

John Gemmer

University of Arizona
Program in Applied Mathematics
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Education

- **University of Arizona:** Tucson, AZ
PhD Candidate in Applied Mathematics 2006 – Present
– Advisor: Shankar Venkataramani
– Dissertation: Periodic Patterns in Hyperbolic non-Euclidean Plates
- **Millersville University of Pennsylvania:** Millersville, PA
B.S. Mathematics and Physics 2001 – 2006
– Advisors: Michael Nolan and Ron Umble
– Honors Thesis: Generalizations of the Brachistochrone Problem

Awards, Fellowships and Honors

August 2005.....	SIAM Student Research Award
August 2005.....	Edna H. Myers Scholarship in Mathematics
May 2006.....	Class of 1866 Award
May 2006.....	SSM Award for Outstanding Poster
January 2007 – May 2007.....	University of Arizona Graduate College Fellowship
May 2010.....	University of Arizona Galileo Scholar Award
May 2010 – December 2010.....	University of Arizona VIGRE Fellowship

Publications

1. *Generalizations of the brachistochrone problem*, (with M. Nolan and R. Umble), *Pi Mu Epsilon Journal*, 13 (4) (2011), pp. 207-218
2. *Shape selection in non-Euclidean plates*, (with S. Venkataramani), *Physica D: Nonlinear Phenomena*, 240(19) (2011), pp. 1536-1552.
3. *Defects and boundary layers in non-Euclidean plates*. (In preparation).

Research Experience

- January 2011- Present **Graduate Research Assistant**, *University of Arizona, Tucson, AZ USA*, Performed research on boundary layers in thin elastic sheets with a prescribed Riemannian metric.
- January 2009- May 2010 **Graduate Research Assistant**, *University of Arizona, Tucson, AZ USA*, Performed research on the equilibrium configuration of thin elastic sheets with a prescribed Riemannian metric.

June 2004-
August 2004 **Research Experience for Undergraduates**, *Florida State University, Tallahassee, FL USA*, Performed research on the multiple scale behavior of viscoelastic drops falling in viscous fluid.

January 2005-
August 2006 **Undergraduate Thesis**, *Millersville University, Millersville, PA USA*, Performed research on curves of shortest time of flight for particles lying in surfaces in various gravitational fields and with relativistic effects.

Teaching Experience

August 2006-
Dec. 2008 **Graduate Teaching Assistant**, *University of Arizona, Tucson, AZ USA*. Primary instructor including all lectures, grading and exam preparation, for the following courses

- Trigonometry
- College Algebra
- Calculus Preparation
- Calculus

June 2008-
August 2008 **New Start Instructor**, *University of Arizona New Start Summer Program, Tucson, AZ USA*. Taught summer course in Calculus Preparation to incoming freshman and prepared a workshop for how to write statement of purposes. The program focused on preparing underrepresented students for college life both academically and socially.

Sep. 2008-
Dec. 2008 **Graduate Teaching Assistant**, *University of Arizona, Tucson, AZ USA*. Senior graduate teaching assistant for the course Principles of Analysis

Spring 2009,
2011, 2012 **Graduate Mentor**, *University of Arizona, Tucson, AZ USA*. Mentor for a group of undergraduate students enrolled in University of Arizona's Mathematical Modeling course.

Dec. 2009-
August 2010 **Graduate Mentor**, *University of Arizona, Tucson, AZ USA*. Prepared graduate students for the University of Arizona's applied mathematics PhD qualifying exam.

Service

August 2008-
May 2009 **Student Brown Bag Organizer**, *University of Arizona, AZ USA*. Organizer for student run weekly colloquium.

January 2009-
May 2009 **Tucson Math Circle Organizer**, *University of Arizona, AZ USA*. Organizer for the Tucson Math circle. I constructed weekly mathematics activities for elementary and middle school students.

January 2009-
May 2009 **SIAM Student Chapter Member at Large**, *University of Arizona, AZ USA*. Duties included helping out the club where needed. I specifically coordinated a panel discussion on how to apply for post doctoral positions and I organized a presentation by a physics faculty member.

- Sep. 2009-
May 2010 **SIAM Student Chapter President**, *University of Arizona, AZ USA*. President of student run chapter of SIAM. Duties include arranging presentations from faculty, coordinating a mini conference on careers in applied mathematics, creating a fun day long mathematics activity for elementary school students, and overseeing the other SIAM officers.
- January 2010-
January 2011 **Founder and Organizer of University of Arizona Graduate Analysis Lecture Series**, *University of Arizona, AZ USA*. The graduate student analysis lecture series is a weekly meeting of applied and pure mathematics students to discuss current analytical tools that we use in our research.
- August 2011 **Organizer of University of Arizona Calculus Workshop**, *University of Arizona, AZ USA*. Organized and ran a week long workshop preparing entering minority students for their calculus courses.

