

Breeanne Swart

The Citadel, The Military College of South Carolina
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EDUCATION

Lehigh University: Bethlehem, PA

Ph.D. Mathematics, September 2013.

Dissertation Topic: The k -fixed-endpoint Path Partition Problem.

Advisor: Dr Garth Isaak.

M.S. Mathematics, May 2009.

Meredith College: Raleigh, NC

B.S. Mathematics; **B.A.** French; Computer Science minor; Honors Program, May 2007

TEACHING EXPERIENCE

The Citadel, The Military College of South Carolina: August 2013 - Present

- Charleston, SC
- Associate Professor of Mathematics: Fall 2019 - Present.
- Assistant Professor of Mathematics: Fall 2013 - Spring 2019.
- Teach mathematics courses including service and major courses. Maintain personal scholarship. Perform service to department, school, college, and discipline.

Lehigh University: August 2007- May 2013

- Bethlehem, PA
- Lecturer: Fall 2011 - May 2013. Taught Preparation for Calculus, Calculus with Business Applications, and Survey of Linear Algebra.
- Mathematics Teaching Assistant: Fall 2007-Spring 2011. Responsibilities included lead four weekly recitations, grade homework assignments, help grade exams, and hold office hours for the Engineering Calculus series and Calculus with Business Applications.

PROFESSIONAL DEVELOPMENT

- NSF ADVANCE ASCEND Faculty Fellow. August 2020 - Present.
- Assessment Academy. Spring 2024.
- Assessment Workshop: General Education Assessment. May 2022.
- Emerging Faculty Leaders. Citadel Provost's Office. September 2021 - June 2022.
- Faculty Assessment Workshop. June 2021.

SABBATICAL

- Semester sabbatical, Spring 2023.

GRANTS (* indicates an external grant)

- ***Project Director**, Dolciani Mathematics Enrichment Grant. “Math Research Experience for Lowcountry High School Students and Teachers.” Funded. May 2024-August 2025. \$5000. Additional funding provided by The Citadel Foundation.
- Faculty Summer Provost Research Grant. “Prime Progressions.” Funded. Summer 2024.
- ***CIRCLE** from Citadel DoD Cyber Institute. “Predicting Malign Actors Using Social Network Analysis.” Funded. June 2024-April 2025. \$29,926.56.
- **Project Director**, Dolciani Mathematics Enrichment Grant. “Math Research Experience for Lowcountry High School Students and Teachers.” Funded. May 2023-August 2024. \$5000. Additional funding provided by The Citadel Foundation.
- ***REUF** Continuation Grant. Summer 2023. Deferred to Summer 2024.
- ***NSF-REU** Site. “Using Graph Theory to Harness Big Data.” Unfunded. Submitted September 2023. \$432,790.00.
- The Citadel Summer Undergraduate Research Experience Grant. Sadie Gomez. Summer 2022.
- The Citadel Summer Undergraduate Research Experience Grant. Aaron Reynolds. Summer 2021.
- ***NSF ADVANCE ASCEND**. August 2020 - August 2025.
- ***REUF** Continuation Grant. Summer 2020.
- ***REUF** Continuation Grant. August 2019.
- The Citadel Summer Undergraduate Research Experience Grant. Jacob Blankenship. Summer 2019.
- The Citadel Foundation Research Grant. July 2018-June 2019.
- ***SC EPSCoR/IDeA REU**. James Andrus. Summer 2017.
- The Citadel Foundation Research Grant. July 2016-June 2017.
- The Citadel Foundation Presentation Grant. Midwestern Conference on Combinatorics and Combinatorial Computings. October 2015.
- The Citadel Foundation Faculty Development Grant. MathFest Minicourse. August 2015.
- ***REUF SQuaRE**. “Properties of Happy Functions.” July 2015.
- The Citadel Foundation Presentation of Research Grant, “Augmented Happy Functions.” MAA-SE Sectional Meetings. March 2015.
- ***Triangle Lecture in Combinatorics Travel Funds** Grant. October 2014.
- The Citadel Foundation Presentation of Research Grant, “Generalization of the Nine Card Problem.” MathFest. August 2014.
- ***The National Science Foundation, # DMS 1239280**, Research Experience for Undergraduate Faculty. July 2014.
- The Citadel Foundation New Faculty Research Grant. March 2014.
- The Citadel Foundation Faculty Development Grant. Joint Mathematics Meetings. January 2014.
- The Citadel Foundation Presentation of Research Grant, “The k -Fixed-Endpoint Path Partition Problem on Trees and Block Graphs.” Carolina Mathematics Seminar. October 2013.
- The Citadel Foundation Presentation of Research Grant, “The k -Fixed-Endpoint Path Partition Problem on Unit Interval Graphs and Other Interesting Problems.” UNC Asheville Senior Seminar. September 2013.
- ***2012 Trends in Undergraduate Research in Mathematical Sciences Conference Travel Funds** Grant. Chicago, IL. October 2012.
- Lehigh University Mathematics Department Summer Research Fellowship. Summer 2012.

