

Department of Mathematics & CS  
St. Mary's College of Maryland  
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### Education

- Ph.D. in Mathematics, Rice University, *Perturbed, Genus-One Scherk Surfaces and Their Geometric Limits* (thesis title), May 2009.
- M.A. in Mathematics, Rice University, May 2007.
- B.A. in Mathematics and English, Summa Cum Laude, Southwestern University, May 2003.

### Positions

- **Mathematics Lecturer**, University of Houston, August 2018-Present.
- **Program Director**, ESP - REU at Saint Mary's College of Maryland, Summer, 2016.
- **Associate Professor**, Saint Mary's College of Maryland, August 2015 - Present.
- **Assistant Professor**, Saint Mary's College of Maryland, August 2009 - Present.
- **Visiting Researcher**, University of Granada, June 2009.
- **Graduate Student**, Rice University, 2003-2009. Dr. Mike Wolf, advisor.

### Areas of Research Interest

- Minimal Surfaces, Differential Geometry, Teichmüller Theory, Complex Analysis, Optical Engineering, Catadioptric Sensor Design.

### Publications

- Co-editor of PRIMUS, special Issue on Project Based Learning (Vol. 28, Issue 4, 2018).
- Introduction to the Special Issue with E. Köse (1 page), PRIMUS, March 2018.
- Turning, Sweeping, Shrinking and Minimizing (12 pages), The College Mathematics Journal (to appear).
- Isoperimetric Block Party, with E. Daring, I. Guadarrama, S. Sprague, and C. Winterer (13 pages), Mathematics Magazine (to appear).
- *Equitable Mirrors*, with E. Köse, N. Stack, and C. VanBlargan (10 pages), Applied Optics, December 2014.
- *Constant Mean Curvature Hypersurfaces in  $\mathcal{G}^m$* , (15 pages), International Journal of Geometry, October 2014.
- *Genus One Scherk Surfaces and Their Limits* (62 pages), Journal of Differential Geometry, January 2014.

### Publications and Projects Under Review or In Preparation

- AMS-MAA *Math-a-Day* page a day calendar, with E. Lamb, (in preparation).
- Not-So-Random Walks, with S. Ganzell, (in preparation).
- Non-Euclidean Photography, with E. Köse, J. Saltzberg, and A. Steinfeld, (in preparation / under revision).
- *Triply Periodic Costa Surfaces*, with A. Weyhaupt (in preparation).

## Grants

- **MAA PIC Math Grant** (with E. Köse), \$ 5,000.00 (2017)
- **NSF REU Grant** (with S. Ganzell), \$ 282,732.00, (DMS-1560301, 2016-2020)
- **Center for Undergraduate Research in Mathematics Grant**, \$ 2,000.00 (2014-2015).
- **Center for Undergraduate Research in Mathematics Grant**, \$ 17,000.00 (2013-2014).
- **Faculty Development Grants**, St. Mary's College of Maryland, (2009-2013).

## Undergraduate Research Projects

- **Maps and Mirrors and Non-Euclidean Photography** (St. Mary's College of Maryland, with E. Köse), 2013-2014 and 2014-2015. Oversaw research done by two groups of three math majors at St. Mary's. This research involves a new and exciting area of mathematics that lies at the intersection of Differential Geometry and Applied Mathematics. Students worked on designing reflective surfaces that solve problems in optics, resulting in several conference presentations and one publication.
- **Self-Similar Solutions to the Mean Curvature Flow** (St. Mary's College of Maryland), 2011-2012 and 2012-2013 Academic Years. Oversaw research done by various math majors at St. Mary's. Research involved open and classical questions concerning self-shrinking and self-expanding solutions to the mean curvature flow. This also involved work funded by St. Mary's Undergraduate Research Fellowship program where in *weighted* mean curvature flow was analyzed. Presentations at regional and national conferences were made by participants.
- **Minimal Surfaces with Density** (St. Mary's College of Maryland), 2010-2011 Academic year. Oversaw research done by three math majors at St. Mary's. Research involved open questions in the differential geometry of manifolds with density. Presentations at the 2011 CURM conference in Provo, UT were made by all participants.
- **A Lego Isoperimetric Problem** (St. Mary's College of Maryland), Summer 2010. Oversaw research done by five St. Mary's undergraduates as part of an NREUP. Research involved a discrete version of the classical isoperimetric problem.
- **Calculus of Variations and Energy Minimizing Vector Fields** (Rice University), Spring 2005-Fall 2006; Assisted undergraduates with research projects, presentations, and independent studies as part of Rice University's VIGRE program.

