

William L. Blair

Curriculum Vitae

1 Basic Information

- Affiliation: The University of Texas at Tyler
- Email: wblair@uttyler.edu
- Citizenship: USA
- Pronouns: he/him/his

2 Employment

- Assistant Professor
 - The University of Texas at Tyler
 - August 2024 - Present
- Graduate Teaching Assistant
 - University of Arkansas
 - August 2017 - May 2024

3 Education

- Ph.D. Mathematics, University of Arkansas, May 2024
- M.S. Mathematics, University of Arkansas, December 2020
- B.S. Mathematics, Henderson State University, May 2017
- A. S., National Park Community College, December 2014

4 Research Interests

Generalizations of classical Hardy spaces, generalized analytic functions, generalizations of generalized analytic functions, complex function theory, complex boundary value problems, distributional boundary values, atomic decompositions, bicomplex function theory and boundary value problems

5 Publication

- “Bicomplex Hardy classes of solutions to higher-order Vekua equations,” *J. Math. Anal. Appl.* **558.2**, 130397 (2026). <https://doi.org/10.1016/j.jmaa.2026.130397>
- “Generalizations of poly-Bergman Spaces and the Bitsadze equation,” with B. B. Delgado, *Bol. Soc. Mat. Mex.* **31**, 132 (2025). <https://doi.org/10.1007/s40590-025-00812-x>
- “An atomic representation for bicomplex Hardy classes,” *Complex Var. Elliptic Equ.* (2025). <https://doi.org/10.1080/17476933.2025.2549391>
- “Meta-analytic functions with derivative not in a Hardy space,” *Ex. Countex.* **7**, 100187 (2025). <https://doi.org/10.1016/j.exco.2025.100187>
- “Hardy Spaces of Solutions to Higher-Order Vekua Equations and the Schwarz Boundary Value Problem,” with B. B. Delgado, *J. Geom. Anal.* **35.1**, 13 (2025). <https://doi.org/10.1007/s12220-024-01825-0>
- “Hardy Spaces of Meta-Analytic Functions and the Schwarz Boundary Value Problem,” *Complex Anal. Synerg.* **10.3**, 13 (2024). <https://doi.org/10.1007/s40627-024-00139-9>
- “The Schwarz boundary value problem for boundary values in the sense of distributions,” *J. Math. Anal. Appl.* **530.2**, 127690 (2024). <https://doi.org/10.1016/j.jmaa.2023.127690>
- “An atomic representation for Hardy classes of solutions to nonhomogeneous Cauchy-Riemann equations,” *J. Geom. Anal.* **33.9**, 307 (2023). <https://doi.org/10.1007/s12220-023-01374-y>

6 Preprints

- “Generalizations of the Dirichlet Boundary Value Problem for Bi-analytic Functions,” submitted.
- “Bicomplex Hardy Classes of Solutions to Beltrami Equations and the Schwarz Boundary Value Problem,” submitted.
- “Bicomplex Schwarz and Dirichlet Boundary Value Problems,” submitted.
- “An Atomic Representation for Hardy Spaces of Generalized Analytic Functions,” submitted.
- “Existence of Solutions to the Seiberg-Witten Vortex Equations with Exponential Decay on the Plane,” with M. L. Nguyen, submitted.

7 Teaching Experience

7.1 The University of Texas at Tyler

- Probability and Statistics for Engineers and Scientists Spring 2026
- Matrix Methods in Science and Engineering Spring 2026
- Introduction to Complex Variables Fall 2025
- Calculus 1 Summer 2025, Fall 2025-26
- Real Analysis II Spring 2025
- Real Analysis I Fall 2024 and 2026
- Math for Business & Economics Fall 2024
- Precalculus Summer 2024 and 2026, Spring 2025

7.2 University of Arkansas

- Mathematical Reasoning in a Quantitative World Spring 2023
- Elementary Differential Equations Summer 2022 - 23
- College Algebra Fall 2018-23, Spring 2022 and 2024, Summer 2021

