009 *Geometric topology in three and four dimensions* Funded by National Science Foundation. Award amount: (\$25,000.00). Co-Principal Investigator.

## TEACHING

### Student Advising

#### *PHD*

- |                |                           |
|----------------|---------------------------|
| 2016 – present | Pongtanapaisan, Puttipong |
| 2016 – present | Aranda, Roman             |
| 2012 – 2017    | Rodman, Daniel            |
| 2012 – 2016    | Grove, Colin              |
| 2011 – 2013    | Watkins, Amanda           |
| 2011 – 2013    | Benson, Katie             |
| 2010 – 2012    | Schirmer, Trent           |
| 2009 – 2012    | Zupan, Alex               |

#### *UNDERGRADUATE*

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|----------------|-------------------|
| 2016 – present | Kohen, Nadav      |
| 2012           | Bloomington, Wade |
| 2010 – 2011    | Porter, Mathew    |

### Other Teaching Activities

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| 2005 – 2011 | Assistant Director and Research Mentor, Research Experience for Undergraduates (summer program), California State University Channel Islands |
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## SCHOLARSHIP

### Publications

1. Taylor, S., Tomova, M. (2018) Thin position for knots, links, and graphs in 3-manifolds. *Algebraic and Geometric Topology* 18: 1361-1409.
2. Taylor, S., Tomova, M. (2018) Additive invariants for knots, links and graphs in 3-manifolds. *Geometry and Topology* 22(6): 3235-3286.
3. Aranda, R., Kim, S., Tomova, M. (2018) Representativity and waist of cable knots. *Journal of Knot Theory and Its Ramifications* 27(4).

4. Blair, R., Campisi, M., Johnson, J., Taylor, S., Tomova, M. (2017). Exceptional and cosmetic surgeries on knots. *Mathematische Annalen*, 367: 581-622.
5. Blair, R., Campisi, M., Johnson, J., Taylor, S., Tomova, M. (2017). Neighbors of knots in the Gordian Graph. *American Mathematical Monthly*, 124: 4-23.
6. Blair, R., Campisi, M., Johnson, J., Taylor, S., Tomova, M. (2016). Distance two links. *Geometriae Dedicata*, 180(1), 17-37.
7. Blair, R., Futer, D., Tomova, M. (2015). Essential surfaces in highly twisted link complements. *Algebraic and Geometric Topology*, 15(3), 1501-1523.
8. Morris-Rivera, M., Tomova, M., Wyels, C., Yeager, A. (2015). The radio number of  $C_n-C_n$ . *Ars Combinatoria*, 120, 7-21.
9. Taylor, S., Tomova, M. (2013). C-Essential surfaces in (3-manifold, graph) pairs and levelling edges of Heegaard spines. *Communications in Analysis and Geometry*, 21(2), 259-330.
10. Blair, R., Tomova, M., Yoshizawa, M. (2013). High distance bridge surfaces. *Algebraic and Geometric Topology*, 13, 2925-2946.
11. Benson, K., Porter, M., Tomova, M. (2013). The radio numbers of all graphs of order  $n$  and diameter  $n - 2$ . *Le Matematiche*, 68(2), 167-190.
12. Blair, R., Tomova, M. (2013). Width is not additive. *Geometry and Topology*, 17(1), 93-156.
13. Canales, D., Tomova, M., Wyels, C. (2013). A gap in the achievable radio number line. *AKCE Int. J. Graphs Comb.*, 10(4), 349-357.
14. Taylor, S., Tomova, M. (2012). Heegaard surfaces for certain graphs in compression bodies. *Revista Matematica Complutense*, 25(2), 511-555.
15. Blair, R., Tomova, M. (2011). Companions of the unknot and width additivity. *Journal of Knot Theory Ramifications*, 20(4), 497-511.
16. Johnson, J., Tomova, M. (2011). Flipping bridge surfaces and bounds on the stable bridge number. *Algebr. Geom. Topology*, 11(4), 1987-2005.
17. Tomova, M., Wyels, C. (2011). Pebbling graph products. *Ars Combinatoria*, 98, 493-499.
18. Martinez, P., Ortiz, J., Tomova, M., Wyels, C. (2011). Radio numbers for generalized prism graphs. *Discussiones Mathematicae Graph Theory*, 31(1), 45-62.
19. Tomova, M. (2009). Cut-disks for level spheres in link and tangle complements. *Topology and Its Applications*, 156(4), 783-794.
20. Szaniszló, Z., Tomova, M., Wyels, C. (2009). The N-queens problem on a symmetric Toeplitz matrix. *Discrete Math.*, 309(4), 969-974.
21. Tomova, M. (2009). Thin position for knots in a 3-manifold. *Journal of Lond. Math. Soc.*, 80(1), 85-98.

