

Education

- 2012–2017 **Ph.D., Mathematics and Statistics**, *Georgia State University*
 Research specialization in Collegiate Mathematics Education.
Dissertation investigated how students develop an understanding of proof by contradiction.
 Advised by Dr. Draga Vidakovic.
- 2007–2010 **B.S., Mathematics**, *University of Florida*

Professional Experience

- 2021–present **Assistant Professor**, Department of Mathematics, Science, and Technology, Embry-Riddle Aeronautical University – Worldwide
- 2017–2021 **Lecturer**, Department of Mathematics, University of Florida
- 2013–2017 **Graduate Teaching Assistant**, Department of Mathematics and Statistics, Georgia State University
- 2011–2012 **Teacher**, Mathematics, William T. Dwyer High School, Palm Beach County, FL

External Research Funding Experience

- \$233,298 funded **Co-Principal Investigator**, *NSF EDU DUE-IUSE: Community of Inquiry and Cognitive Load in Online STEM: Persistence, Performance, and Perspectives*, with Emily Faulconer (PI) and Beverly Wood (co-PI). 2021–2024.
- \$271,543 unfunded **Principal Investigator**, *NSF EDU DUE-IUSE: Drilling Down into Concepts with Automatic and Diagnostic Item Generation (Auto-DIG)*, with Annie Burns-Childers (co-PI), Catherine Paolucci (co-PI), and Russell Jeter (consult). Submitted October 2020.
- \$202,184 unfunded **Co-Principal Investigator**, *NSF: Using Video to Expand Communication of Mathematical Sciences Research*, with Catherine Paolucci (PI). Submitted October 2020.
- \$99,960 unfunded **Principal Investigator**, *NSF EDU DUE-ECR Core Research: Analyzing a Novel College Algebra Curriculum and Implementation*, with Russell Jeter (consult). Submitted October 2019.
- \$340,764 funded **Graduate Research Assistant (2016–2017); Other Professional (2017–present)**, *NSF EDU DUE-IUSE: Promoting Reasoning in Undergraduate Mathematics (PRIUM)*, with Draga Vidakovic (PI), Valerie Miller (Co-PI), and Guantao Chen (Co-PI). 2016–2022.

Internal Research Funding Experience

- \$4,069 funded **Principal Investigator**, *ERAU-W Faculty Seed Grant: Developing Autonomous, Targeted Feedback in Precalculus*, 2021–2022.
- \$29,923 funded **Co-Principal Investigator**, *UF Internal Grant: Examining and addressing the content knowledge development needs of Florida's aspiring and newly-qualified mathematics teachers*, with Catherine Paolucci (PI) and Christopher Redding (Co-PI). 2020–2021.

Journal Articles Under Review

- [1] Paolucci, C., **Chamberlain Jr., D.**, Redding, C., Vancini, S., & Reese, A. (first submission Nov 2021, revised and resubmitted Aug 2022). *Critical lessons from certification exam preparation materials for mathematics teachers' content knowledge and professional learning*. Journal of Teacher Education.
- [2] **Chamberlain Jr., D.** (first submission Sept 2021, revised and resubmitted August 2022). *How one instructor can teach a large-scale, mastery-based College Algebra course online*. Problems, Resources, and Issues in Mathematics Undergraduate Studies.

Peer-Reviewed Journal Articles

- [1] Faulconer, E., **Chamberlain Jr., D.**, & Woods, B. (2022). *A Case Study of Community of Inquiry Presences and Cognitive Load in Asynchronous Online STEM Courses*. Online Learning Journal. DOI: <http://dx.doi.org/10.24059/olj.v26i3.3386>.
- [2] **Chamberlain Jr., D.** & Vidakovic, D. (2021). *Cognitive trajectory of proof by contradiction for Transition-to-Proof students*. Journal of Mathematical Behavior. DOI: 10.1016/j.jmathb.2021.100849.

