

Christopher Felder

Curriculum Vitae

Bloomington, Indiana

✉ cfelder@iu.edu

🌐 <https://cfelder.pages.iu.edu>

Employment

- 2022– **Zorn Postdoctoral Fellow.**
Indiana University, Bloomington (3 yrs).
Mentors: Hari Bercovici, Norm Levenberg.

Education

- 2022 **PhD. in Mathematics.**
Washington University In St. Louis.
Advisor: John E. M^cCarthy.
- 2018 **A.M. in Mathematics.**
Washington University In St. Louis.
- 2016 **B.S. in Mathematics.**
Butler University. Indianapolis, Indiana.
- 2016 **B.S. in Mechanical Engineering.**
Indiana University–Purdue University. Indianapolis, Indiana.

Grants

- 2018 **ICM Travel Grant.**
AMS administered NSF grant for travel to the ICM in Rio de Janeiro, Brazil (\$3,300).
- 2015 **Seitz Award.**
Butler University endowed grant for international research travel (\$5,300);
Used for 8 week stay at Universidad Complutense de Madrid.

Awards

- 2019 **Robert McDowell Teaching Award.**
Awarded by the Department of Mathematics at Washington University for excellence in the teaching of mathematics & outstanding performance as a teaching assistant.

- 2016 **Amos Carpenter Award.**
Awarded by the Department of Mathematics at Butler University for excellence in undergraduate mathematics research.
- 2015 **Bay Chotlos Award.**
Awarded by the Department of Mathematics at Butler University for dedication to a professional career in mathematics.

Preprints

- [2] **More properties of optimal polynomial approximants in Hardy spaces.**
(w/ R. Cheng) 2023. arXiv:2310.16010 [↗](#).
- [1] **Optimal polynomial approximants in H^p .**
(w/ R. Center and R. Cheng) 2023. arXiv:2305.16068 [↗](#).

Publications (Accepted/Published)

- [7] **General optimal polynomial approximants, stabilization, and projections of unity.**
Anal. Theory Appl. (2023). DOI [↗](#).
- [6] **On interpolation by functions in ℓ_A^p .**
(w/ R. Cheng) *Contemporary Mathematics* (2023), To appear. arXiv: 2210.05823 [↗](#).
- [5] **On the geometry of the multiplier space of ℓ_A^p .**
(w/ R. Cheng) *Concr. Oper.* (2022), no. 1, 41–52. DOI [↗](#).
- [4] **Spectra for Toeplitz operators associated with a constrained sub-algebra.**
(w/ D. Pfeffer and B. Russo) *Integral Equations Operator Theory* 94 (2022), no. 2, Paper No. 24, 19 pp. DOI [↗](#).
- [3] **Convexity of the Berezin range.**
(w/ C. Cowen) *Linear Algebra Appl.* 647 (2022), 47–63. DOI [↗](#).
- [2] **Analogues of finite Blaschke products as inner functions.**
(w/ T. Le) *Bull. Lond. Math. Soc.* 54 (2022), no. 4, 1197–1219. DOI [↗](#).
- [1] **Active Manifolds: A non-linear analogue to Active Subspaces.**

(w/ R. Bridges, A. Gruber, C. Hoff, K. Verma) *International Conference on Machine Learning* (2019), 764–772. DOI [↗](#).

Other Publications (Feature Stories)

- 2021 **Is Virtual Conferencing Here to Stay?**, *The Ampersand* [↗](#).
- 2020 **Meet Soumendra Lahiri, the new Stanley A. Sawyer Professor**, *The Ampersand* [↗](#).
- 2019 **A Calculated Move**, *The Ampersand* [↗](#).
- 2018 **The Politics of Polygons: Using Math to Determine Fairness**, *The Ampersand* [↗](#).

Teaching

At Indiana University

- Fall 2023 **Brief Survey of Calculus I**, Math-M 119.
- Spring 2023 **Elementary Computational Methods**, Math-M 371.
- Fall 2022 **Brief Survey of Calculus I**, Math-M 119.
Two sections.

At Washington University in St. Louis

- Summer 2021 **Elementary Probability and Statistics**, Math 2200, Co-instructor w/ Nathan Wagner [↗](#).
- Summer 2021 **Introduction to Statistics**, Math 1011, Co-instructor w/ Nathan Wagner [↗](#).
- Summer 2020 **Calculus II**, Math 132.
Two sections.
- Summer 2019 **Matrix Algebra**, Math 309.

Invited Talks

- October 2023 **Purdue University Operator Algebras Seminar**.
- August 2023 **Stockholm University Analysis Seminar**.
- August 2023 **IWOTA 2023**. Hilbert function spaces/Model spaces, their operators, and applications (two talks). Helsinki, Finland.