## Teaching

### Lecturer (University of Houston)

- Honors Calculus, Fall 2018.
- Business Calculus, Fall 2018.
- Transitions to Advanced Mathematics, Fall 2018.
- Calculus, Spring 2019.
- College Algebra (two sections), Spring 2019.

### Visiting Instructor (Rice University)

- Multivariable Calculus, Summer 2009.

- Ordinary Differential Equations and Linear Algebra, Fall 2017 and Spring 2018.

#### **Assistant / Associate Professor (St. Mary's College of Maryland)**

- Abstract Algebra II, Springs 2011, 2012
- Abstract Algebra, Falls 2010, 2011
- Advanced Linear Algebra (Independent Study), Spring (2013)
- Calculus, Falls 2009, 2010 2015, and Spring 2015.
- Calculus II, Springs 2010, 2011.
- Chemical Algebra (Independent Study), Fall 2016
- Complex Analysis, Springs 2010, 2012, 2014.
- Differential Geometry, Spring 2015.
- Foundations of Mathematics, Falls 2012, 2015 and Springs 2013, 2016.
- Graph Theory, Spring 2015.
- Linear Algebra, Fall 2013 and Spring 2016.
- Multivariable Calculus, Falls 2009, 2011, 2014, 2015, 2016 and Springs 2014, 2016.
- Industrial Mathematics (with E. Köse, funded by PIC Math), Spring 2017
- Real Analysis II, Spring 2017
- Real Analysis I, Fall 2016
- Riemannian Geometry (Independent Study / Seminar), Fall 2015
- Survey of Mathematics, Spring 2017
- Topology, Spring 2013

#### **Instructor (Rice University)**

- Single Variable Calculus, Spring 2006;
- Linear Algebra, Summer 2008.
- Linear Algebra, Summer 2007.
- Ordinary Differential Equations and Linear Algebra, Summer 2005.

Sole instructor (unless otherwise noted), organized course schedule and syllabus, maintained course website, wrote and graded assignments and exams, kept regular office hours, and provided practice exams as well as additional study sessions.

#### **Presentations and Other Activities**

- *Beyond Xenon's Paradox: Sticks, Loops, and Shape-Preserving-Functions*, Southwestern University, upcoming.
- *Non-Euclidean Photography (or How To Redirect Bent Light)*, Undergraduate Mathematics Colloquium, Rice University, March 23, 2018.
- *Raised Turning-Sweepers* (student talk by D. Weber), MAA Spring Sectional Meeting, Montgomery College, April 16, 2016.
- *Maps and Mirrors* (student talk by A. Steinfeld and J. Saltzberg), MAA Spring Sectional Meeting, Roanoke College, April 25, 2015.
- *Panelist* for Project NExT discussion group on undergraduate education, Joint Mathematics Meetings, January 2015.