- [3] **Chamberlain Jr., D.** & Jeter, R.¹ (2020). *Creating diagnostic assessments: Automated distractor generation with integrity*. Journal of Assessment in Higher Education. DOI: 10.32473/jahe.v1i1.116892.
- [4] **Chamberlain Jr., D.**, Grady, A., Keeran, S., Knudson, K., Manly, I., Shabazz, M., Stone, C., & York, A. (2020). *Transitioning to an active learning environment for calculus at the University of Florida*. Problems, Resources, and Issues in Mathematics Undergraduate Studies. DOI: 10.1080/10511970.2020.1769235
- [5] Stalvey, H., Burns, A., **Chamberlain Jr., D.**, Kemp, A., Meadows, L., & Vidakovic, D. (2019). *Students' understanding of the concepts involved in hypothesis testing for one population*. Journal of Mathematical Behavior. DOI: 10.1016/j.jmathb.2018.03.011

Peer-Reviewed Conference Proceedings [asterisk denotes presenter]

- [1] **Chamberlain Jr., D.***, Reed, Z., & Keene, K. (2023, Feb 23-25). *Adapting the Argumentative Knowledge Construction Framework to Asynchronous Mathematical Discussions*. 25th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [2] Bailey, T., **Chamberlain Jr., D.***, & Christodouloupoulou, K. (2022, Feb 24-26). *Undergraduate's covariational reasoning across function representations*. 24th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [3] Kemp, A.*, **Chamberlain Jr., D.**, Cooley, L., Miller, V., & Vidakovic, D. (2020, Feb 27-29). *Student self- and simulated peer-evaluation of proof comprehension: Tina*. 23rd Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [4] **Chamberlain Jr., D.*** & Jeter, R. (2019, Feb 28 - Mar 2). *Leveraging cognitive theory to create large-scale learning tools*. 22nd Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [5] **Chamberlain Jr., D.*** & Vidakovic, D. (2018, Feb 22-24). *Developing proof comprehension and proof by contradiction through logical outlines*. 21st Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [6] Burns, A.*, **Chamberlain Jr., D.**, Kemp, A.*, Meadows, L., Stalvey, H., & Vidakovic, D. (2018, Feb 22-24). *Reasoning about one population hypothesis testing: The case of Steve*. 21st Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [7] **Chamberlain Jr., D.*** & Vidakovic, D. (2017, Feb 23-25). *Developing student understanding: The case of proof by contradiction*. 20th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [8] Burns, A.*, **Chamberlain Jr., D.**, Kemp, A.*, Meadows, L., Stalvey, H., & Vidakovic, D. (2017, Feb 23-25). *Students' understanding of test statistics in hypothesis testing*. 20th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [9] Abel, T.*, Brazas, J.*, **Chamberlain Jr., D.**, & Kemp, A. (2017, Feb 23-25). *Characterizing mathematical digital literacy: A preliminary investigation*. 20th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.
- [10] **Chamberlain Jr., D.*** & Vidakovic, D. (2016, Feb 25). *Use of strategic knowledge in a transition-to-proof course: Differences between an undergraduate and graduate student*. 19th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME.

Conference Presentations [asterisk denotes presenter]

- [1] Faulconer, E.*, **Chamberlain Jr., D.***, & Woods, B. (2022, April 13). *Instructional Efficiency in Asynchronous Online Discussions*. Online Learning Consortium Innovate conference, Dallas, TX.
- [2] Paolucci, C.*, **Chamberlain Jr., D.**, & Vancini, S.* (2022, Apr 7). *Investigating alternatively-certified teachers' mathematical knowledge for teaching calculus*. Joint Mathematics Meeting, Seattle, WA.
- [3] Reed, Z., **Chamberlain Jr., D.***, & Keene, K. (2022, Feb 25). *Argumentative knowledge construction in asynchronous calculus discussion boards*. Poster at 24th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME, Boston, MA.
- [4] **Chamberlain Jr., D.***, Reed, Z., & Keene, K. (2021, Nov 20). *Investigating social construction of knowledge during asynchronous discussions*. 5th Northeastern Conference on Research in Undergraduate Mathematics Education. New Brunswick, NJ (virtual).

