

Curriculum Vitae

Daniel Dreibelbis

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CURRENT POSITION

2004 - Present: Associate Professor, Department of Mathematics, University of North Florida
1998 - 2004: Assistant Professor, Department of Mathematics, University of North Florida

EDUCATION

- **May 1998:** Ph.D. Mathematics Brown University, Providence, RI
- **May 1995:** Sc.M. Mathematics Brown University, Providence, RI
- **May 1993:** B.A. Mathematics, High Distinction, University of Virginia, Charlottesville, VA

RESEARCH INTERESTS

Differential geometry through singularity theory, surfaces immersed in four-dimensional Euclidean space, bitangencies

PUBLICATIONS

- With W. Olsen, "Structure and transitions for line bitangencies from a one-parameter family of surface pairs", Submitted.
- With A. do Espirito Santo, M. Riberiro, and R. Araújo dos Santos, "A quick trip through fibration structures", *Journal of Singularities*, vol 22, 2020, pg 134-158.
- "Gauss maps and duality of sphere bundles", *Real and Complex Singularities*, Contemp. Math., *Amer. Math. Soc.*, 2016.

- With R. Araújo dos Santos. N. Dutertre, "Topology of the real Milnor fiber for isolated singularities", *Real and complex singularities*, 67–75, [Contemp. Math., 569](#), Amer. Math. Soc., Providence, RI, 2012.
- "Self-conjugate Vectors of Immersed 3-manifolds in \mathbf{R}^6 ", *Topology and its Applications*, **159** (2012), no. 2, 450-456.
- "Conjugate Vectors of Immersed Manifolds," *Real and Complex Singularities*, 1-12, Contemp. Math., **459**, Amer. Math. Soc., 2008.
- "The Geometry of Flecnodal Pairs," *Real and Complex Singularities, Trends in Mathematics* (2007), 113-126.
- "Birth of bitangencies in a family of surfaces in \mathbf{R}^4 ," *Differential Geometry and its Applications*. **24** (2006), no. 4, 321-331.
- "Invariance of the Diagonal Contribution in a Bitangency Formula," *Real and Complex Singularities*, 45-56, Contemp. Math., **354**, Amer. Math. Soc., 2004.
- "Singularities of the Gauss Map and Binormal Surfaces," *Advances in Geometry*, **3** (2003), 453-468.
- "A Self-Intersecting Sphere," [EG-Models](#), 2002.
- "A Bitangency Theorem for Surfaces in Four-Dimensional Euclidean Space," *Quarterly Journal of Mathematics*, **52** (2001).
- Editor for web version: T. Banchoff, T. Gaffney, and C. McCrory, "Cusps of Gauss Mappings," web version, [Electronic Library of Mathematics](#), European Mathematical Information Service. 1998.
- "A Bitangency Theorem for Immersed Surfaces in Four-Dimensional Euclidean Space," Ph.D. dissertation.
- With J. Rovnyak and K. Y. Li, "Coefficients of Bounded Univalent Functions," *Proceedings of the Conference of Complex Analysis (Tianjin, 1992)*, 45-48, Conference Proceedings and Lecture Notes in Analysis.

GRANTS

- **Summer 2020:** OUR Undergraduate Research Grant, with undergraduate NKosi Alexander, "Bitangency Reconstruction Problem".
- **Summer 2009:** Teaching Grant, Awarded by University of North Florida, "Undergraduate Elliptic Curves"
- **Summer 2007:** Research Grant, Awarded by University of North Florida, "4-D Geometry of Lighted Surfaces"
- **Summer 2002:** Teaching Grant, Awarded by University of North Florida, "Using the web in Explorations".
- **Summer 2001:** Teaching Grant, Awarded by University of North Florida, "Improving the computer-based college algebra system".
- **Summer 2000:** Research Grant, Awarded by University of North Florida, "Parabolic curves of evolving surfaces in \mathbf{R}^4 ."
- **Summer 1999:** Technology and Teaching Grant, Awarded by University of North Florida, "Using WebCT in Explorations of Mathematics".
- **Summer 1998:** *Communications in Visual Mathematics*, Awarded by the Mathematical Association of America.

- **Summer 1992:** Research Experiences for Undergraduates, Awarded by the National Science Foundation.