PUBLICATIONS (* indicates Citadel undergraduate)

- Breeanne Baker Swart, Rigoberto Flórez, and Sandra Yepes, *Happy Fibonacci Numbers*, in preparation.
- Breeanne Baker Swart, Antara Mukherjee, and Aaron Reynolds*, *Properties of Ulam Sequences*, in preparation.
- Breeanne Baker Swart, Sadie Gomez*, and Antara Mukherjee, *Families of Prime Progressions*, in preparation.
- Breeanne Baker Swart, Mei Chen, Rigoberto Flórez, and Antara Mukherjee, *Getting High School Students Doing Mathematical Research*, Teaching Mathematics and Its Applications: International Journal of the IMA, Accepted.
- B. Baker Swart, S. Crook, H. Grundman, and L. Hall-Seelig. *Quadratic Polynomial Happy Functions*, Rocky Mountain Journal of Mathematics, Accepted.
- Skyler Addy*, Breeanne Baker Swart, Antara Mukherjee, and Zachary Parker*. *Characterizing Lucky and Unlucky Numbers*, Unpublished student work.
- Skyler Addy*, Breeanne Baker Swart, Antara Mukherjee, and Zachary Parker*. *Extensions of Wilson's Theorem*, Unpublished student work.
- B. Baker Swart, S. Crook, H. Grundman, and L. Hall-Seelig. *Gaussian Happy Numbers*, Rocky Mountain Journal of Mathematics, **52** (2022), iss. 2, 415-429.
- B. Baker Swart, S. Crook, H. Grundman, L. Hall-Seelig, M. Mei, and L. Zack, *Fixed Points of Augmented Happy Functions II: Oases and Mirages*, J. Integer Seq., **22** (2019), no. 5, Art. 19.5.5.
- James Andrus Jr.*, Shankar Banik, Breeanne Baker Swart, and Michael Verdicchio, *Multicast Routing using Delay Intervals for Collaborative and Competitive Applications*, IEEE Transactions on Communications, **66** (2018), iss. 12, 6329-6338.
- Breeanne Baker Swart, Kristin Beck, Christina Eubanks-Turner, Helen Grundman, May Mei, and Laurie Zack, *Fixed Points of Augmented Happy Functions*, Rocky Mountain Journal of Mathematics, **48** (2018), no. 1, 47-58.
- Breeanne Baker Swart, Kristin Beck, Christina Eubanks-Turner, Helen Grundman, May Mei, and Laurie Zack, *Augmented Generalized Happy Functions*, Rocky Mountain Journal of Mathematics, **47** (2017), no. 2, 403-417.
- Breeanne Baker Swart, Rigoberto Florez, Darren Narayan, and George Rudolph, *Extrema Property of the k -ranking of directed paths and cycles*, AKCE International Journal of Graphs and Combinatorics, **13** (2016), iss. 1, 35-53.
- Marcus Harbol* and Breeanne Baker Swart, *Augmented Happy Functions of Higher Powers*, Journal of South Carolina Academy of Science, **13** (2015), iss. 2, article 7.
- Breeanne Baker Swart and Brittany Shelton, *Revelations and Generalizations of the Nine Card Problem*, Mathematics Magazine, **88** (2015), no. 2, 137-143.