¹Co-first authors.

- [5] Babiceanu, L.* & **Chamberlain Jr., D.** (2021, Feb 20). *Analyzing student achievement with residential and online students in College Algebra*. Florida Section of the Mathematical Association of America and Florida Two-Year College Mathematics Association 2021 Joint Meeting, Gainesville, FL (virtual).
- [6] **Chamberlain Jr., D.*** & Jeter, R. (2021, Jan 7). *Automated AF: Leveraging augmented intelligence to provide automated, actionable feedback*. Joint Mathematics Meeting, Washington, D.C. (virtual).
- [7] **Chamberlain Jr., D.*** & Jeter, R. (2020, Oct 20-21). *Incorporating Augmented Intelligence to Enhance Learning: Automatic and Diagnostic Item Generation (Auto-DIG)*. STEMpowered Faculty Symposium, Gainesville, FL (virtual).
- [8] **Chamberlain Jr., D.*** & Vidakovic, D. (2020, Oct 3). *Potential cognitive obstacles to understanding proof by contradiction*. 4th Northeastern Conference on Research in Undergraduate Mathematics Education. Philadelphia, PA (virtual).
- [9] **Chamberlain Jr., D.*** (2020, Jul 30). *Drilling down into content with Auto-DIG: Automatic Diagnostic Item Generation*. MAA MathFest, Philadelphia, PA. *Session canceled due to COVID-19 pandemic*.
- [10] **Chamberlain Jr., D.*** (2020, Jan 18). *Mastery-based assessment in a large-enrollment online College Algebra course*. Joint Mathematics Meeting, Denver, CO.
- [11] **Chamberlain Jr., D.**, Knudson, K., Grady, A.*, Keeran, S., Manly, I., Shabazz, M., Stone, C., & York, A. (2020, Jan 18). *Active Calculus at the University of Florida*. Joint Mathematics Meeting, Denver, CO.
- [12] **Chamberlain Jr., D.*** & Jeter, R. (2019, Apr 5). *Creating diagnostic assessments: Automated distractor generation with integrity*. 2019 Assessment in Higher Education: Enhancing Institutional Excellence, Gainesville, FL.
- [13] Jeter, R.* & **Chamberlain Jr., D.** (2018, Mar 24). *A novel method for creating assessment and diagnostic tools in the classroom*. MAA Southeastern Spring Sectional Meeting, Clemson, SC.
- [14] **Chamberlain Jr., D.*** & Vidakovic, D. (2017, Mar 11). *Active learning in transition-to-proof courses: An example lesson of proof by contradiction*. AMS Southeastern Spring Sectional Meeting, Charleston, SC.
- [15] **Chamberlain Jr., D.*** & Vidakovic, D. (2017, Jan 5). *A first lesson on proof by contradiction: Developing proof comprehension in a transition-to-proof course*. Joint Mathematics Meeting, Atlanta, GA.
- [16] **Chamberlain Jr., D.***, Kemp, A.*, Meadows, L.*, Stalvey, H., Vidakovic, D., & Burns, A. (2016, Mar 5). *The emporium model for elementary statistics: A preliminary report*. AMS Southeastern Spring Sectional Meeting, Athens, GA.
- [17] **Chamberlain Jr., D.*** & Vidakovic, D. (2015, Apr 17). *APOS Theory in the classroom*. Center for Instructional Effectiveness Annual Conference, Atlanta, GA.
- [18] **Chamberlain Jr., D.***, Vidakovic, D., Stalvey, H., Burns, A., Meadows, L., & Kemp, A.* (2015, Apr 10). *Student understanding of one population hypothesis testing: A piece of the process*. Mathematics Graduate Student Miniconference, Atlanta, GA.
- [19] **Chamberlain Jr., D.*** & Vidakovic, D. (2015, Apr 10). *Teaching proofs with APOS Theory*. Mathematics Graduate Student Miniconference, Atlanta, Ga.

