Douglas T. Pfeffer
Curriculum Vitæ

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EDUCATION

Ph.D., Mathematics 2019

University of Florida

> Title: Widom and Szegő Theorems for Finite-Codimensional Subalgebras of a Class of Uniform Algebras
> Advisor: Dr. Michael T. Jury
> E-mail: mjury@ufl.edu

M.S., Mathematics 2016

University of Florida

B.S., Mathematics 2014

Florida Atlantic University

> Summa Cum Laude.

TEACHING

Assistant Teaching Professor 2022-Present

University of Tampa, Tampa, FL

> Teaching 24 credit hours per year (approx. 12 each spring and fall). Earnestly engaged in service and research on top of the following responsibilities:

- Teaching the following mathematics courses:
  - College Algebra, Precalculus, Calculus for Business, Discrete Mathematics

Visiting Assistant Professor 2019-2022

Berry College, Mount Berry, GA

> 3-year contract teaching 24 credit hours per year (approx. 12 each spring and fall). Earnestly engaged in service and research on top of the following responsibilities:

- Teaching the following mathematics courses:
  - Precalculus, Calculus 1, Calculus 2, Multivariable Calculus, Applied Calculus
    * All of these courses were taught using a Mastery-Based grading scheme, Inquiry-Based Learning strategies, and other Active-Learning techniques. Some included additional projects to strengthen team-building.
  - Real Analysis and Linear Algebra
    * These were single-semester, proof-based courses. Real analysis covered the topics of single-variable real analysis from a metric space perspective, whereas Linear Algebra covered the theory of vector spaces. Focusing on proof-writing, these courses integrated LaTeX and had students regularly present.
  - History of Mathematics

- * This writing-intensive course covered various topics in mathematics from ancient times to modern day. The exact topics were chosen by students, but include the early development of geometry, algebra, and arithmetic. Significant efforts were made to present their history in a way that celebrated the diverse cultures that contributed.
  - Nature of Math
    - * This general-audience course involves a large amount of hands-on learning and other non-traditional teaching strategies. Its content includes mathematical notions such as fractals, infinity, dimension, graphs, and more.
  - Elementary Statistics
    - * This entry-level course integrates online-learning software that sees students using applications like Excel to statistically analyze data.

Due to COVID-19, some of the above courses were delivered using a hyflex model. Depending on the course size, this sometimes meant half of the students attended via Zoom, while half attended in-person (rotating throughout the week). These courses also successfully introduced online components such as discussion boards, out-of-class videos, and other assignments facilitated through Berry College's Learning Management System.

Graduate Teaching Assistant   2014-2019
University of Florida, Gainesville, FL

- Primary instructor for the following mathematics courses
  - Calculus 2
    - * Spring 2018 – Taught the course lecture-hall style to 300+ students
    - * Summer 2018 – Taught this course using Mastery Based Grading and flipped classroom structures. Successfully advocated the use of these structures within all summer Calculus 2 courses and helped create and organize them for the department.
  - Math for Liberal Arts 2, Precalculus Algebra, Precalculus Algebra and Trigonometry

Responsibilities included lecturing, lesson planning, homework and exam creation, grading, assigning course grades, holding office hours, classroom and time management

- Teaching Assistant who led Discussion Sections for following mathematics courses
  - Linear Algebra (MAS 4105)
    - * Proof-based course, which involved grading proofs, teaching and reinforcing introductory proof techniques, and giving lectures on proof based material.
    - * Fall 2017 and Fall 2018
  - Precalculus Algebra and Trigonometry, Calculus 1, Calculus 2, Calculus 3, Math for Liberal Arts 1, Math for Liberal Sciences 2

Responsibilities included holding office hours, proctoring and grading exams, working in the Mathematics Tutoring Center, classroom and time management.