- July 2023 **Saarland University Analysis Seminar.**
- April 2023 **University of Florida Analysis & Probability Seminar** (Online).
- February 2023 **University of South Florida Analysis Seminar.**
- November 2022 **Wabash Mini-Conference (Plenary).** IUPUI.
- October 2022 **Women in Operator Theory Workshop.** University of Memphis.
- October 2022 **Midwestern Workshop on Asymptotic Analysis.** Purdue University Fort Wayne.
- September 2022 **IWOTA 2022.** Model spaces, their operators, and applications. Krakow, Poland.
- March 2022 **Joint Mathematics Meetings.** Recent Progress in Function Theory and Operator Theory (Online).
- December 2021 **Canadian Mathematical Society Winter Meeting.** Approximation Theory in Function Spaces (Online).
- November 2021 **Indiana University Analysis Seminar** (Online).
- October 2021 **Focus Program on Analytic Function Spaces.** The Fields Institute (Online).
- September 2021 **Clemson University Analysis Seminar** (Online).
- September 2021 **IUPUI Operator Theory Seminar.**
- June 2021 **Trends in Operator Theory and its Applications.** University of Lisbon (Online).
- June 2021 **ComPlane: the next generation** (Online).
- April 2021 **University of Toledo Complex Analysis & Operator Theory Seminar** (Online).
- September 2020 **IUPUI Operator Theory Seminar** (Online).
- August 2020 **Operator Theory with its Applications.** University of Florida (Online).
- March 2019 **Butler University Colloquim.**

Other Selected Talks


- June 2023 **Harmonic and Complex Analysis: Modern and Classical** (in honor of L. Zalcman). Bar-Ilan University, Israel.
- March 2023 **Operator Theory, Free Probability, and Random Matrices** (in honor of H. Bercovici). Georgia Institute of Technology.
- February 2023 **Indiana University Analysis Seminar.**
- July 2021 **Working Groups in Operator Theory.** Lorentz Center (Online).
- March 2021 **The Southeastern Analysis Meeting.** University of Florida (Online).

- February 2021 **Early Career Workshop in Operator Theory/Algebras** (Online).
- December 2019 **Szegő Graduate Seminar**. Washington University in St. Louis.
- June 2019 **Advanced Course in Operator Theory and Complex Analysis**. U. Paris-Est Marne-la-Vallée.
- April 2019 **Washington University in St. Louis Analysis Seminar**.
- December 2018 **Washington University in St. Louis Analysis Seminar**.
- September 2017 **Szegő Graduate Seminar**. Washington University in St. Louis.
- October 2016 **Szegő Graduate Seminar**. Washington University in St. Louis.
- January 2016 **Joint Mathematics Meetings**. AMS Special Session on Functional Analysis and Operator Theory.

Mentorship

- 2023 **Summer Undergraduate Research**. Mentees: Teresa Chen, Thomas Radke, Ben Roark (Coe College). Joint w/ B. Miller. Project: Berezin range of composition operators on H^2 .
- 2020 **Undergraduate Teaching Assistant Mentor**, *Calc I/II*, Washington University in St. Louis (8 students).

Departmental Service

- 2023 **Diversity, Equity, and Inclusion Committee Member**, *Department of Mathematics, Indiana University*.
- 2022 **Undergraduate Math Club Faculty Advisor**, *Department of Mathematics, Indiana University*.
- 2020 **Director**, *Mathematics and Statistics Online Help Room*, Washington University in St. Louis.
sites.wustl.edu/mathhelp/ 
- 2019 **Committee Member**, *Guido L. Weiss Teaching & Service Award*.
Selected by department faculty to decide presentation of faculty award for teaching and service
- 2018 **Graduate Council Representative**, *Washington University in St. Louis*.
Selected by department faculty.

Community Involvement and Outreach

- 2020– **Founding Member/Organizer**, *Operator Theory Talks for Early Researchers (OTTER)*.
<http://www.sites.google.com/view/otter-math> ↗
- 2016 – 2018 **Szegő Graduate Seminar Organizer**, *Washington University in St. Louis*.
Bi-weekly math seminars for graduate students, given by graduate students
- 2017 **Math Circle**, *Washington University in St. Louis*.
Presentation of 'Hilbert's Hotel' to K-12 students.
- 2015 **Presenter, National Chemistry Week and Celebrate Science Indiana**, Indiana State Fairgrounds and Children's Museum of Indianapolis.
Presentation of an electrochemical cell, in the form of a potato battery, to K-12 students.

Referee and Review Service

Referee for: *Demonstratio Mathematica, Complex Analysis and Operator Theory, Linear & Multilinear Algebra, Bulletin of the London Mathematical Society*

Reviewer for: *Math Reviews, Banff International Research Station (Equity, Diversity, & Inclusion)*

Research Visits

- August 2023 Stockholm University, Sweden (3 days).
July 2023 Saarland University, Germany (10 days).

Invited Workshop Participation

- October 2022 **Working Groups for Women in Operator Theory**, *University of Memphis* ↗.
- July 2021 **Working Groups for Women in Operator Theory**, *Lorentz Center* ↗ (Online).
- June 2017 **Complex Functions, Operators, Partial Differential Equations, and Applications** (in honor of D. Khavinson), *Mittag-Leffler Institute* ↗.


Professional Memberships

American Mathematical Society

Canadian Mathematical Society

Society for Advancement of Chicanos/Hispanics and Native Americans in Science

Association for Women in Mathematics

MathSafe (trained) 

Other Professional Experience

Summer 2016 **Science Undergraduate Laboratory Intern**, *U.S. Department of Energy*, Oak Ridge National Laboratory, Mentor: Robert Bridges.
Project: Non-Linear Dimension Reduction

2014 - 2016 **Peer Tutoring Supervisor**, *Engineering Dual Degree Program*, Butler University.

2014 - 2015 **Engineering Intern**, *Freije-RSC Engineered Solutions Co.*, Fishers, Indiana.
Focus: Industrial Refrigeration