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Education

Ph.D. in Mathematics, Indiana University, August 2006

New Families of Embedded Triply Periodic Minimal Surfaces of Genus Three in Euclidean Space

Advisor: Matthias Weber

Master of Arts in Mathematics, Indiana University, 2002

Bachelor of Arts in Mathematics (*summa cum laude*), Eastern Illinois University, 2001

Bachelor of Science in Mathematics and Computer Science (*summa cum laude*), Eastern Illinois University, 2001

Employment

Fontbonne University; Vice President for Academic Affairs *July 2020 to present*

Fontbonne University; Interim Vice President for Academic Affairs *August 2019 to July 2020*

Fontbonne University; Dean, College of Arts & Sciences, Associate Professor *July 2016 to present*

Southern Illinois University Edwardsville; Associate Professor and Chair *July 2012 to June 2016*

Southern Illinois University Edwardsville; Assistant Professor *August 2006 to July 2012*

Indiana University; Instructor for IU Continuing Studies *Fall 2004 - Fall 2005*

Indiana University; Associate Instructor (graduate student) *Fall 2001 - Summer 2006*

Teaching

Masters theses

1. Shuai Hao. "An introduction to discrete minimal surfaces via the Enneper surface." July 2013.
2. Paul Heidbrink. "A two-parameter family of embedded triply periodic minimal surfaces." August 2011.
3. Darren Garbuz. "Isoperimetric properties of some genus 3 triply periodic minimal surfaces embedded in Euclidean space." May 2010.

I have served on the thesis committees of fourteen additional students.

Senior projects

1. Angela Bilzing. "Fair division of cake among n participants." May 2016.
2. Cory Simpson. "What is a matroid?" June 2015.
3. Mara Holloway. "Generalizations and extensions of the Descartes circle theorem." June 2015.
4. Seth Arnold. "Inflating the Platonic solids while preserving distance." May 2014.
5. Courtney Thomas. "Groebner bases and Sudoku puzzles." May 2014.
6. Briana Lawson. "R-Trivial simple voting games." May 2013.
7. Alexa Creech. "A congruence problem for polyhedra." May 2013.
8. Brian Heger. "Using generating functions to compute power indices." April 2013.
9. Nick Dewaele. "An explanation of 'period 3 implies chaos'" December 2011.
10. Stephanie Kuban. "Political power indices and dealing with abstentions." May 2011.
11. Emily Sowers. "Fair division of pie." April 2011.
12. Holly Crider. "Finite and infinite hat problems." May 2010.
13. Chelsey Poettker. "Topology and the four color theorem." May 2010.
14. Paul Antonacci. "Vanishing mean curvature and related properties." January 2009.
15. Elizabeth Schaab. "Finding bounds for the number of Sudoku squares." July 2008.
16. Anthony Scoles. "An investigation of closed geodesics on regular polyhedra." May 2008.
17. Glenn Harris. "Billiards in polygons using unfoldings." April 2007.
18. Meagan Heckert. "Understanding special sudoku solutions through geometry and error correcting codes." April 2007.

Have served as supervisor for two completed expository projects for mathematics education students (Jasmine French (2015) and John Blackburn (2015)). Have served on at least twenty-two senior project committees in addition to the above.

Courses

Have taught Fundamentals of Algebra, Introduction to Mathematics for the Liberal Arts, Logic, College Algebra, Precalculus, Calculus I, Calculus II, Discrete Mathematics, Logic and Reasoning, Linear Algebra I, Number Theory, Introduction to Real Analysis, Real Analysis I, Complex Analysis, Differential Geometry, Senior Seminar, Content and Pedagogy of Discrete Mathematics, Mathematics and Politics, Foundations of Integrative Studies, and a summer professional development course for elementary teachers.

Papers, Publications, and Professional Talks

Published/accepted in a peer-reviewed journal:

1. (with A. Neath, J. Cavanaugh) *Model evaluation, discrepancy function estimation, and social choice theory*. *Comp. Statistics*. 30 (2015), no. 1, 231-249.
2. (with K. Lawson (undergraduate), J. Parish, C. Traub) *Coloring graphs to classify simple closed geodesics on convex deltahedra*. *Int. J. Pure and Applied Math*. 89 (2013), no. 2, 123-139.
3. (with M. Feldmann, M. Quivey) *Intel Math Connections: A Three-Year Study of the Impact of a Math-Based Program on Elementary Teachers*. Proceedings of the 2013 ASQ Advancing the STEM Agenda Conference. June 2013.
4. *A real-life data project for an interdisciplinary math and politics course*. *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies*. (2012) 23:1, 13–24.
5. *A note on some bounds for permanents of $(0, 1)$ -matrices*. *J. Interdiscip. Math*. 12 (2009), no. 1, 123–128.
6. *Deformations of the gyroid and Lidinoid minimal surfaces*. *Pacific J. Math*. 235 (2008), no. 1, 137–171.