Invited Talks

- [1] **Chamberlain Jr., D.** & Faulconer, E. (2022, Apr. 21). *How We Manage Large-Scale Data Collection*. Invited by Embry-Riddle Aeronautical University – Worldwide College of Arts and Sciences Brown Bag Lunch & Learn Series.
- [2] Paolucci, C. & **Chamberlain Jr., D.** (2021, Mar. 25). *A profile of the content knowledge development needs of Florida's alternatively-certified teachers*. Invited by University of Florida Education Policy Research Center Research Brown Bag Series.
- [3] **Chamberlain Jr., D.** (2020, Nov. 13). *Integrating Augmented Intelligence into Mathematics Education*. Invited by Florida International University Mathematics Education Seminar.
- [4] **Chamberlain Jr., D.** (2020, Sept. 17). *Automatic and Diagnostic Item Generation*. Invited by the University of Florida Laster Center.

Session/Workshop Organization

- [1] **Chamberlain Jr., D.**, Reed, Z., & Keene, K. (2023, Feb 23). Workshop: *Research on Technology in Undergraduate Mathematics Education*. 25th Annual Conference on Research in Undergraduate Mathematics Education: SIGMAA on RUME, Omaha, NE.
- [2] **Chamberlain Jr., D.**, Acu, B., & Gasiorrek, S. (2023, Jan 3). Session: *Navigating the Early Years of the Faculty Experience*. 2023 Joint Mathematics Meeting, Boston, MA.
- [3] Vidakovic, D., Stalvey, H., **Chamberlain Jr., D.**, Kemp, A., Meadows, L., & Kellam, A. (2018, Mar 23-24). Session: *Active Learning in Undergraduate Mathematics*. MAA Spring 2018 Southeastern Section Conference, Clemson, SC.
- [4] Vidakovic, D., Stalvey, H., **Chamberlain Jr., D.**, Kemp, A., & Meadows, L. (2017, Mar 10-12). Session: *Active Learning in Undergraduate Mathematics*. AMS Spring 2017 Southeastern Regional Conference, Charleston, SC.
- [5] Vidakovic, D., Stalvey, H., **Chamberlain Jr., D.**, Kemp, A., & Meadows, L. (2016, Mar 5-6). Session: *Active Learning in Undergraduate Mathematics*. AMS Spring 2016 Southeastern Regional Conference, Athens, GA.

Teaching Experience

- 2021–present **Precalculus for Aviation, Instructor**
- Asynchronous online with 20 – 30 students.
 - October 2022: EagleVision with 20 students.
- 2021–present **Precalculus Essentials, Instructor**
- Asynchronous online with 20 – 30 students.
- 2018–2021 **Analytic Geometry and Calculus I, Instructor**
- Fall 2019, Fall 2020: Special flipped class for ~15 Pre-Health PostBac students.
 - Summer 2018: Special flipped classroom with ~20 freshmen engineering students.
 - Spring 2018: Large lecture with 200+ students.
- Spring 2021 **Sets and Logic, Instructor**
- Modified Moore's Method with ~30 students.
- Summer 2019 **Analytic Geometry and Calculus II, Instructor**
- Flipped class with ~20 students.
- Spring 2019 **Elementary Differential Equations, Instructor**
- Large lecture with 120+ students.
- 2017–2021 **College Algebra, Coordinator**
- Multiple sections of Pure Online (~150 students) and Hybrid (~200 students) per semester.
 - Curriculum overhaul with focus on understanding of functions.
 - Developed open-source online homework system/textbook with dynamically-generated problems.
 - Developed automatically-generated assessments based on students' varying levels of understanding functions.
- 2013–2017 **Various courses, Instructor of Record as graduate student**
- Elementary Statistics (flipped, ~40 student sections).
 - Intermediate Algebra (traditional, ~20 student section).
 - College Algebra (flipped, ~40 student sections).
 - Support for College Algebra (co-req course, flipped, ~40 student sections).
 - Precalculus (flipped, ~40 student sections).

