

Zhengbo Zhou

CONTACT INFORMATION

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RESEARCH PROFILE

PhD candidate in Numerical Analysis at the University of Manchester and Research Associate in Rigorous Numerics for Matrix Functions at the University of Leicester. My research on mixed-precision algorithms for numerical linear algebra emphasizes eigenvalue and singular value problems, and extends to verified algorithms and rigorous error bounds for matrix functions. My work combines matrix analysis, floating-point error analysis, algorithm design, and numerical experiments in MATLAB, Python, and Julia.

EDUCATION

University of Manchester *September 2022 – September 2026 (Expected)*

PhD in Numerical Analysis

Topic: *Novel Algorithms for High-Performance Numerical Linear Algebra*

Supervisors: [Prof. Nicholas J. Higham](#), [Prof. Françoise Tisseur](#), and [Dr. Marcus Webb](#)

University of Manchester *September 2021 – September 2022*

M.Sc. in Applied Mathematics (Distinction)

M.Sc. thesis: *A Mixed Precision Eigensolver Based on the Jacobi Algorithm*

Supervisors: [Prof. Nicholas J. Higham](#) and [Prof. Françoise Tisseur](#)

Relevant courses:

- Numerical Linear Algebra (89/100)
- Approximation Theory and Finite Element Analysis (96/100)
- Advanced Uncertainty Quantification (93/100)
- Scientific Computing (83/100)

University of Manchester *September 2018 – June 2021*

B.Sc. (Hons) in Mathematics (First Class)

Relevant courses:

- Matrix Analysis (89/100)

WORK EXPERIENCE

University of Leicester *August 2026 – Present*

Research Associate in Rigorous Numerics for Matrix Functions

Leicester, UK

- Working with [Dr. Behnam Hashemi](#) on verified algorithms and rigorous *a posteriori* componentwise forward error bounds for matrix functions, and developing open-source software in MATLAB and Python.

PUBLICATIONS AND PREPRINTS

1. Nicholas J. Higham, Françoise Tisseur, Marcus Webb, and **Zhengbo Zhou**. [Computing accurate eigenvalues using a mixed-precision Jacobi algorithm](#). *SIAM J. Matrix Anal. Appl.*, 46(4):2423–2448, 2025.

2. **Zhengbo Zhou**, Françoise Tisseur, and Marcus Webb. [Computing accurate singular values using a mixed-precision one-sided Jacobi algorithm](#). arXiv:2602.18134, February 2026. Submitted to *SIAM J. Matrix Anal. Appl.*
3. **Zhengbo Zhou**, Françoise Tisseur, and Marcus Webb. [Computing accurate singular vectors and eigenvectors using mixed-precision Jacobi algorithms](#). arXiv:2606.28069, June 2026. Submitted to *SIAM J. Matrix Anal. Appl.*
4. **Zhengbo Zhou**. [A mixed precision eigensolver based on the Jacobi algorithm](#). M.Sc. thesis, The University of Manchester, Manchester, UK, September 2022.

TALKS

1. (Forthcoming Invited Talk) *Computing Accurate Singular Values and Singular Vectors using a Mixed-Precision One-Sided Jacobi Algorithm*. The Joint Annual Meeting of GAMM and DMV 2027. Ulm, Germany. March 2027.
2. (Invited Talk) *Computing an Accurate SVD using a Mixed-precision One-sided Jacobi Algorithm*. Scientific Computation Seminar. University of Leeds, March 17, 2025.
3. *Computing Accurate Eigenvalues using the Preconditioned Jacobi Algorithm*. The 30th Biennial Numerical Analysis Conference. University of Strathclyde, June 26, 2025.
4. *Computing Accurate Eigenvalues using the Preconditioned Jacobi Algorithm*. 75th British Mathematical Colloquium. University of Manchester, June 19, 2024.

HONORS

- *The University of Manchester Research Scholar Award 2022-23*. Full PhD scholarship covering tuition fees and maintenance stipend.

TEACHING

Graduate Teaching Assistant at University of Manchester

– MATH11221: Mathematical Problem Solving	2025–2026, Semester 1
– MATH19861: Mathematics 0N1	2025–2026, Semester 1
– MATH11221: Mathematical Problem Solving	2024–2025, Semester 1
– MATH19661: Mathematics 1M1	2024–2025, Semester 1
– MATH19681: Mathematics 1E1 for EEE	2023–2024, Semester 1
– COMP11212: Fundamentals of Computation	2022–2023, Semester 2
– MATH11221: Mathematical Problem Solving	2022–2023, Semester 1

ACADEMIC ORGANIZATION

1. Co-organizer of the minisymposium *Recent Advances in Numerical Linear Algebra* at *The 30th Biennial Numerical Analysis Conference*, University of Strathclyde, June 24–27, 2025. The minisymposium featured 9 speakers and approximately 20 attendees.
2. Co-organizer of *the Manchester SIAM-IMA Student Chapter Conference*, University of Manchester, April 27, 2023. The conference featured 4 plenary speakers and 6 PhD speakers, with approximately 40 attendees.

ACADEMIC SERVICE

Referee: ACM Transactions on Mathematical Software, IMA Journal of Numerical Analysis, SIAM Journal on Matrix Analysis and Applications, SIAM Journal on Scientific Computing.

Broader Service: Treasurer of the Manchester SIAM-IMA Student Chapter (2022–2025).