Published in a non-peer-reviewed venue:

7. *Statisticians listen and give a voice to data*. *Edwardsville Intelligencer*. March 20, 2015.
8. *Meet the gyroid*. *Plus Mathematics magazine*. September 12, 2011

Professional Talks

1. American Physical Society March Meeting, *Deformations of the gyroid and Lidinoid minimal surfaces using flat structures*, March 2015
2. ASQ Education Division “Advancing the STEM Agenda Conference”, Grand Valley State University, *Intel Math Connections: A Three Year Study*, June 2013
3. (with D. Garbuz) Southern Illinois University College of Arts and Sciences Colloquium “Thinking About Space”, *Space Separation Using Minimal Surfaces*, March 2012

4. Invited talk to St. Mary's College of Maryland mathematical research seminar, *The moduli space of embedded triply periodic minimal surfaces and the construction of some new examples*, March 2010
5. Invited talk to St. Mary's College of Maryland math club, *Minimal Surfaces and the Role of Computers in Theoretical Mathematics*, March 2010
6. Mathfest (Mathematical Association of America national meeting), *Students, Sudoku, permanents, and combinatorial proof: An upper bound for permanents of $(0, 1)$ -matrices*, August 2009
7. AMS Central Section meeting; special session on minimal and CMC surfaces, *Gyroids, Lidinoids, and the moduli space of embedded triply periodic minimal surfaces of genus 3*, April 2008
8. AMS-MAA Joint Meetings, *On the moduli space of triply periodic minimal surfaces*, January 2008
9. Illinois section of the MAA, *An illustrated stroll through the forest of minimal surfaces*, March 2007
10. AMS-MAA Joint Meetings, *Deformations of the gyroid and Lidinoid minimal surfaces*, January 2007
11. Eastern Illinois University Colloquium, *Deformations of triply periodic minimal surfaces: A new family of gyroids*, January 2006
12. Indiana University Geometry Seminar, *A deformation of the gyroid minimal surface*, November 2005
13. Mathematical Association of America Indiana Section Fall Meeting, *Being a mathematics graduate student* (panel discussion), November 2005

University, Community, and Professional Service Activities

University service

As an administrator at Fontbonne, my university service is accurately captured by my administrative responsibilities. The (partial) list of university service below describes my activities as a faculty member and chair at SIUE.

1. Mathematics and Statistics Department chair (July 2012 - June 2016)
2. SIUE STEM Center for Research, Outreach, and Education advisory board member (December 2013 - June 2016)
3. Chair, College of Arts and Sciences Strategic Budget Planning committee (Jan 2015 - June 2015)
4. University Housing Faculty Fellow (2012-2013)
5. Graduate Program Director (Spring 2010 - July 2012)

6. Course management system selection committee (March 2010 - January 2012)
7. Departmental representative to faculty senate (Fall 2007 - Spring 2011)
8. SIUE representative to the Illinois Board of Higher Education Faculty Advisory Committee (2011-2012)
9. Chair, Faculty Development Council of the Faculty Senate (2009-2010)
10. Meridian scholar selection committee member (Fall 2008 - Spring 2010, December 2014)
11. Member of department graduate committee (Spring 2008 - Fall 2009)
12. College of Arts and Sciences bullying task force (March - December 2010)
13. Presented a faculty development activity on "Team Teaching: Lessons Learned from Interdisciplinary Faculty" with D. DeGarmo (Fall 2012)
14. Numerous other minor activities

Community Service

1. Judge for St. Louis Academy of Science Science Fair (Spring 2017, 2018)
2. Presenter at "Math in the Pub" for the St. Louis Academy of Science (February 2016)
3. St. Louis Academy of Science Teen Science Cafe presenter (October 2015 & March 2019)
4. Presenter at Madison County Job Fair (2014 and 2015)
5. Presenter at several area middle and high schools in Missouri and Illinois (ongoing)
6. East St. Louis center professional development presentation (Fall 2013)
7. Main Street Community Center public lecture "Amusing Questions in Mathematics" (2013)
8. Speaker at St. Elmo High School career fair (March 2010)
9. Presenter for Educational Talent Search summer program at the East St. Louis center (Summer 2009)