PRESENTATIONS

- "Finding Patterns in Sequences of Numbers." **Invited Talk**. Department of Mathematical Sciences Colloquium, Charleston, SC. September 2024.
- "Extensions of Wilson's Theorem." Integers. Athens, GA. May 2023.
- "Properties of Ulam Sequences." MAA-SE Sectional Meeting. Conway, SC. March 2023.
- "Clickers." Invited Talk: MAA-SE Section NExT. Macon, GA. March 2017.
- "Math and Magic." Invited Talk: South Carolina Junior Academy of Science. Charleston, SC. October 2016.
- "Maximizing the Number of Edges in a k -Ranking of a Directed Graph." Midwestern Conference on Combinatorics and Combinatorial Computings. Charleston, SC. October 2015.
- "Augmented Happy Functions." MAA-SE Sectional Meeting. Wilmington, NC. March 2015.

- “Augmented Happy Numbers.” Invited Talk: Sigma Xi. Charleston, SC. November 2014.
- “Math and Magic.” Invited Talk: South Carolina Junior Academy of Science. Charleston, SC. November 2014.
- “Generalization of the Nine Card Problem.” MathFest. Portland, OR. August 2014.
- “The Nine Card Problem: The Mystery Revealed.” MAA-SE Sectional Meeting. Cookeville, TN. March 2014.
- “The k -Fixed-Endpoint Path Partition Problem on Trees and Block Graphs.” Invited Talk: Carolina Mathematics Seminar. Columbia, SC. October 2013.
- “The k -Fixed-Endpoint Path Partition Problem on Unit Interval Graphs and Other Interesting Problems.” Invited Talk: UNC Asheville Senior Seminar. Asheville, NC. September 2013.
- “The 1-Fixed-Endpoint Path Partition Problem on Interval Graphs.” Joint Mathematics Meetings. San Diego, CA. January 2013. (1086-05-481)
- “Characterization Theorems for the k -Fixed-Endpoint Path Partition Problem.” Invited talk: AMS Eastern Sectional Meeting. Rochester Institute of Technology, Rochester, NY. September 2012. (1082-05-155)
- “From Professors to Empires.” Moravian College Mathematical Society ϵ -talk, Bethlehem, PA. April 2012.
- “The k -fixed-endpoint Path Partition Problem.”
 - Joint Mathematics Meetings. Boston, MA. January 2012. (1077-05-1568)
 - EPaDel MAA Sectional Meeting. Harrisburg Area Community College, Harrisburg, PA. April 2011.
 - 42nd Southeastern International Conference on Combinatorics, Graph Theory, and Computing. Florida Atlantic University, Boca Raton, FL. March 2011.
 - Graduate Student Intercollegiate Mathematics Seminar. Lehigh University, Bethlehem, PA. March 2011.
- “Mobius Fun.” Touch the Future: A Celebration of Women in Math and Science. American Association of University Women, Lansdale, PA. March 2011.
- “Path Partitions in Special Graph Classes.” Graduate Student Intercollegiate Mathematics Seminar. Lehigh University, Bethlehem, PA. October 2010.
- “Elliptic Curves and Cryptography.” Celebrating Student Achievement Day. Meredith College, Raleigh, NC. April 2007.
- “Sending Secret Messages Using Cryptography.” Sonya Kovalesky Day. Meredith College, Raleigh, NC. February 2007.

ADDITIONAL CONFERENCES ATTENDED

- South Carolina Academy of Sciences Annual Meeting. Charleston, SC. April 2024.
- South Carolina Academy of Sciences Annual Meeting. Charleston, SC. March 2023.
- South Carolina Academy of Sciences Annual Meeting. Aiken, SC. April 2022.
- MAA Southeastern Section Meeting. Rome, GA. March 2022.
- South Carolina Academy of Sciences Annual Meeting. Virtual. April 2021.
- South Carolina Academy of Sciences Annual Meeting, March 2019.
- MAA Southeastern Section Meeting. Macon, GA. March 2017.
- Joint Mathematics Meetings. Atlanta, GA. January 2017.
- MathFest. Washington, DC. August 2015.
- South Carolina Academy of Sciences Annual Meeting. Greenville, SC. April 2015.
- Triangle Lectures in Combinatorics. High Point, NC. October 2014.
- American Institute of Mathematics Research Experiences for Undergraduate Faculty Workshop. Palo Alto, CA. July 2014.
- Joint Mathematics Meetings. Baltimore, MD. January 2014.