Professional Mathematics Tutor   2012-2014
Tutor Doctor, Broward County, Florida

- Provided supplementary instruction for a variety of both high school and university subjects, as well as Test Prep for standardized tests.
  - University subjects include: Math for Liberal Arts 1, Precalculus Algebra and Trigonometry, Calculus 1, Calculus 2, Discrete Mathematics

Exercised flexibility and punctuality by meeting on time with clients at their preferred location and time. Created review material and practice exams.

Teaching Assistant   2010-2011
Broward College, Davie, Florida

- Worked in the Mathematics Department and helped teach Developmental Mathematics
  - Duties included the creation of lesson plans, lecturing, creation and grading of assessments, working in the departmental tutoring center, hosting one-on-one and group tutoring.

PUBLICATIONS

Peer-reviewed Publications:

2. Douglas T. Pfeffer, Christopher Felder, and Benjamin P. Russo. "Spectra for Toeplitz Operators Associated with a Constrained Subalgebra." *Integral Equations and Operator Theory.* **94,** 24 (2022) https://doi.org/10.1007/s00020-022-02700-9

1. Douglas T. Pfeffer and Michael T. Jury. "Szegő and Widom theorems for finite codimensional subalgebras of a class of uniform algebras." *Complex Anal. Oper. Theory* **15,** 83 (2021) https://doi.org/10.1007/s11785-021-01129-z

Accepted (pending revisions):

2. Douglas T. Pfeffer, Nicole Fider, and Christina Duron. "From Mirrors to Wallpapers: A Virtual Math Circle Series on Symmetry." *Journal of Math Circles.* (2022)

1. Douglas T. Pfeffer, Ron Taylor, and Garner Cochran. "Double Integrals and the Human Condition." *Cross-Curricular Pure Math Applications* (to appear in 2023 as a MAA *Notes* volume)

In Preparation:

2. Douglas T. Pfeffer, Christopher Felder, and Benjamin P. Russo. "Spectra for Toeplitz Operators Associated with Finite-Codimensional Subalgebras of $H^\infty(\mathbb{D})$." *In Preparation.*

1. Douglas T. Pfeffer. "World War II and the Emergence of Applied Coursework in the Undergraduate Mathematics Curriculum, 1929 – 1958." *In Preparation.*

TALKS

Invited Talks:

8. *Spectra for Toeplitz operators associated with finite codimensional subalgebras of H^∞*
   Special Session on 'The Interplay of Matrix Analysis and Operator Theory', JMM 2022, Virtual, April 8, 2022

7. *Eigenvalues for Constrained Toeplitz Operators*
   Early Career Math Colloquium, University of Arizona, March 18, 2022

6. *Toeplitz Matrices and their Infinite-dimensional Analogues* †
   Math Club, Kenyon College, February 21, 2022

5. *From Mandelbrot to Menger: Putting Fractals 'Under the Microscope'* †
   Governor's Honors Program, Berry College, Georgia, July 12, 2021

4. *Invertibility of a Class of Toeplitz Operators*
   Analysis Seminar, Kennesaw State University, October 21, 2020

3. *Toeplitz Operators on Constrained Subalgebras*
   Faculty Colloquium, University of South Alabama, October 22, 2019

2. *What Isolation Can Yield: The Mathematics of Ancient China, 1200 BCE – 1300 CE* †
   The Mobile Mathematics Circle, Mobile, Alabama, October 21, 2019

1. *Constructibility and the Greek Problems of Antiquity* †
   Undergraduate Mathematics Society, University of Florida, October 1, 2018

Contributed Talks:

9. *From Mirrors to Wallpapers: A Virtual Math Circle Module on Symmetry*
   Special Session on 'Math Circle Outreach Activites that Engage Diverse Audiences', JMM 2022, Virtual, April 8, 2022

8. *On the spectrum of Toeplitz operators associated with a constrained subalgebra of H^∞*
   37th Southeastern Analysis Meeting, Facilitated virtually via 2TART, March 14, 2021

7. *Widom Theorem for Finite-Codimensional Subalgebras of a Class of Uniform Algebras*
   35th Southeastern Analysis Meeting, University of Alabama, March 17, 2019