8 Conference Invitations/Research Seminar Talks

- “Higher-Order Vekua-Hardy Spaces”

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January 2026

JMM 2026 Special Session on “Analysis and Differential Equations at Undergraduate Institutions”
Washington, DC, USA

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November 2025

Analysis Seminar, Department of Mathematics, The University of Texas at Tyler
Tyler, TX, USA

- “An Atomic Representation for Generalized Analytic Functions” February 2025

Analysis Seminar, Department of Mathematics, The University of Texas at Tyler
Tyler, TX, USA

- “Representations by an Atomic Decomposition” November 2024

Analysis Seminar, Department of Mathematics, The University of Texas at Tyler
Tyler, TX, USA

- “The Schwarz Boundary Value Problem” September 2024

Analysis Seminar, Department of Mathematics, The University of Texas at Tyler
Tyler, TX, USA

- “Generalizations of the Hardy Spaces” September 2024

Colloquium, Department of Mathematics, The University of Texas at Tyler
Tyler, TX, USA

- “A New Look at the Schwarz Boundary Value Problem”

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January 2024

JMM 2024 Special Session on “Geometric Analysis in Several Complex Variables”
San Francisco, CA, USA

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December 2023

Graduate Student Colloquium, Dept. of Math. Sci., University of Arkansas
Fayetteville, AR, USA

- “An Atomic Representation for Hardy Classes of Solutions to Nonhomogeneous Cauchy-Riemann Equations”
 - September 2023
– *Analysis Seminar, Dept. of Mathematics, Washington University in St. Louis* *St. Louis, MO, USA*
 - September 2023
– *Analysis Seminar, Dept. of Math. Sci., University of Arkansas Fayetteville, AR, USA*
 - September 2023
– *Graduate Student Colloquium, Dept. of Math. Sci., University of Arkansas Fayetteville, AR, USA*
 - August 2023
– *11th Workshop on Geometric Analysis of PDEs and Several Complex Variables* *Serra Negra, SP, Brazil*
 - July 2023
– *Analysis Seminar, Dept. of Mathematics, Universidade Federal de São Carlos* *São Carlos, SP, Brazil*
- “Generalizations of the Hardy Spaces”
 - April 2023
Graduate Student Colloquium, Department of Math. Sci., University of Arkansas *Fayetteville, AR, USA*

9 Expository Talks

- “Atomic decomposition of holomorphic Hardy spaces on the complex unit disk”
 - October 2021
Graduate Student Colloquium, Department of Math. Sci., University of Arkansas *Fayetteville, AR, USA*
- “Hardy Spaces on \mathbb{R}^n ”
 - November 2020
Graduate Student Colloquium, Department of Math. Sci., University of Arkansas *Fayetteville, AR, USA*

10 Awards & Honors

- Doctoral Student Presentation Travel Grant, 2023-24, University of Arkansas

- Julia Hicks Endowed Graduate Teaching Award, 2021-22, 2023-24, University of Arkansas
- Lawrence Jesser Toll Scholarship, 2018-19, 2022-23, University of Arkansas
- William Alton Anderson Scholarship, 2020-21, University of Arkansas
- John C. Massie Scholarship, 2019-20, University of Arkansas
- Ellis College Outstanding Graduating Senior Award, Spring 2017, Henderson State University
- William W. Durand Scholarship, 2015-16, 2016-17, Henderson State University

11 Student Advising

11.1 Master's thesis advisor:

- *Title: TBD*
Student: Sara Cross Expected Spring 2027

11.2 Master's thesis committee member:

- *Title: TBD*
Student: Jacob Flores Expected Summer 2026

11.3 Senior seminar project advisor:

- *Title: "The parallels and differences between complex and bicomplex numbers"*
Student: Donald "Blake" Hopkins Fall 2025

11.4 Honors contract project advisor:

- *MATH 3351*
Student: Zachary Paul Spring 2026

12 Service to Mathematics

- Texas Undergraduate Mathematics Conference at St. Mary's University, Fall 2025

Volunteered to moderate panel sessions with established faculty members and current masters students from a variety of institutions where students had the opportunity to ask questions about pursuing a masters degree in mathematics. Also, moderated contributed talk sessions for undergraduates presenting their research.