- Mini-ExCEED Workshop. Charleston, SC. January 2014.
- The Council on Undergraduate Research Workshop. Charleston, SC. November 2013.
- ProjectNExt Workshop. Hartford, CT. August 2013.
- MathFest. Hartford, CT. August 2013.
- 2012 Trends in Undergraduate Research in Mathematical Sciences Conference. Chicago, IL. October 2012.
- EPaDel MAA Sectional Meeting. LaSalle University, Philadelphia, PA. November 2010.
- Joint Mathematics Meetings. Washington, D.C. January 2009.

SERVICE

Professional Service

- Project Director. Math Research Experience for Lowcountry High School Students and Teachers, Charleston, SC. June 2024, July 2023.
- Co-organizer. South Carolina Academy of Sciences Councilors' Dinner, Charleston, SC. March 2024, March 2023.
- Puzzle Reviewer. MAA FOCUS, October 2023-Present.
- Judge - Oral Presentations. South Carolina Junior Academy of Sciences Annual Meeting. April 2024, March 2023, April 2022, March 2019.
- Judge - Papers. South Carolina Junior Academy of Sciences. February 2023, February 2024.
- Co-director. Math Research Experience for Lowcountry High School Students, Charleston, SC. June 2022.
- Co-host. South Carolina Academy of Sciences Annual Meeting, Virtual. April 2021.
- Chair. The Citadel Undergraduate Curriculum Committee, August 2020 - May 2021.
- Reviewer. AMS MathReviews, 2018 - Present.

University Service

- Freshmen Seminar Standards Committee, September 2024 - Present.
- General Education Committee, April 2023 - Present.
- Academic Excellence Day Judge, April 2021, 2022, 2023, 2024.
- CSI Steering Committee, November 2021 - May 2022.
- Undergraduate Curriculum Committee, January 2017 - May 2022. **Chair** August 2020 - May 2021.
- Faculty Fellow for LiveStreaming, August 2020 - May 2021.

Department Service

- Scheduling Committee, September 2023 - Present.
- Website, August 2016 - Present.
- Gateway Exam Committee, January 2014 - August 2022. **Chair** August 2014 - December 2021.
- Curriculum Committee, August 2019 - May 2022.
- Graduate Math Committee, August 2016 - April 2022.
- Math Jeopardy Team, August 2014 - April 2022.
- Recruitment Committee, August 2016 - December 2021. **Chair** August 2016 - August 2019.
- CURE Committee, August 2017 - May 2021.
- Student Awards Committee, **Chair** August 2017 - May 2020.
- Department T&P Standards, August 2019 - December 2019.

MEMBERSHIPS

National Center for Faculty Development & Diversity, Member, September 2024-Present.
South Carolina Academy of Science, Councilor, January 2018-June 2024; Member January 2018-Present.
Math Alliance, January 2017-Present.
Sigma Xi, Charleston Chapter, May 2015-June 2022.
Mathematical Association of America, September 2013-Present.
Project NExT Fellow – MAA, August 2013-Present.
American Mathematical Society, August 2007-2013.
Graduate Student Intercollegiate Mathematics Seminar, August 2009-May 2013.

OTHER EXPERIENCE

Lehigh University Math Study/Help Center: Fall 2007-Spring 2013.

- Bethlehem, PA.
- Tutored undergraduate and graduate students taking calculus, differential equations, linear algebra, probability, statistics, and analysis.

Meredith College Learning Center: Fall 2005-Spring 2007

- Raleigh, NC
- Tutored fellow students in math courses from algebra to calculus as well as introductory physics and introductory french.

Honors Thesis: Fall 2006-Spring 2007

- Meredith College, Raleigh, NC
- Performed research in cryptology with Dr Jennifer Hontz. Used Java to encrypt and decrypt messages.

Research Experiences for Undergraduates: Summer 2006

- Rose-Hulman Institute of Technology, Terre Haute, IN
- Performed research in inverse problems. Presented findings at conference for Indiana REUs.

AWARDS

- TA of the Year. Spring 2011. Lehigh University, Bethlehem, PA.

TECHNOLOGY SKILLS: iClicker, TurningPoint Technologies, WebAssign, MyMathLab, Canvas, Course Site, Blackboard, L^AT_EX, Word, Excel, PowerPoint, Zoom, SWIVL.