22. Scharlemann, M., Tomova, M. (2008). Conway products and links with multiple bridge surfaces. *Michigan Math. Journal*, 56(1), 113-144.
23. Tomova, M. (2008). Distance of Heegaard splittings of knot complements. *Pacific J. Math.*, 236(1), 119-138.
24. Scharlemann, M., Tomova, M. (2008). Uniqueness of bridge surfaces for 2-bridge knots. *Math. Proc. Cambridge Philos. Soc.*, 144(3), 639-650.
25. Tomova, M. (2007). Multiple bridge surfaces restrict knot distance. *Algebr. Geom. Topol.*, 7(2), 957-1006.
26. Scharlemann, M., Tomova, M. (2006). Alternate Heegaard genus bounds distance. *Geometry and Topology*, 10(1), 593-617.
27. Tomova, M. (2006). Compressing thin spheres in the complement of a link. *Topology Appl.*, 153(15), 2987-2999

### Invited Lectures and Conference Presentations

- 2019 *Distortion and the Bridge Distance of Knots*, Georgia Topology Conference
- 2018 Panelist, Nebraska Conference for Undergraduate Women in Mathematics
- 2016 *A width is additive*, Georgia Topology Conference, University of Georgia
- 2015 *Neighbors of knots in the Gordian graphs*, AMS Sectional meeting, Fullerton
- 2015 *High distance knots are well behaved*, Midwest Women in Mathematics Symposium
- 2014 *Highly twisted knot diagrams*, Brigham Young University
- 2014 *Knot Diagrams and Essential Surfaces*, Michigan State University
- 2014 *Obtaining Topological Information from Knot Diagrams*, Oklahoma State University
- 2013 *Thin Position, Special Surfaces and Edge Leveling*, UT Austin
- 2013 *Progress on the Cabling Conjecture*, AMS Meeting, Iowa State University
- 2013 *Distances and the Cabling Conjecture*, Hempelfest, Rice University
- 2012 *Cosmetic Surgery*, Bradley University Colloquium
- 2012 *High Distance Bridge Surfaces and their Applications*, Syracuse University
- 2011 *Flipping bridge surface*, Washington University, St Louis, Missouri
- 2011 *Width is not additive*, AMS Sectional meeting, Special Session on Invariants in Knot Theory and Low-dimensional Topology, Lincoln, Nebraska
- 2011 *Flipping bridge surfaces and bounds on the stable bridge number*, AMS Sectional Meeting on Geometry and Applications of 3-Manifolds, Worcester, Massachusetts
- 2011 *Flipping bridge surface*, Topology Seminar, University of California, Santa Barbara

