Yuze Zhao

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Education

- **Beijing Normal University (BNU)** — Beijing, China
  M. S. - Pure Mathematics — *Sep. 2023 – Now*
  Advisors: Prof. Dachun Yang and Prof. Wen Yuan

- **Dalian University of Technology (DUT)** — Dalian, China
  B. S. - Mathematics and Applied Mathematics — *Sep. 2019 – Jul. 2023*
  Advisors: Prof. Junfeng Li and Prof. Suqing Wu

Publications & Working Papers

- Y. Chen, D. Yang, W. Yuan and **Y. Zhao**, **Embeddings and the φ-transform characterization of Besov–Morrey Spaces**, in preparation.

- F. Bu, D. Yang, W. Yuan and **Y. Zhao**, **Matrix Weights, Maximal Operators, Calderón–Zygmund Operators, and Besov–Triebel–Lizorkin-Type Spaces — A Survey**, Anal. Theory Appl. (to appear), 2025.

- S. Wu and **Y. Zhao**, **Truncations of Logarithmic Besov Spaces**, finished and currently under revision.

Research Interests

Harmonica Analysis, Compressed Sensing, Signal and Image Processing, Optimization, Machine Learning.

Research Experience

- **Matrix-Weighted Besov–Morrey spaces**
  Advisor: Dachun Yang and Wen Yuan — *Oct. 2025 – Now*
  - **Matrix-Weighted Besov–Morrey Spaces**: established the φ-transform characterizations of matrix-weighted Besov–Morrey spaces; collected characterizations of both scalar and matrix weights.
  - **Embeddings of Matrix-Weighted Besov–Morrey Spaces**: investigated the embeddings from matrix-weighted Besov–Morrey to Besov-type spaces via the φ-transform characterizations.

- **Qualitative and Quantitative Matrix-Weighted inequalities**
  Advisor: Dachun Yang and Wen Yuan — *Jan. 2023 – Oct. 2025*
  - **Matrix Weights**: established new characterizations of A_∞-matrix weights; collect characterizations of both scalar and matrix weights.
  - **Maximal Operators**: surveyed the maximal operators associated with matrix weights as well as weighted-norm inequalities.
  - **Fractional Integral Operators and Calderón–Zygmund Operators**: investigated the boundedness of fractional integral operators and Calderón-Zygmund operators.
  - **Dimensions of Weights**: recalled the concepts of dimensions of weights; proposed some open question.

- **Trucations of Logarithmic Besov Spaces**
  Advisor: Junfeng Li and Suqing Wu — *Sept. 2022 – Jun. 2023*
  - **Interpolation**: established the interpolation of logarithmic Besov spaces with $p \in (0,1)$.
  - **Boundedness of the Truncation Operator on Besov Spaces**: established the boundedness on the Besov space of the truncation operator.

- **Quantitative strategy research with artificial intelligence**
  Advisor: Mingsong Cheng and Ben Duan — *Mar. 2021 – Apr. 2022*
  - **The Undergraduate Student Innovation Practice Program**:
    (i) studied key machine learning algorithms (decision trees and SVM);
    (ii) developed and implemented a dual moving average trading strategy;
    (iii) backtested the strategy on historical market data, achieving relatively stable returns.

Awards & Honors

- National Scholarship, Beijing Normal University — 2025
- Outstanding TA for Undergraduate Courses, Beijing Normal University — 2024
- 1st Prize Academic Scholarship, Beijing Normal University — 2024
- 1st Prize Freshman Scholarship, Beijing Normal University — 2023
- Outstanding Undergraduate Thesis Award, Dalian University of Technology — 2023
- Hua Luogeng Scholarship, Chinese Academy of Sciences — 2022
- Excellent Campers of Summer Camp, Shanghai Jiao Tong University — 2022
- Excellent Campers of Summer Camp, Beijing Normal University — 2022
- 3rd Prize of Undergraduate Mathematical Contest in Modeling, Liao Ning Province — 2021
- 3rd Prize of Chinese Mathematics Competitions, Liao Ning Province — 2020

TA Experience

- **Functional Analysis III** — BNU
  Organize Q & A and exercise classes for over 100 students. — *Sep. 2025 – Dec. 2025*
- **Mathematical Analysis I (Outstanding TA in 2024)** — BNU
  Organize Q & A and exercise classes for over 30 students. — *Sep. 2024 – Dec. 2024*
- **Mathematical Analysis III** — BNU
  Organize Q & A and exercise classes for over 110 students. — *Sep. 2023 – Dec. 2023*

Conference & Talks

- **Harmonic Analysis and Its Applications** — Beijing, China
  Participant — *Nov. 2025*
- **BNU Harmonic Analysis Forum** — Virtual Online
  Participant — *2024-2025*
- **Harmonic Analysis and Its Applications** — Beijing, China
  Participant — *Oct. 2023*
- **Beijing Workshop on Harmonic Analysis** — Beijing, China
  Participant — *Aug. 2023*

Skills

- **Programming:** Proficient in Matlab, Python, Markdown and LaTeX. Familiar with C++, R and SQL.
- **Languages:** English (TOEFL - 100); Mandarin (native).
- **Sports:** Volleyball.

Relevant Coursework

- Functional Analysis
- Graph Theory
- Numerical Algebra
- Fourier Analysis
- Numerical Approximation
- Time Series Analysis