Invited Presentations

1. Sep. 2012 - Lorentz Institute (Leiden, NL): Modern perspectives on thin sheets: Geometry, Mechanics, and Statistical Physics.
2. October 7, 2011 - *Periodic Shapes in Swelling Thin Elastic Sheets*. University of Arizona: Recent progress in wave processes in nature.
3. May 18, 2011 - *Shape Selection in Hyperbolic non-Euclidean Plates*. IMA Hot Topics Workshop Strain Induced Shape Formation: Analysis, Geometry and Materials Science.
4. November 2009 - *Mathematics in the 21-st Century*, Tucson High School: Presentation given to motivate high school students to pursue a career in mathematics.

Conference, Seminar, and Poster Presentations

Conference Presentations

1. January 5, 2012 - *Periodic Rippling in Hyperbolic non-Euclidean Plates*. Boston: MAA Joint Mathematics Meeting - AMS Special Session.
2. November 14, 2011 - *Shape Selection in Hyperbolic non-Euclidean Plates*. San Diego: SIAM Conference on Partial Differential Equations.
3. April 2, 2011 - *Shape Selection in Hyperbolic non-Euclidean Plates*. Tucson: Los Arizona Days.
4. March 16, 2010 - *Shape Selection in Non-Euclidean Plates*. Portland Oregon: APS March Meeting.
5. August 6, 2005 - *Generalizations of the Brachistichrone Problem*. Albuquerque: Mathfest.

Poster Presentations

1. 2011 - *Shape Selection in Swelling Thin Elastic Sheets*. Fifth Annual Mathematical Field of Dreams Conference.
2. 2011 - *Differential Growth and Ripples in Thin Elastic Sheets*. IMA Hot Topics Workshop Strain Induced Shape Formation: Analysis, Geometry and Materials Science.
3. 2010 - *Shape Selection in Non-Euclidean Plates*. University of Arizona: Poster presentation at graduate interdisciplinary programs event.

4. 2010 - *Differential Growth and Ripples in Thin Elastic Sheets*. University of Arizona: Graduate Interdisciplinary Programs Poster Contest

University of Arizona Seminars

1. 2011 - *Periodic Shapes in Swelling Thin Elastic Sheet*. University of Arizona: Analysis and its Applications Seminar.
2. 2011 - *Introduction to Nonlinear Elasticity and non-Euclidean Plates*. University of Arizona: Brown Bag Graduate Student Colloquium.
3. 2011 - *Shape Selection in Non-Euclidean Plates*. University of Arizona: Mathematical Physics Seminar.
4. 2010 - *Shape Selection in Non-Euclidean Plates*. University of Arizona: Analysis and its Applications Seminar.
5. 2010 - *Shape Selection in Non-Euclidean Plates Part 2*. University of Arizona: mathematics graduate colloquium.
6. 2010 - *Shape Selection in Non-Euclidean Plates Part 1*. University of Arizona: Brown Bag graduate student colloquium.
7. 2009 - *Elastic Discs and the Ripples in Leaves*, University of Arizona: Brown Bag graduate student colloquium.
8. 2009 - *Inducible Shape Transitions in Thin, Non-Euclidean, Elastic Discs*. University of Arizona: Analysis and its Applications Seminar.
9. 2008 - *How to Control a Front Wheel Drive Bike*. University of Arizona: Brown Bag graduate student colloquium.
10. 2007 - *Nonlinear Dynamical Control Theory and How to Parallel Park a Car*. University of Arizona: RTG presentation.

Conference and Workshop Participation

1. 2012 - *NSF PIRE Summer School: New Frontiers in Multiplescale Analysis and Computing for Materials*: IMA.
2. 2012 - *Southwestern Meeting of the MAA*: Tucson.
3. 2012 - *MAA Joint Mathematics Meeting*: Boston.
4. 2011 - *SIAM Conference on Analysis of Partial Differential Equations*: San Diego.
5. 2011 - *Los Arizonas Days*: Tucson.
6. 2010 - *APS March Meeting*: Portland Oregon.
7. 2009 - *Great Circles Workshop on Math Circles*: MSRI.
8. 2005 - *Mathfest*: Albuquerque.
9. 2005 - *MAA Joint Mathematics Meeting*: Atlanta.