- Referee for the following journals:
 - *Advances in Applied Clifford Algebras* (1 paper)
 - *Complex Analysis and Operator Theory* (1 paper)
 - *Complex Variables and Elliptic Equations* (1 paper)
 - *Mathematical Methods in the Applied Sciences* (1 paper)
 - *Journal of Mathematical Sciences* (1 paper)
- Reviewer for Mathematical Reviews (American Mathematical Society) (5 papers)

13 Service to the Department of Mathematics, The University of Texas at Tyler

- Organizer of the Colloquium in the Department of Mathematics, Fall 2025-Present
- Co-organizer of the Analysis Seminar in the Department of Mathematics, Fall 2024-Present
- Texas Undergraduate Mathematics Conference, Fall 2025
Volunteered to escort students to St. Mary's University in San Antonio, TX where they presented their original research.
- Lyceum 2025, Spring 2025
Volunteered to judge UT Tyler student research poster presentations.
- Texas Undergraduate Mathematics Conference (hosted by UT Tyler), Fall 2024
Volunteered to moderate panel sessions with established faculty members and current doctoral students from a variety of institutions where students had the opportunity to ask questions about pursuing a doctorate degree in mathematics.
- Committee Work in the Department of Mathematics at UT Tyler

- Hiring Committee for Tenure-Track Assistant Professor 2025-26
- Curriculum Committee 2025-26
- Putnam Exam Committee 2024-26
- Graduate Committee 2024-25

14 Service to the Department of Mathematical Sciences, University of Arkansas

- Arkansas Math Discovery Day, Spring 2024
Volunteered to present a specific topic and assist event participants in exploring the associated exercises. This event is the successor of the long running annual Celebration of Mind at the University of Arkansas event.
- Graduate Student Colloquium, Spring 2022 - Spring 2024
Maintained role of Online Manger. This consisted of constructing and maintaining a website which includes general information about the group and information concerning future and past talks for the Graduate Student Colloquium of the Department of Mathematical Sciences at the University of Arkansas.
- UARK Department of Mathematical Sciences Committee for Diversity and Inclusion, 2019-20
Participated in the committee as the graduate student member. Communicated my viewpoint on specific issues and assisted in preparing the department's DEI statement.
- Celebration of Mind at the University of Arkansas, March 2018 and 2019
Volunteered to present a specific topic and assist event participants in exploring the associated exercises.

15 Service to the Department of Mathematics, Statistics, and Computer Science, Henderson State University

- Henderson State University Assessment Team, 2016-17
I was the undergraduate student representative to the university's as-

essment team. I advocated for undergraduate students during decision making and communicated my perspective on specific issues.

16 Service to the Community

- Cookies for Proof, Spring 2024
Volunteered to assist UARK faculty in presenting the prime number theorem to local high school students at the Fayetteville Public Library and provide exposure to the complex analysis tools used in proving the theorem.
- MOEMS Study Group , Fall 2021-23 and Spring 2022-24
Volunteered to assist group of local elementary and middle school students in preparing for national math competitions.
- ACTM High School Mathematics Competition hosted by UARK, March 2019 and 2023
Volunteered to assist in grading exams and various other tasks associated with facilitating the competition.
- FPL Math/Coding Club, Spring 2023
Assisted a joint team of faculty from the Departments of Mathematical Science and Computer Science at the University of Arkansas in offering an extra curricular club at the Fayetteville Public Library for local high school students interested in mathematics and computer programming.
- AMC 10/12 Study Group, Fall 2021-22
Volunteered to assist group of local high school students in preparing for national math competitions.

17 Membership

- American Mathematical Society, 2017 - Present