- *Session Chair and Co-Organizer for Mathematics and Cartography session*, Joint Mathematics Meetings, January 2015.
- *Session Chair and Co-Organizer for Undergraduate Research and Project Based Curricula*, MathFest, August 2014.
- *Equitable Mirrors* (student talk by C. Van Blargen and N. Stack), Center for Undergraduate Research in Mathematics Conference, March 2014 and Joint Mathematics Meetings, January 2014.
- *The Great and Powerful O.*, St. Mary's College of Maryland NSM, November 2013 (Invited Talk).
- *What do Math and LEGOs Have in Common?* (student talk by C. Winterer, S. Sprague, and I. Guadarrama), Joint Mathematics Meetings, January 2013.
- *Gaussian Lines and Circles* (student talk by N. Pasko), Joint Mathematics Meetings, January 2013.
- *A LEGO Isoperimetric Problem* (student presentation by E. Darring), Young Mathematicians Conference, July 2012 (invited presentation).
- *An Undergraduate Approach to Mean Curvature Flow* (student talk by J. Kaminsky), Regional Undergraduate Mathematics Research Conference, April 2012.
- *Weighted geodesics and self-similar curve shortening*, George Washington University, March 17, 2012 (Invited Talk).
- *WILL PROVE FOR FOOD: Career Opportunities for Mathematics Majors*, St. Mary's College of Maryland, 2011 and 2012 (Invited Talk).
- *Measuring the Power of Jerks*, (presented by A. Jamieson), Florida Atlantic University, FL, March, 2011.
- *What Is/Was/Will be a Minimal Surface?* BYU, Provo, UT March 23rd, 2010 (Invited Talk).
- *Constructing and Obstructing Minimal Surfaces*. Johns Hopkins University, Baltimore, MD March 15th, 2010 (Invited Talk).
- *Perturbed, Genus-One Scherk Surfaces and Their Limits*. University of Granada, Granada, Spain June 10, 2009 (Invited Talk).
- *Perturbed, Genus-One Scherk Surfaces and Their Limits*. AMS Sectional Meeting, Urbana, IL, March 27-29, 2009 (Invited Talk).
- *Perturbed, Genus-One Scherk Surfaces and Their Limits*, and *Minimal Surfaces: Past, Present,*

*and Future*. Research Seminar and Undergraduate Colloquium, Holy Cross University, Worcester, MA, November 11, 2008.

- *Perturbed, Genus-One Scherk Surfaces*. AMS Sectional Meeting, Indiana University, Bloomington, IN, April 6, 2008.

### **Additional Talks and Service**

- College Evaluation Committee. SMCM, 2015-2017. Evaluated applications for contract renewals, tenure, and promotion for faculty at St. Mary's College of Maryland.
- Faculty Development Grant Committee. SMCM, 2014-Present. Awarded professional development funds to faculty at St. Mary's College of Maryland.
- Library Liaison. SMCM, 2011-Present. Assist librarians with collection development.
- IRB Committee Member. SMCM, 2013-Present.
- Natural Science and Mathematics Colloquium Committee Member. SMCM, 2011-2012. Invited speakers for the college's STEM-focused Colloquium series.
- *Undergraduate Research Consultant*. BYU, July 2010. Assisted REU students with their research topics pertaining to Minimal Surfaces.
- *A Crash Course in Measure and Integration Theory*. Rice University, June 2008. Introductory lecture given to VIGRE undergraduates conducting summer research.
- *Calculus II and Beyond*. Rice University, April 2006. Lecture given to undergraduates considering higher level math courses.
- *Soap Bubbles and Golden Bridges*. Rice University, March 2006. Lecture and demonstration given to visiting elementary school students.

### **Fellowships and Honors**

**Project NExT Feellowship**, 2009-2010.

**NSF VIGRE Fellowship**, Vertical Integration of Research and Education in Mathematical Sciences, Rice University, 2005-2007.

**Graduate Fellowship**, Rice University, 2003-Present.

**Summer Research Assistantship**, Rice University, Summers 2003-2008.

**Phi Beta Kappa Society Membership (Southwestern University Chapter)**, 2003 - Present.

### **Professional Organizations**

American Mathematical Society, 2003-Present

Mathematical Association of America, 2003-Present

### **References**

Dr. Michael Dorff, mdorff@math.byu.edu

Dr. Sandy Ganzell, sganz11@smcm.edu, 240-895-4371 (office)

Dr. Emek Köse, ekose@smcm.edu.edu, 240-895-4353 (office)

Dr. Alex Meadows (current chair), ammeadows@smcm.edu.edu, 240-895-4432 (office)

Additional references available upon request.