6. *Widom Theorem for a constrained subalgebra of H^∞*
   34th Southeastern Analysis Meeting, Georgia Tech, March 23, 2018

5. *World War II and the Emergence of Applied Coursework in the Undergraduate Mathematics Curriculum, 1929 – 1956*
   57th Annual Meeting of the History of Education Society, Little Rock, Arkansas, November 5, 2017

4. *17th and 18th Century Calculus — A Series Approach*
   University of Florida, Graduate Mathematics Association Seminar, January 11, 2017

3. *Distinguishing between Distinguished Varieties and the variety of other Varieties*
   University of Florida, Analysis Seminar, November 2, 2016

2. *Introduction to D. Sarason's operator theoretic approach to the Pick interpolation problem.*
   University of Florida, Analysis Seminar, March 30, 2016

1. *A look at the changes to analytic rigor in the 18th and 19th centuries.*
   University of Florida, Graduate Mathematics Association Seminar, September 9, 2015

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† *Indicates a talk given to an audience*
at or below the undergraduate level.

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PROFESSIONAL DEVELOPMENT

Project NExT
Silver 2019

Mathematical Association of America

Project NExT (New Experiences In Teaching) is a professional development program for recent PhD's in mathematics. Was accepted as part of the Silver 2019 cohort, which saw attendance at MathFest 2019 and 2020, as well as JMM 2020. At these conferences, this program included workshops focused on improving mathematics teaching, research engagement, and finding service opportunities at one's home institution and within the larger mathematical community.

- Learned of innovative, research-backed teaching and grading techniques such as Inquiry-Based Learning, Project Based Learning, Mastery-Based Grading, Think-Pair-Share, Flipped Classroom, and more.

- Successfully implemented many of these techniques in the Fall 2019, Spring 2020, Fall 2020, and Spring 2021 classrooms. Final grades and teaching evaluations both demonstrated increases in knowledge attainment and classroom enjoyment in courses such as precalculus and calculus.

PEDESTALS 2: Teaching Mathematics Remotely and Doing It Well!
Summer 2020

College Bridge

This 6-week workshop focused on successfully designing and delivering mathematical content remotely in light of the COVID-19 pandemic. Topics addressed include:

- How to design one's Learning Management System (Canvas) in a way that is accessible and easy to use.

- Designing thought-provoking and engaging discussion boards and other online assignments.

- Building lesson plans goal-first using Bloom's Taxonomy to assist in creating a cohesive and successful learning module.

- Reading and discussing research articles on active-learning strategies for the classroom and how they might translate to the online or hyflex setting. Addressed technological challenges and introduced solutions to accommodate students from all backgrounds.

SERVICE TO THE MATHEMATICAL COMMUNITY

Operator Theory Talks for Early Researchers (OTTER)
Summer 2020-Present

Co-Founder / Co-Organizer

Founded in the Summer of 2020 to help build a community for early researches in operator theory, complex analysis, and related areas. Aims to be both educational and social, where it provides a tight-nit network of individuals around the globe with whom to mutually chat and grow.

- Every other week during the Fall and Spring semesters, OTTER had an invited speaker give a talk virtually via Zoom. The speakers and talks were chosen to promote a broader understanding of the field as well as to promote the academic success of those early career researchers in our discipline.

- When talks weren't given, OTTER held virtual chats over Discord. The topic of these chats were carefully chosen beforehand to best serve our audience. Examples include how to give a good talk, how to network, finding the right conferences, how to find funding, how to write a research paper, and more.

- In Spring 2020, OTTER organized a mock job interview for those members on the job hunt. OTTER invited seasoned members of the community to serve as interviewers to help our members best prepare for any upcoming interviews.

