Hao-Ning Wu

Affiliation

Department of Mathematics University of Georgia Athens, GA 30602, USA

Contact Information

(706) 240-4943 **a** hnwu@uga.edu ⊠ haoningwu.github.io **◄**

Resea	arch	Intere	ests

Approximation theory, applied harmonic analysis, and applications to mathematical data science
Partial differential equations (PDEs), integral equations, and their numerical analysis
Optimization and optimal control with PDE and integral equation constraints

Education

Ph.D	. in Mathematics,	The University of	of Hong Kong	(Advisor:	Xiaoming	Yuan):	Nov 2023
B.Sc.	in Mathematics,	Jinan University,	Guangzhou,	China: Ju	n 2019		

Employment

Postdoctoral Research and Teaching Associate: Aug 2024 –
Department of Mathematics, University of Georgia, Athens, GA, USA (Mentor: Weiwei Hu)
Postdoctoral Fellow: Sept 2023 – Jul 2024
Department of Mathematics, The University of Hong Kong (Mentor: Dong Li)

Academic Visits

The	University	of	Hong 1	Kong	(Host:	Xiaon	ning	Yuan):	May 26	6 – Jul	25, 2	2025
The	University	of	Sydney	y, Aus	tralia	(Host:	Ding	g-Xuan	Zhou):	Jan 9	-27	, 2023

A RESEARCH AND RELATED ACTIVITIES

Publications

Clickable entries to database profiles: MathSciNet, zbMATH, Google Scholar, and ResearchGate

The authorship order of all my coauthored works is always alphabetical

Journal Articles

- 7. Is hyperinterpolation efficient in the approximation of singular and oscillatory functions?, with C. An

 Journal of Approximation Theory, 299 (2024), 106013, 23PP
- 6. Bypassing the quadrature exactness assumption of hyperinterpolation on the sphere, with C. An *Journal of Complexity*, 80 (2024), 101789, 23PP
- 5. Enhanced total variation minimization for stable image reconstruction, with C. An and X. Yuan *Inverse Problems*, 39 (2023), 075005, 37PP

Hao-Ning Wu 2 OF 4

- 4. On the quadrature exactness in hyperinterpolation, with C. An *BIT Numerical Mathematics*, 62 (2022), 1899–1919
- 3. The springback penalty for robust signal recovery, with C. An and X. Yuan Applied and Computation Harmonic Analysis, 61 (2022), 319–346
- 2. Lasso hyperinterpolation over general regions, with C. An SIAM Journal on Scientific Computing, 43 (2021), A3967–A3991
- 1. Tikhonov regularization for polynomial approximation problems in Gauss quadrature points, with C. An

Inverse Problems, 37 (2021), 015008, 19PP

Not Yet Appeared

- 3. Marcinkiewicz–Zygmund inequalities for scattered data on polygons Submitted. arXiv: 2411.16584
- 2. Spherical configurations and quadrature methods for integral equations of the second kind, with C. An

Submitted. arXiv: 2408.14392

1. Breaking quadrature exactness: A spectral method for the Allen–Cahn equation on spheres, with X. Yuan

Submitted. arXiv: 2305.04820

Degree Theses

- 2. Restricted isometry and information-based numerical analysis, Ph.D. Dissertation (2023)
- 1. Regularized least squares approximation using orthogonal polynomials, B.Sc. Thesis (2019)

Presentations

6 conference talks in 6 cities | 3 seminar talks at 2 academic institutions

Conferences and Workshops

- Invited minisymposium talk in "Estimation and Control of PDE Systems," SIAM Conference on Control and Its Applications (CT25), Montreal, Canada, Jul 28 30, 2025
- Contributed talk, Shanks Conference on Constructive Functions Celebrating Ed Saff's 80th birth-day, Vanderbilt University, Nashville, TN, USA, May 19 22, 2025
- \bullet Contributed talk, Southeast Applied and Computational Math Student Workshop, Auburn University, AL, USA, Apr $4-5,\,2025$
- Poster presentation, Georgia Scientific Computing Symposium, Georgia Institute of Technology, Atlanta, GA, USA, Feb 8, 2025
- Contributed talk, International Conference on Analysis and Applications in honor of Roderick S. C. Wong's 80th birthday, City University of Hong Kong, Jun 3 6, 2024
- Contributed talk, The 7th Workshop on Recent Advances on Spectral Methods and Related Applications, Beijing Computational Science Research Center, China, Jun 8 9, 2019

Seminars and Colloquiums

Hao-Ning Wu 3 of 4

- Applied Math Seminar, University of Georgia, Athens, GA, USA, Oct 15, 2024
- Postgraduate Student Seminar, The University of Hong Kong Jun 26, 2023
- Qualifying Research Seminar, The University of Hong Kong, Jan 21, 2021

Grants and Awards

Honors and Awards

•	Doris Chen Postgraduate Scholarship: Department of Mathematics, HKU	2019
•	Bachelor's Thesis Award: Jinan Undergraduate School	2019
•	National Scholarship: Ministry of Education of the People's Republic of China	2018
•	Elite Undergraduate Training Program (2017–19): Jinan Undergraduate School	2017

Internal Funding Schemes

• National Undergraduate Innovation Training Program (no. 201710559017) - Research on barycentric interpolation: algorithm and application

Jinan Undergraduate School: 20,000 CNY, Aug 1, 2017 – Jul 31, 2018

Travel Support

- Travel Support for RPg Students for Intl. Academic Research Activities 2022/23 (Sept Round) HKU University Research Committee: 13,500 HKD, Jan 1 28, 2023
- Exchange Scholarship for Short-term Programs at McGill University 2016/17 (Winter Round) JNU Office of International Exchange and Cooperation: 20,000 CNY, Jan 30 Feb 17, 2017

TEACHING AND RELATED ACTIVITIES

Instructorship of Record

University of Georgia

Fall 2025	MATH2250	Calculus I for Science and Engineering
Fall 2024	MATH1113	PreCalculus

Teaching Assistantship

Certificate: Certificate of Teaching and Learning in Higher Education (Nov 2019), issued by HKU Centre for the Enhancement of Teaching and Learning (CETL) after completing eight 3-hour inperson modules on teaching in a university context

Main Responsibility: Offering weekly classroom tutorials/recitations

Spring 2023	MATH1013	University Mathematics II (HKU)
Fall 2022	MATH3901	Operations Research I (HKU)
Spring 2022	MATH1013	University Mathematics II (HKU)
Fall 2021	MATH3901	Operations Research I (HKU)
Spring 2021	MATH1009	Basic Mathematics for Business and Economics (HKU)
Fall 2020	MATH2101	Linear Algebra I (HKU)
Spring 2020	MATH1009	Basic Mathematics for Business and Economics (HKU)
Fall 2018	07010167	Numerical Linear Algebra (JNU)

Hao-Ning Wu 4 of 4

SERVICE AND RELATED ACTIVITIES

Time Format: mm/yy n Reports Delivered: $\times n$

Academic Service

Referee for Journals

- Applied Numerical Mathematics
- Advances in Computational Mathematics (×4)
- Biology
- IEEE Transactions on Neural Networks and Learning Systems
- International Journal of Computer Mathematics $(\times 2)$
- Mathematics
- Numerical Algorithms
- Signal Processing $(\times 2)$

Miscellaneous

- Referee: S.T. Yau High School Science Award (Asia) (09/22, 09/21)
- Conference Assistant: Conference on Advances in Nonsmooth Analysis and Applications, Southern University of Science and Technology, Shenzhen, China (12/19)

ATHENS, GA · August 11, 2025 haoningwu.github.io