

# Tova (Lindberg) Brown

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CONTACT INFORMATION	Department of Mathematics University of Arizona, Tucson, Arizona, USA	t lindberg@math.arizona.edu www.math.arizona.edu/~tlindberg
RESEARCH INTERESTS	Analytic combinatorics, enumeration of maps, discrete dynamical systems, integrable systems, Painlevé equations, random matrix theory, orthogonal polynomials	
EDUCATION	<b>University of Arizona</b> , Tucson, Arizona, USA <i>Doctor of Philosophy, Mathematics</i> <b>Aug 2010 – present</b> <ul style="list-style-type: none"><li>• Expected graduation date: Summer 2016</li><li>• Advisor: Professor Nicholas Ercolani</li><li>• Dissertation: <i>Asymptotics and Dynamics of Map Enumeration Problems</i></li></ul> <b>Bethany Lutheran College</b> , Mankato, Minnesota, USA <i>Bachelor of Arts, Mathematics and Theatre</i> <b>Aug 2006 – May 2010</b> <ul style="list-style-type: none"><li>• Senior thesis in Mathematics: <i>Polynomial Identification in Algebras of Bounded Linear Operators on Banach Spaces</i></li></ul>	
HONORS AND AWARDS	Travel Grant, University of Arizona Graduate and Professional Student Council, \$675, Jan 2016. Joint Mathematics Meetings Graduate Student Travel Grant, American Mathematical Society, \$500, Jan 2016. Outstanding Graduate Teaching Assistant, University of Arizona Department of Mathematics, \$250, Spring 2015. National Science Foundation Graduate Research Fellowship, 2010. Undergraduate Research Conference Grant: <i>Polynomial Identification in Algebras of Bounded Linear Operators on Banach Spaces</i> , Minnesota State University Mankato, \$675, 2010. SIAM Exemplary Student MAA Presentation, MathFest 2009. MAA Outstanding Presentation Award, MathFest 2008. Marvin G. Meyer Scholarship, Bethany Lutheran College, 2006-2010 - the highest academic scholarship at Bethany, given to one incoming student per year, valued at four years of tuition, room, and board.	
RESEARCH EXPERIENCE	<b>Department of Mathematics, University of Arizona</b> , Tucson, Arizona, USA <i>Student Researcher</i> <b>Aug 2011 – present</b> <p>Member of the working group led by Nicholas Ercolani, with the assistance of Kenneth McLaughlin, Sergey Cherkis, and Joceline Lega. Interests of the group include analytic combinatorics, orthogonal polynomials, integrable systems, random matrix theory. Weekly group meetings include regular talks by all members of the group, including occasional long series of lectures. Complementing my dissertation work, the paper for my comprehensive exam was on enumeration of maps on surfaces by the loop equations of random matrix theory.</p> <i>Research Tutorial Group</i> <b>Aug 2011 – Dec 2011</b> <p>Advisors: Professors Nicholas Ercolani and Kenneth McLaughlin, University of Arizona. Semester research experience in analytic combinatorics.</p> <b>Department of Mathematics and Computer Science, Clarkson University</b> , Potsdam, New York, USA <i>Summer Program</i> <b>May 2009 – May 2010</b> <p>Advisor: Professor Aaron Luttmann, Clarkson University. Summer research in polynomial identification in algebras of bounded linear operators on Banach spaces. Work continued long-distance throughout the following academic year, culminating in a senior thesis for a B.A. in Mathematics.</p> <b>VIGRE Arizona Summer Program on Computational Group Theory, University of Arizona</b> , Tucson, Arizona, USA <i>Summer Program</i> <b>Jun 2008 – Jul 2008</b> <p>Advisor: Dr. Thomas Breuer, RWTH Aachen University, Germany. Summer research in groups of automorphisms of compact Riemann surfaces, using the computer algebra system Groups, Algorithms, Programming (GAP).</p>	