Webpage can be found here: https://sites.google.com/view/otter-math/home?authuser=0

Tucson Math Circle   Jan 2021 - May 2022

Co-Organizer / Co-Instructor

Joined a team of post-docs at the University of Arizona to organize and lead weekly sessions for the Tucson Math Circle. Facilitated virtually via Zoom and an infinite whiteboard app called Miro, this math circle saw us meeting with kids (ages 9-12) to teach them about fascinating mathematical concepts standard schooling generally lacks.

- Helped organize and lead sessions as part of a 7-part series on symmetry. Adapted traditional hands-on, active learning strategies to the virtual format and used them to promote interest in the topics.

- Created and led a 4-part series on fractals. Included team-work activities that utilized online-only strategies (e.g., 'copy+pasting') to help engage the students in the building of fractals.

Math JEOPARDY!   2020

Question writer

Wrote questions for the Math JEOPARDY! competition at the 2020 MAA Southeastern Section Meeting, contributing a total of 5 categories. Reviewed and provided feedback on most remaining categories.

Panel at MathFest 2020   July 29, 2020

Co-Organizer of a panel on 'Managing Expectations and Developing a Positive Work-Life Balance'

Co-organized a panel at MathFest 2020 focused on work-life balance. Brought in three speakers from various backgrounds to help answer questions on building a work-life balance that promotes a higher quality of mental health and life as an academic.

SERVICE TO THE COLLEGE

Math and Natural Science (MNS) Research Committee   Spring 2021-Present

Berry College

Serving as the mathematics and physics representative on the MSN research committee. Duties include reading through and approving internal grant proposals such as the Development of Undergraduate Research (DUR) Grant, the Richard's Science Scholar grant, the Laura Maddox-Smith grant, and more.

Engagement Committee   Fall 2019-Present

Berry College

Goals include designing, hosting, and facilitating social and educational activities for the department and its students. Personal contributions include:

- Inviting at least one speaker a semester to give a talk at our department. These speakers are chosen to cover a wide array of topics from mathematical physics to set theory. These events entail the construction and posting of fliers, hosting the speaker, facilitating the talk, and sending email announcements.

- Hosting a tent at Berry Colleges *Mountain Day* in 2019 where alumni and students alike can visit.

Mathematical 'Dead Poets Society' (DPS)   Fall 2019-Present

Berry College

Berry College's DPS is a recreational math group that meets weekly to solve interesting math problems and promote social interaction among the math majors. Personal week-to-week contributions included the facilitating the discussion of proposed solutions.

- For the Spring 2021 semester, I took over as a co-organizer of DPS. Duties included organizing, advertising, and facilitating the sessions, as well as writing the questions to be solved.

Hiring Committee for 1-year Visitor   Spring 2021
Berry College

Worked with two colleagues to interview candidates for two 1-year visitor positions in mathematics. Duties included reading through application packages, conducting virtual interviews via Zoom, collecting and consolidating information about the interviews, and making final recommendations.

PUTNAM exam   2019/2020
Berry College

Worked to help facilitate the PUTNAM exam for our students. Duties included promoting interest, advertising the event, proctoring the exam, administering materials, designing t-shirts, and providing lunch.

Calculus Textbook Committee   Spring 2021
Berry College

With the help of two other faculty, I helped put together a researched list of alternative calculus texts for the department. I networked with all mathematics faculty to help promote a final selection that was universally agreed upon.

History of Mathematics Seminar   Fall 2018
University of Florida

Founded and organized the University of Florida's first ever seminar on the History of Mathematics. Responsibilities included giving weekly talks; organizing and finding guest speakers; advocating for the subject and gathering interest throughout the department.

AWARDS

UF Mathematics Graduate Student Teaching Award   Won in 2018
University of Florida

- Highest Graduate Teaching Award given by the Mathematics Department
    - Recognizes rare, outstanding work done by a graduate student as either a lecturer or coordinator.

Certificate of Excellence in Teaching   Won in 2016 and 2017
University of Florida

- Awarded by the Mathematics Department as one of their Graduate Teaching Awards
    - Awarded yearly to select graduate students. Recognizes exceptional work as a Teaching Assistant.