## SERVICE

### Service to the College and the University

2019	Diversity, Equity, and Inclusion, Faculty Senate Retreat, invited speaker
2019 – present	College Executive Committee
2018 – present	Faculty Assembly
2018 – present	UI First Generation Task Force
2018 – present	Mentor, faculty member in the College of Education
2018	We Are Phil Fundraising Committee, Member
2018	College Marshal, CLAS Commencement Ceremony
2017 – 2018	Search Committee for Dean of CLAS, Member
2017 – 2018	Search Committee for Math Education (College of Education), Member
2017 – 2018	CLAS Graduate Diversity Fellowships ad hoc Committee, Member
2015 – 2017	CLAS - Graduate Educational Policy Committee, Member
2015 – 2018	Financial Aid Advisory Committee, Member
2015	Martin Luther King Celebration, Keynote Speaker
2015 – 2016	Graduate Program Review -- subcommittee on Mathematical, Physical and Engineering Sciences, Member
2012 – 2014	Human Rights Committee, Member

### Service to the Department: Committees

2017 – present	Department Executive Officer (Department Chair)
2014 – 2017	Graduate Committee, Member
2017	Third Year Review Committee, Ben Cooper
2010 – present	Minority Student Recruiting and Development Committee, Member
2013 – 2014	Promotion and Tenure Committee for Keiko Kawamuro, Member
2012 – 2014	Hiring Committee, Member
2013	Search Committee, Member
2013	Professional Development Seminar, Co-Organizer
2012	Search Committee, Member
2012 – 2013	Math Club, Faculty Advisor
2010 – 2012	Graduate Committee, Member
2010 – 2012	Topology Reading Seminar, Organizer
2010	AMS Sectional Meeting Organization Committee, Member
2009 – 2010	Professional development seminar, Co-Organizer

### Service to the Department: Talks and Lectures

2017, 2015, 2012, 2009	Annual Sonia Kovalevsky Day, Guest Speaker
2012	Career Development Seminar, Guest Speaker
2012, 2010, 2009	First Year Graduate Student Seminar, Guest Speaker
2012, 2010, 2009	Undergraduate Research Seminar, Guest Speaker
2009 – 2011	Prospective Graduate Students Orientation, Expert Panel

### Service to the Profession

**Reviewer for:** *Duke Mathematical Journal*; *Geometry and Topology*; *Algebraic and Geometric Topology*;

*Australasian Journal of Combinatorics; Communications in Analysis and Geometry; Geometria Dedicata; Knot Theory and its Ramifications; Pacific Journal of Mathematics; Proceedings of the AMS; Utilitas Mathematica*

### Editorial boards:

2017– present Algebraic and Geometric Topology

### Scientific committee:

2019 7th Midwest Women in Mathematics Symposium

### Conferences organized:

2016 Advances in Quantum and Low Dimensional Topology (with Caprau, Cooper, and Russel)  
 2014 The Thin Manifold (with Scott Taylor)  
 2012 Summer Topology and its Applications Conference, Geometric Topology Session (with Blair)  
 2011 AMS Sectional Meeting, Special Session on Thin Position (with Johnson)  
 2009 Geometric Topology in Three and Four Dimensions (with Eudave-Munos, Johnsons, Schultens, and Thompson)  
 2009 Joint Mathematics Meeting, Special Session on Low Dimensional Topology and Teichmüller Theory (with Kent)  
 2007 American Institute of Mathematics, Workshop on Triangulations, Heegaard Splittings and Hyperbolic Geometry (with Schultens)

### Grant Reviews:

2019 IMA conference grant review committee  
 2017 NSF panel (remotely)  
 2016 NSF panel (in person)  
 2016 Israel Science Foundation (by mail)  
 2015 NSF panel (in person)  
 2015 Israel Science Foundation (by mail)  
 2015 NSA-AMS (by mail)  
 2014 NSA-AMS (by mail)  
 2013 NSA-AMS (by mail)  
 2011 NSF (by mail)  
 2009 NSF (in person)

### National Professional Committees

2016 – 2019 Joint Committee on Women in the Mathematical Sciences  
 2013 – 2016 AWM Mentor Network Committee

### Community Outreach

June 2019-present Leader, free math tutoring for children of immigrant families.  
 2016 – 2017 Leader, Saturday Math Fun for elementary school students.