PRESENTATIONS

- “Surface Reconstruction from Line Bitangencies”, 6th International Workshop on Singularities in Generic Geometry and its Applications, Valencia, Spain, October 2019.
- “Line Bitangencies: Transitions and Global Theorems”, 15th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, July 2018.
- “Freakin’ Big Numbers”, UNF Math/Stat Club, October 2017.
- “Generic Geometry and the Structure of Line Bitangencies”, Mathematics Colloquium, Georgia State University, February, 2018.
- “Integral Curves from Line Bitangencies”, Singularities in Generic Geometry and its Applications: Valencia V, Mexico City, Mexico, August 2017.
- “Duality and Singularities”, Math/Stat Seminar, UNF, September 2016.
- “Gauss Maps and Duality of Sphere Bundles”, 13th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, July, 2014.
- “What’s that Thing of the Cover of My Calculus Book?”, UNF Math/Stat Club, October 2013.
- "Flat Geometry and Normal Forms for 3-Tensors", Singularity Seminar, USP-ICMC, Sao Carlos, Brazil, October 2012.
- "Monkey Saddles, Swallowtails, and the Giant Rat of Sumatra", MAA Florida Regional Meeting, Jacksonville, FL, February 2012.
- "Duality of Immersed Manifolds", Workshop of Singularities in Geometry and Applications, Bedlewo, Poland, May 2011.
- "How to Destroy the World Through Number Theory", Pi Mu Epsilon, Jacksonville, FL, April 2011 and Math/Stat Club, UNF, October 2012.
- "Fractals from Root-solving Techniques", MAA Florida Regional Meeting, Orlando, FL, February 2011.
- "Bitangencies on Higher Dimensional Immersed Manifolds", 11th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, 2010.
- "Curves and Surfaces from 3-D Matrices", First Coast MAA Sectional Meeting, Jacksonville, FL, January 2010 and MAA Florida Regional Meeting, Gainesville, FL, February 2010.
- "Self-Conjugate Vectors on Immersed 3-Manifolds in \mathbf{R}^6 ", International Workshop on Singularities in Generic Geometry and Applications, Valencia, Spain, March 2009.
- "What is Elliptic Curve Cryptography?", First Coast MAA Sectional Meeting, Jacksonville, FL, January 2009 and MAA Florida Regional Meeting, Fort Meyers, FL, February 2009, Key Note Talk, Embry-Riddle Undergraduate Mathematics Conference, Daytona, FL, April 2010, Math/CS Joint Seminar, UNF, October 2014.
- "Singularities of the Tangential Gauss Map", 10th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, July 2008.
- "Visualizing Milnor's Fibration Theorem", MAA Florida Regional Meeting, Lakeland, FL, March 2008.

- "The Geometry of Conjugate Vectors", 9th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, July 2006.
- "Visualizing Root Approximations", Student MAA Chapter Meeting, Jacksonville University, October 2005.
- "Reconstructing Surfaces from their Outlines", Keynote talk, Florida Northeast Regional MAA Meeting, Jacksonville University, April 2005.
- "The Geometry of Flecnodal Normals", 8th International Workshop on Real and Complex Singularities, LUMNY, Marseille, France, July 2004.
- "Building a Web Component for Explorations in Mathematics", The 14th International Conference on College Teaching and Learning, Jacksonville, April 2003.
- "Invariance of the Diagonal Contribution in a Bitangency Formula", 7th International Workshop on Real and Complex Singularities, ICMC-USP, Sao Carlos, Brazil, July 2002.
- "Squishin' Stuff: The Mathematics of Data Compression," Graduate Student Seminar, University of North Florida, October 2001.
- "Fancy Ways to Connect the Dots," Graduate Student Seminar, University of North Florida, September 2000.
- "Lights and Shadows: The Mathematics of Vision," Math/Stat Club Presentation, University of North Florida, February 2000.
- "Singularities of the Binormal Surface," Contributed Paper, Joint Mathematics Meeting, Washington D.C., January 2000.
- "Using the Web and WebCT in 'Explorations in Mathematics'," Contributed Paper, Joint Mathematics Meeting, Washington D.C., January 2000.
- "Lights, Shadows, and Stick Figures: The Mathematics of Vision," Seminar, Jacksonville University, April 1999.
- "The Fourth Dimension," Seminar, Jacksonville University, April 1999.
- "Bitangencies on Curves and Surfaces," MAA Florida Regional Conference, Panama City, March 1999.
- "Semi-Simple Web Page Creation," Colloquium, University of North Florida, February 1999.
- "A Bitangency Theorem for Surfaces in Euclidean Four-Space," Seminar, Fairfield University, July 1998.
- "Apparent Contours of Surfaces," Job Talk, University of North Florida, April, 1998.
- "Bitangencies on surfaces in Euclidean Three-Space," Shapes of Surfaces Seminar, Brown University, March, 1998.
- "A Bitangency Theorem for Surfaces in Euclidean Four-Space," Geometry Seminar, Brown University, March, 1998.
- "Contact Between Circles and Surfaces," Shapes of Surfaces Seminar, Brown University, November, 1997.
- "A Counterexample to a Conjecture on the Coefficients of a Bounded Univalent Function," AMS National Meeting, Washington D.C., April, 1993.

MISCELLANEOUS

- **2017:** Picture for Clay Institute's webpage
- **2000:** Picture design for MAA recruitment advertisement.
- **2000:** Picture design for MAA recruitment decal.
- **1998:** Picture design for Brown University mathematics graduate program brochure.

