Victor Bailey, Ph.D.

Contact

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Positions

Morehouse College — Atlanta, GA
Assistant Professor of Mathematics — *Current Position*

University of Oklahoma — Norman, OK
Postdoctoral Research Associate — *Fall 2023 - Spring 2026*

Education

Georgia Institute of Technology — Atlanta, GA
Ph.D., Mathematics — *Conferred May 2023*
- Advisor: Christopher Heil

Current Projects

Characterizing Submodules in $H^2(D^2)$ Using the Core Function | *with Rongwei Yang and Chao Zu*
- Determine properties of submodules in $H^2(D^2)$ using the core function and core operator. Examine the structure of submodules with a finite rank core operator. Characterize submodules with a bounded core function.

Frames Associated with C_0-Semigroups | *with Eva Gallardo-Gutiérrez and Jonathan Partington*
- Provide characterizations of continuous frames generated by C_0-semigroups. Determine properties of the dynamical frames by iterations of operators defined in terms of the infinitesimal generator of a given C_0-semigroup.

The Inner Function of the Izuchi-Ohno Type Submodule | *with Kelly Bickel and Rongwei Yang*
- Construct the inner function of the Izuchi-Ohno Type Submodule explicitly and determine properties of the inner function.

Papers/Preprints

- **"Submodules of $H^2(T^2)$ and Frames by Pairs of Bounded Commuting Operators"** | *with Carlos Cabrelli*
  Published in Complex Analysis and Operator Theory.
- **"Dynamical Frames and Hyperinvariant Subspaces"** | *with Deguang Han, Keri Kornelson, David Larson, Rui Liu*
  Published in Applied and Computational Harmonic Analysis.
- **"Frames via Unilateral Iterations of a Bounded Operator"**
  Accepted for publication in the AMS Contemporary Mathematics volume "Modern Perspectives in Real and Complex Function Theory with Applications to Operator Theory"
- **"4×4 Irreducible Sign Pattern Matrices that Require Four Distinct Eigenvalues"** | *with Yubin Gao, Frank J. Hall, Zhongshan Li, Paul Kim*
  Published in Linear Algebra and its Applications.
- **"Reconstructing Graph Signals from Noisy Dynamical Samples"** | *with Akram Aldroubi, Ilya Krishtal, Brendan Miller, Armenak Petrosyan*
  Under Review.

Research Presentations

- 40th Southeastern Analysis Meeting (Plenary speaker)
- Multivariable Operator Theory – A Hilbert Module Approach Conference in Hainan, China (Invited)
- Research on Functional and Complex Analysis Centered on Positivity Workshop in Kyoto, Japan (Invited)
- 27th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2026) in Waterloo, Canada (Invited)
- Bucknell Mathematics Student Colloquium (Invited as "Bucknell Distinguished Visitor")
- Hilbert Function Spaces Conference in Frascati, Italy
- Operators on Analytic Function Spaces Conference in Marseille, France (Invited)
- 37th International Workshop on Operator Theory and its Applications in Québec City, Canada (Invited)
- 36th International Workshop on Operator Theory and its Applications in Enschede, Netherlands (Invited)
- 35th International Workshop on Operator Theory and its Applications in Canterbury, UK
- 34th International Workshop on Operator Theory and its Applications in Helsinki, Finland
- Advanced Courses in Operator Theory and Complex Analysis in Tenerife, Spain
- 9th International Conference on Computational Harmonic Analysis, held in conjunction with the 38th Annual Shanks Lecture (Invited)
- 8th International Conference on Computational Harmonic Analysis in Ingolstadt, Germany
- Heilfest, held in conjunction with the February Fourier Talks (Invited)
- 2026 Joint Mathematics Meeting (Invited)
- 2025 Joint Mathematics Meeting (Invited)
- 2025 Northeastern Analysis Meeting
- 2025 AMS Fall Central Sectional Meeting (Invited)
- 2025 AMS Fall Western Sectional Meeting (Invited)
- 2024 AMS Spring Southeastern Sectional Meeting (Invited)
- 2023 AMS Fall Central Sectional Meeting (Invited)
- 2023 AMS Spring Southeastern Sectional Meeting (Invited)
- Virginia Operator Theory and Complex Analysis Meeting (Invited)
- Workshop in Harmonic Analysis, Sampling Theory, Machine Learning, and Data Science in Buenos Aires, Argentina (Invited)
- Clemson and Gatech Time-Frequency Workshop (Invited)
- Midwestern Workshop on Asymptotic Analysis (Invited)
- University of Central Florida Colloquium Seminar
- University at Albany Analysis and Data Science Seminar
- University of Houston Analysis Seminar
- Texas A&M Functional Analysis Seminar
- University of Oklahoma Analysis Seminar
- Georgia Tech Analysis Seminar
- University of Wisconsin-Madison Analysis Seminar
- Washington University in Saint Louis Analysis Seminar
- Saint Louis University Colloquium Seminar

- Clemson Analysis Seminar
- University of Vienna Harmonic Analysis Seminar
- Tufts University Analysis Seminar
- Johns Hopkins University Applied Mathematics and Statistics Seminar
- Codes and Expansions Seminar

Service

Frames Seminar Organizer
University of Oklahoma

- Provide multipart lecture series on various topics in frame theory.
- Host department visitors speaking for seminar.

Undergraduate Teaching Assistant Hiring Committee
Georgia Institute of Technology

- Interview undergraduate teaching assistant applicants.
- Evaluate teaching demonstrations.

Refereeing
Various Journals

- Reviewer for the following journals: *Complex Analysis and Operator Theory, Journal of Mathematical Analysis and Applications, Concrete Operators, SaSiDa(Sampling Theory, Signal Processing, and Data Analysis), Information and Inference, Canadian Journal of Mathematics.*

Awards

- Outstanding teaching award at Georgia Institute of Technology
- Faculty recognition in the annual math newsletter at University of Oklahoma
- Simons Grant (issued by Christopher Heil)
- NSF REG Supplement (issued by Michael Lacey)

Courses Taught

- Precalculus, Calculus I, Calculus II, Differential and Integral Calculus, Calculus and Analytic Geometry IV, Introduction to Linear Algebra, etc.

Technical Skills

Languages: Spanish (fluent), Mandarin Chinese (limited working proficiency)