Mentoring

- 2020–present **Undergraduate Research**
- 2019–2020 **Masters of Arts in Teaching Mathematics**
- 2019–2021 **3rd–4th year First Generation Student Life Coach**
- 2018–2021 **University Minority Mentor Program**

Professional Service

- 2022 **Reviewer** for National Science Foundation grant panel.
- 2022–present **Chair** for Mathematics Association of America Subcommittee on Technologies in Mathematics Education (STME). Member since 2021.
- 2022 **Nominating Committee Member** for Research in Undergraduate Mathematics Education (RUME) community.

- 2020–present **Program Committee Member** for Research in Undergraduate Mathematics Education (RUME) annual conferences.
- 2018–2019 **Huddle Leader** for the *Florida College System*. Year-long huddle leader for multiple Florida Mathematics Re-Design workgroups.
- 2017–present **Journal Reviewer** for
- *Educational Studies in Mathematics* since 2022;
 - *Mathematical Thinking and Learning* since 2021;
 - *International Journal of Research in Mathematics Education* since 2020;
 - *Journal of Assessment in Higher Education* since 2019;
 - *Journal of Mathematical Behavior* since 2017; and
 - *Problems, Resources, and Issues in Mathematics Undergraduate Studies* since 2017.
- 2017 **Poster judge** for *Joint Mathematics Meeting, Atlanta, GA*.
- 2016–present **Conference Reviewer** for *Annual Conference on Research in Undergraduate Mathematics Education*.

College/University Service

- 2022–present **Academic Technology Committee member** for ERAU-W faculty senate.
- 2022–present **Faculty Senate member** for ERAU-W College of Arts and Sciences.
- 2020–2021 **Steering Committee member** for the University of Florida College of Liberal Arts and Sciences.
- 2019–2021 **Curriculum Committee member** for the University of Florida College of Liberal Arts and Sciences. *Chair 2020–2021*.
- 2018 **Commencement Marshal** on behalf of the College of Liberal Arts and Sciences for the University of Florida's Spring 2018 and Summer 2018 undergraduate commencement ceremonies.

Departmental Service

- 2022–present **Coordinator** for Mathematics Minor.
- 2021–present **Course Monitor** for ERAU Department of Mathematics, Science, and Technology
- MATH 111 Pre-Calculus for Aviation (2022–present)
 - STAT 412 Probability & Statistics (2022–present)
 - GNED 103 Basic Mathematics (2021–2022)
 - MATH 106 Basic Algebra & Trigonometry (2021–2022)
- 2017–2021 **Committee member** at University of Florida Department of Mathematics.
- Teaching Methods (*Chair 2019–2021*);
 - Online Course Development;
 - Teaching Assistant Training; and
 - Undergraduate Committee Lower Division.

Professional Affiliations

- 2015–present **SIGMAA on RUME**: Special Interest Group of the Mathematical Association of America on Research in Undergraduate Education
- 2015–present **MAA**: Mathematical Association of America
- 2016–2018 **Proof Research Group** of SIGMAA on RUME

Travel Grants and Awards

- 2023 **Travel Grant**, from ERAU-W Faculty Development Research Program for Conference on Research in Undergraduate Mathematics Education, February 23-25
- 2022 **Project NExT Fellow**, from Mathematics Association of America for 2022-2023
- 2022 **Travel Grant**, from ERAU-W Faculty Development Research Program for Joint Mathematics Meeting 2022, January 5-8
- 2021 **Travel Grant**, from UF Center for Applied Mathematics for Joint Mathematics Meeting 2021, January 6-9
- 2020 **Travel Grant**, from UF College of Liberal Arts and Sciences for Joint Mathematics Meeting 2020, January 15-18
- 2017 **Travel Grant**, from the American Mathematical Society for the AMS Spring 2017 Southeastern Sectional Meeting, March 10-12