Professional service

1. Refereed professional papers for PRIMUS, Transactions of the AMS, and other journals
2. Presenter for Tulsa Math Teachers' Circle summer immersion program (2015), Ohio Math Teachers' Circle (2016), and the Great Rivers Math Teachers' Circle (several times)
3. Co-organizer of Great Rivers Math Teachers' Circle
4. Lead local organizer for Illinois Section of Mathematical Association of America annual meeting (Spring 2014)

5. On-site review panel member for National Science Foundation Division of Undergraduate Education (Spring 2014)
6. On-site program review consultant for mid-sized midwestern state university mathematics department (Spring 2014) and midwestern small private university mathematics department (Spring 2018)
7. Elected board member (public universities), Illinois Section of the Mathematical Association of America (April 2012 - April 2014)
8. Co-organizer of special session on "Know More, Teach Better? Content Knowledge for Secondary Teaching and Above" at national meeting of the Mathematical Association of America (Mathfest 2011)
9. Served as co-coordinator of the Project NExT sessions at Mathematical Association of America "Mathfest" annual meeting in Madison, Wisconsin (Spring/summer 2008)
10. Served as a faculty mentor for the graduate student paper session at Mathfest (Summer 2008)
11. Co-organizer of special session at a Central Section meeting of the American Mathematical Society (2008)

Grants, Awards, and Honors

Grants, Contracts, and Corporate Partnerships Received

(includes only grants for which I was named PI/co-PI or major co-author for institutional grants)

1. NetVUE Professional Development grant (Council of Independent Colleges), Summer 2018, \$6000. Funding to implement a book group, workshop, and develop implementation plan to increase vocational exploration in academic and student affairs.
2. National Science Foundation Noyce Capacity Building Grant, Fall 2016, \$70,054. Capacity building grant was designed to increase Fontbonne's capacity to apply for a full Noyce scholarship grant.
3. Math/Science Partnership "corporate partnership", Summer 2015, \$80,000. This partnership with the Monroe-Randolph Regional Office of Education #45 and St. Clair Regional Office of Education was to teach professional development for teachers. The partnership includes tuition and fees for approximately 80 students for 3 credit hours in the first year of a 3 year partnership.
4. Math/Science Partnership contract, Summer 2012, \$25,000. This subcontract through the Monroe-Randolph Regional Office of Education #45 was to teach the "MRI Math Connections" program to 25 in-service teachers. The subcontract included tuition and fees for 25 students for 3 credit hours.

5. Math/Science Partnership contract, Summer 2011, \$25,000. This subcontract through the Monroe-Randolph Regional Office of Education #45 was to teach the "MRI Math Connections" program to 25 in-service teachers. The subcontract included tuition and fees for 25 students for 3 credit hours.
6. Excellence in Undergraduate Education grant (internal SIUE program), Summer 2010, \$16,000. Implemented WeBWorK (an online homework and assessment tool) at Southern Illinois University Edwardsville with co-PI C. Traub.
7. Southern Illinois Univ. Edwardsville 2007 Summer Research Fellowship, Summer 2007, \$8000. Internal grant for the study of deformations of triply periodic minimal surfaces.
8. National Science Foundation conference support, Spring 2006, \$14,750. Along with three other graduate students, received NSF grant DMS-0555730 to organize a graduate student topology conference with over 100 national and international attendees.

Grants and Contracts not funded

1. Sumner Foundation, Fall 2017, \$5075. Proposal for funded for restart of Mock Trial program. Not funded.
2. Upward Bound Math and Science TRIO Proposal, Spring 2017, \$255,000 annually. In collaboration with Associate Vice President for Academic Affairs. Project team included five high-need districts and significant institutional resources. Not recommended for funding.
3. Illinois Math Science Partnership I-STEM Network Leadership, Fall 2014, \$3,000,000. Along with a large team from local Regional Offices of Education and other universities, wrote a proposal to the Illinois State Board of Education for the I-STEM Network Leadership. Not funded.

Teaching Recognition Award

2010

Received a 2010 Teaching Recognition Award and was nominee for the university Teaching Excellence Award.

Mathematisches Forschungsinstitut Oberwolfach

October 2009

Was an invited participant at the workshop *Arbeitsgemeinschaft: Minimal Surfaces* in Oberwolfach, Germany.

2007-2008 Project NExT Fellow

Summer 2007

Project NExT is a national selective professional development program for recent Ph.D.'s in the mathematical sciences. Was organizer of Project NExT 2007 fellow sessions at 2008 Mathfest. Evaluated graduate student talks during Mathfest 2008.

American Institute of Mathematics Workshop

June 2005

Was an invited participant at the American Institute of Mathematics Workshop *Moduli Spaces of Properly Embedded Minimal Surfaces* in Palo Alto, California.

Rothruck Teaching Award for Associate Instructors

May 2004

References

Available upon request.