PROFESSIONAL SERVICE

University Committees

- University Disability Review Committee – 2017-2021
- General Education Council – 2017, 2018
- College of Arts and Sciences - Budget and Planning Committee - 2007, 2008
- Selection Committee for the Undergraduate Teaching Award finalists - 2002, 2008
- Research Grant Allocation Committee - 2000, 2001, 2008

Department Committees

- Promotion and Tenure By-Laws Committee (chair), 2006-2007, 2018-2021
- Annual Evaluation Guideline Committee (chair), 2018-2021
- General Education Committee, 2018-2020
- P&T Committee, 2005-2020 (chair four times)
- Search Committee, 2004, 2005, 2006, 2007, 2014, 2015, 2017, 2019
- Academic Resource Committee - 2000 (chair), 2001
- Undergraduate Committee - 2003, 2005- (chair in 2010, 2016-2019)
- Graduate Committee - 2004
- Liaison Committee - 1998, 1999 (chair), 2004
- Professional Development - 1999

2005-2010, 2019- : Undergraduate Director, Department of Mathematics and Statistics.

2018-2019: Lower Division Director, Department of Mathematics and Statistics.

2005-2010, 2019- : Faculty Advisor, Math/Stat Club

2001-2003: Coordinator for the computer-based college algebra.

1999-2002: Faculty Advisor, Sigma Kappa Brendo

TEACHING

Awards:

- **2017:** Sigma Alpha Pi Teacher of the Year
- **2007:** 2007 Outstanding Undergraduate Teaching Award, University of North Florida
- **2003:** UNF Student's Choice Award, Mathematics
- **2003:** Award for Innovative Excellence in Teaching, Learning and Technology, The 14th International Conference on College Teaching and Learning
- **2002:** 2002 Outstanding Undergraduate Teaching Award, University of North Florida
- **1999-2000:** Project NExT Fellow
- **1998:** Outstanding Teaching Prize in Mathematics, Brown University.

Undergraduate Courses:

- Abstract Algebra I - Sp 11, Sp 15
- Abstract Algebra II (independent study) - Sp 12
- Business Calculus - F 01, Su 17
- Calculus I - F 98, F 99, F 00, Su 04, F 14, Sp 17, F 19
- Calculus II - F 96, Sp 01, Su 03, F 04, F 05, Su 06, F 06, Su 07, Su 08, F 08, Su 14, Sp 15, Sp 20
- Calculus III - F 97, Sp 02, Sp 03, F 03, Su 05, Sp 08, Su 09, Sp 10, Su 10, F 11, Sp 12, Sp 14
- Capstone - Sp 06, Sp 07, F 07, Sp 08, F 09, Sp 10, F 20
- College Algebra - Sp 99, Su 99, F 99, Sp 00, Su 00, F 00, F 03, Sp 11
- Complex Analysis - Sp 02
- Cryptography - Sp 09
- Discrete Mathematics – F 17, F 18
- Explorations in Mathematics - F 99, Sp 02, F 02, Sp 04, F 04, F 05, F 06, F 11, Sp 12
- Foundations in Mathematics - Sp 05, F 15, F 16, F 17, Sp 19
- Geometry for Middle School Teachers - F 01, F 02, F 05, F 06, F 07, F 08, F 09, F 10, F 11, F 13, F 14, F 15, F 16, F 17, F19, F20
- Honors Calculus II - Sp 05
- Honors Explorations - Sp 06
- Linear Algebra - Sp 96, F 10, Sp 14, F 16, Su 18, F 18, F19
- Math Enhancement for Elementary School Teachers - Su 02
- Modern Geometry - Sp 00, Sp 07, Sp 09, Sp 14, Sp 15, Sp 16, Sp 17, Sp 18, Sp 19, Sp 20, Sp 21
- Partial Differential Equations - F 10
- Precalculus - Sp 99, Su 12, Su 15, Su 19
- Topology - F 98, Su 14 (independent study)
- Trigonometry - Su 02
- Vector Analysis - F 03, F 07, F 20

Graduate Courses:

- Complex Analysis (independent study) - Sp 02
- Computer Vision - Sp 04
- Differential Geometry - Sp 99
- Numerical Analysis - F 04
- Scientific Computing - Sp 01, Sp 03, F 09

Thesis Advisor:

- Murphy Griffin – “Harmonic Morphisms with One-Dimensional Fibers”, defended Summer 2020.
- Bill Olsen - "Transitions in Line Bitangency Submanifolds for One-Parameter Family of Immersion Pairs", defended Summer 2014.
- Alex Aftuck - "Weil Pairing on Elliptic Curves with Applications to Cryptography", defended Summer 2011.
- John Metcalf - "Cusp Detection using Wavelets", defended Spring 2005.
- Derek Wray - "The Apparent Contour and Edge of Stationary and Rotating Surfaces", defended Summer 2000.
- Also served on five other thesis committees.

PROFESSIONAL ASSOCIATIONS

Mathematical Association of America

American Mathematical Society