- PUBLICATIONS Ethier, Dillon; Lindberg, Tova; Luttmann, Aaron; “Polynomial Identification in Uniform and Operator Algebras”, *Annals of Functional Analysis*, Vol. 1, Issue 1, pp. 105-122 (2010).
- Fieldsteel, Nathan; Lindberg, Tova; London, Tyler; Tran, Holden; and Xu, Haokun; “Classification of Groups with Strong Symmetric Genus Up To Twenty-Five”, *Houston Journal of Mathematics*, Vol. 39, Iss. 1, pp. 51-60 (2013).
- PRESENTATIONS “Dynamics of Discrete Painlevé-I Through Elliptic Functions”, Analysis, Dynamics, and Applications Seminar, Department of Mathematics, University of Arizona, March 8, 2016.
- “Discrete Dynamical Systems from Combinatorial Problems”, Recruitment Workshop Graduate Student Research Blitz, Department of Mathematics, University of Arizona, March 7, 2016.
- “Combinatorial Hamiltonian Dynamics”, Joint Mathematics Meetings, AMS Special Session in Integrable Systems, Painlevé Equations, and Random Matrices, January 6, 2016.
- “Scaling Limits of Random Walks in Random Environments”, Mathematical Physics and Probability Seminar, Department of Mathematics, University of Arizona, March 25, 2015.
- “A Short Introduction to the Umbral Calculus”, Graduate Colloquium, Department of Mathematics, University of Arizona, March 4, 2015.
- “Labeled Trees and Surface Maps”, Analysis Dynamics and Applications Seminar, Department of Mathematics, University of Arizona, October 14, 2014.
- “Enumeration of Maps on Surfaces by the Loop Equations of Random Matrix Theory”, Oral Comprehensive Exam, Department of Mathematics, University of Arizona, May 5, 2014.
- “The Connection Between Map Enumeration and Matrix Integrals”, Current Ideas in the Mathematical Sciences Recruitment Workshop, Department of Mathematics, University of Arizona, March 10, 2014.
- “The Loop Equations of Random Matrices”, Analysis Dynamics and Applications Seminar, Department of Mathematics, University of Arizona, November 12, 2013.
- “The Loop Equations of Random Matrices”, Graduate Colloquium, Department of Mathematics, University of Arizona, October 16, 2013.
- “Enumeration of Planar Graphs”, Analysis Dynamics and Applications Seminar, Department of Mathematics, University of Arizona, November 13, 2012.
- “Enumeration of Planar Graphs”, Graduate Colloquium, Department of Mathematics, University of Arizona, November 7, 2012.
- “Enumerating Planar Graphs by Blossom Trees”, Current Ideas in the Mathematical Sciences Recruitment Workshop, Department of Mathematics, University of Arizona, March 5, 2012.
- “Enumerating Planar Graphs by Blossom Trees, Part 1”, Research Tutorial Group Mini-Conference, Department of Mathematics, University of Arizona, December 8, 2011.
- “Polynomial Identification in Algebras of Bounded Linear Operators on Banach Spaces”, Mathematics Senior Thesis Presentation, Bethany Lutheran College, April 9, 2010.
- “Identification of Polynomial Combinations of Operators”, Undergraduate Research Conference, Minnesota State University Mankato, April 6, 2010.
- “Operator Identification with Minimal Information”, Minnesota Private College Scholars at the Capitol, St. Paul, MN, February 25, 2010.
- “Dominant Eigenvalues and the Structure of Matrix Spaces”, Twelfth Annual Nebraska Conference for Undergraduate Women in Mathematics, University of Nebraska, Lincoln, NE, January 31, 2010.
- “Dominant Eigenvalues and the Structure of Matrix Spaces”, MathFest 2009, Portland, OR, August 6, 2009.
- “Dominant Eigenvalues and the Structure of Matrix Spaces”, Symposium on Undergraduate Research Experiences, Clarkson University, July 30, 2009.
- “Using Eigenvalues to Completely Determine a Matrix”, Department of Mathematical Sciences Summer Research Seminar, Clarkson University, June 25, 2009.
- “Groups of Automorphisms of Compact Riemann Surfaces”, Pi Mu Epsilon Regional Undergraduate Math Conference, St. Norbert College, November 7, 2008.
- “Groups of Automorphisms of Compact Riemann Surfaces”, Mathematics Colloquium, Bethany Lutheran College, October 31, 2008.

“Groups of Automorphisms of Compact Riemann Surfaces”, MathFest 2008, University of Wisconsin, Madison, WI, July 31, 2008.

“Maximal Ideals”, MAA North Central Section Meeting, College of St. Benedict, April 26, 2008.

OTHER  
CONFERENCES  
ATTENDED

Frontier Probability Days 2014, University of Arizona, Tucson, AZ, May 18-20, 2014.

Conference on Integrable Systems, Random Matrix Theory, and Combinatorics, University of Arizona, Tucson, AZ, October 23-27, 2013.

AMS Special Session on Asymptotic Analysis of Random Matrices, Integrable Systems and Applications, Fall Western Sectional Meeting, University of Arizona, Tucson, AZ, October 27-28, 2012.

Tenth Annual Nebraska Conference for Undergraduate Women in Mathematics, University of Nebraska, Lincoln, NE, February 8-10, 2008.

TEACHING  
EXPERIENCE

**Department of Mathematics, University of Arizona, Tucson, Arizona, USA**

*Calculus II (Math 129)* **Spring 2016**  
Instructor of record for Calculus II. Collaborated with colleague Colin Clark to write materials for a flipped classroom. Full responsibility for writing and grading in-class materials, homework, midterm exams, and assigning final course grades.

*Mathematical Modeling (Math 485)* **Spring 2016**  
Served as mentor to a group of five senior-level students on a semester-long modeling project on a graph-based approach to modeling the US stock market.

*Calculus I (Math 125)* **Spring 2015, Fall 2015**  
Instructor of record for accelerated (3 credit) Calculus I. Wrote and delivered all lectures, wrote and graded all homework, wrote and graded all midterm exams, assigned final course grades. Designed and implemented a flipped classroom in Spring 2015, modified and implemented again in Fall 2015.

*Mathematical Modeling (Math 485)* **Spring 2015**  
Served as mentor to a group of three senior-level students on a semester-long modeling project on evolutionary graph theory. Gave guidance on mathematical content, scope and pacing of work through the semester, coding of simulations in Python, writing and speaking about their results. Their project culminated in a public poster session sponsored by the School of Mathematical Sciences, University of Arizona.

*First Semester Calculus (Math 122B)* **Fall 2014**  
Instructor of record for a section of 35 students. Wrote and delivered all lectures, wrote and graded all homework, wrote and graded all midterm exams, assigned final course grades.

*Mathematics Tutor* **Fall 2014, Spring 2015, Fall 2015**  
Tutored students in Calculus II and Vector Calculus on a drop-in basis in the Department of Mathematics Math 129, 163, 223, 263 Tutoring Room.

*College Algebra (Math 112)* **Summer Session 1 2014**  
Instructor of record for an accelerated (5 week) course. Gave all lectures, graded homework, assigned final course grades.

*College Algebra (Math 112)* **Fall 2013, Spring 2014**  
Instructor of record for a section of 35 students each semester in Math 112. Gave all lectures, graded homework, assigned final course grades.

**Student Success Center, Bethany Lutheran College, Mankato, Minnesota, USA**

*Tutor of Math and Writing* **Aug 2007 – May 2010**  
Tutored students in Intermediate Algebra, Math Problem Solving, College Algebra, Introduction to Statistics, Calculus I, Calculus II, and writing for a variety of courses on a drop-in basis.

**Private Math Tutor, Mankato, Minnesota, USA**

*Precalculus Tutor* **Sep 2006 – Dec 2006**  
Tutored a high school senior in Precalculus for one semester, one to two times weekly.

SERVICE  
ACTIVITIES

**Travel Grant Judge, Graduate and Professional Student Council, University of Arizona**

*Volunteer judge* **October 2014**  
Served as a judge during the grant evaluation process for \$500 travel grants through the Graduate and Professional Student Council.

**Panel**, Graduate Teaching Assistant Training, Department of Mathematics, University of Arizona

*Invited panelist*

**Aug 2014, 2015**

Invited to serve on a panel with program directors and other “exceptional GTAs” to answer questions from new GTAs during their intensive three-day training.

**Sonia Kovalevsky Day**, University of Arizona

*Workshop leader*

**Mar 2011, 2012, 2013, 2015**

Assisted with Sonia Kovalevsky Day, an event held on campus to encourage female high-school students and their teachers to continue in further study of mathematics. Co-wrote and co-led workshops Graph Theory: Instant Insanity (2012) and Tower of Hanoi (2013, 2015).

**Panel: Research Experiences for Undergraduates**, Undergraduate Teaching Assistant Program, Department of Mathematics, University of Arizona

*Panelist*

**Oct 9, 2012**

Shared information and answered students’ questions about undergraduate research experiences.

**Arizona Mathematics Road Show**, University of Arizona

*Volunteer assistant*

**Summer 2012**

Helped with math and science outreach to the Tucson public, including a family day at Science Downtown and a science day for middle-school girls at Flandrau Planetarium at University of Arizona.

**Presentation: Research Experiences for Undergraduates**, Bethany Lutheran College, Mankato, Minnesota, USA

*Organizer, presenter*

**Dec 11, 2008**

Organized event and presented with two other students on experiences at REUs in scientific fields, to encourage students to apply for similar opportunities.

MEMBERSHIP IN  
PROFESSIONAL  
SOCIETIES

American Mathematical Society (AMS)

Mathematical Association of America (MAA)

Association for Women in Mathematics (AWM)

Association for Christians in the Mathematical Sciences (ACMS)

Women Advancing Arizona Mathematics (WAAM)