Wen Li

Contact Information	Fordham University Mathematics Department at Rose Hill John Mulcahy Hall 417, Bronx, NY 10458, USA `E-mail:`wli198@fordham.edu `Webpage:` https://wenlimath2.github.io/
Research Interests	Image Processing, Microfluidics, Partial Differential Equations, Meshfree Methods, Radial Basis Functions, Inverse Problems, Modeling and Simulation of Real-World Problems.

Education

Ph.D., Applied Mathematics   Aug. 2015 –May 2019

Clarkson University, NY, USA

- Dissertation: *Meshfree Methods Based on Radial Basis Functions for Solving Partial Differential Equations: From Strong Form to Weakened Weak Form*
- Advisor: Guangming Yao

M.S., Applied Mathematics   Sep. 2004 –June 2007

Taiyuan University of Technology (TYUT), China

- Dissertation: *Research of Multi-Objective Programming Algorithm Based on Mind Evolution*

B.S., Information and Computer Science   Sep. 2000 –June 2004

Department of Mathematics, Taiyuan University of Technology, China

Employment (Selected)

Assistant Professor   2022 –Present

Mathematics Department, Fordham University, New York

Assistant Adjunct Professor   2019 –2022

Department of Mathematics, University of California, Los Angeles

- Mentor: Andrea L. Bertozzi, Luminita A. Vese

Lecturer   2009 –2015

Department of Mathematics, Taiyuan University of Technology, China

Assistant Lecturer   2004 –2009

Department of Mathematics, Taiyuan University of Technology, China

Publications

Preprints & Submitted Articles

1. **W. Li**, K. Ha, G. Destgeer, M. Ouyang, D. Di Carlo, A. L. Bertozzi. *Simulation and analysis of 3D micro-encapsulation using efficient threshold dynamics.* (Prepare for submission)

2. J. Barnett, **W. Li**, E. Resmerita, L.A. Vese. *Multiscale hierarchical decompositions of images corrupted by multiplicative noise.* (Prepare for submission)

3. J. Niu, **W. Li**, and G. Yao*. *An reproducing kernel method for solving singularly perturbed delay parabolic partial differential equations.* (Under review)

Published Peer-reviewed Journal Articles (Google Scholar)

(*Corresponding Author)

1. **W. Li**, B.N. Nzeribe, G.R. Liu, G. Yao*, M. Crimi, K. Rubasinghe, C. Divine, J. Mcdonough, J. Wang. *Modelling, simulation and analysis of groundwater flow captured by the horizontal reactive media well using the cell-based smoothed radial point interpolation method.* Advances in Water Resources 160, 104089, 2022.

2. **W. Li**, E. Resmerita*, L.A. Vese. *Multiscale hierarchical image decomposition and refinements: qualitative and quantitative results.* SIAM Journal on Imaging Sciences 14 (2), 844-877, 2021.

3. **W. Li**, K. Rubasinghe, G. Yao*, L.H. Kuo. *The modified localized method of approximated particular solutions for linear and nonlinear convection-diffusion-reaction PDEs.* Advances in Applied Mathematics and Mechanics 12, 1113-1136, 2020.

4. B.N. Nzeribe*, **W. Li**, M. Crimi, G. Yao, C.E. Divine, J. McDonough, J. Wang. *Hydraulic performance of the horizontal reactive media treatment well: Pilot and numerical study.* Groundwater Monitoring & Remediation 40 (3), 30-41, 2020.

5. D. Wang, C.S. Chen, **W. Li***. *An efficient MAPS for solving fourth order partial differential equations using trigonometric functions.* Computers & Mathematics with Applications 79 (4), 934-946, 2020.

6. **W. Li***, G. Yao, J. Niu. *The modified localized method of approximated particular solutions for solving elliptic equations with mixed boundary conditions on scattered data.* Engineering Analysis with Boundary Elements 100, 164-174, 2019.

7. R.D. Parshad, G. Yao, **W. Li***. *Another mechanism to control invasive species and population explosion: "ecological" damping continued.* Differential Equations and Dynamical Systems 27 (1), 249-276, 2019.

8. W. Chang, C.S. Chen, **W. Li***. *Solving fourth order differential equations using particular solutions of Helmholtz-type equations.* Applied Mathematics Letters 86, 179-185, 2018.

9. X.Y. Liu, C.S. Chen, **W. Li**, M. Li*. *Particular solutions of products of Helmholtz-type equations using the Matern function.* Computers & Mathematics with Applications 75 (9), 3158-3171, 2018.

10. **W. Li**, G. Song, G. Yao*. *Piece-wise moving least squares approximation.* Applied Numerical Mathematics 115, 68-81, 2017.

11. G. Yao*, K.M. Bliss, M. Crimi, K.R. Fowler, J. Clark-Stone, **W. Li**, P.J. Evans. *Radial basis function simulation of slow-release permanganate for groundwater remediation via oxidation.* Journal of Computational and Applied Mathematics 307, 235-247, 2016.

12. G. Yao, C.S. Chen, **W. Li***, D.L. Young. *The localized method of approximated particular solutions for near-singular two-and three-dimensional problems.* Computers & Mathematics with Applications 70 (12), 2883-2894, 2015.

13. **W. Li**, X.Y. Liu*, G. Yao. *A local meshless collocation method for solving certain inverse problems.* Engineering Analysis with Boundary Elements 57, 9-15, 2015.

14. **W. Li**, M. Li*, C.S. Chen, X.Y. Liu. *Compactly supported radial basis functions for solving certain high order partial differential equations in 3D.* Engineering Analysis with Boundary Elements 55, 2-9, 2015.

15. X.Y. Liu, **W. Li**, M. Li*, C.S. Chen. *Circulant matrix and conformal mapping for solving partial differential equations*. Computers & Mathematics with Applications 68 (3), 67-76, 2014.

16. **W. Li**, J. Yang*. *Realization of an iterative criterion for H-matrices based on the storage structure of sparse matrices*. Journal of Shanxi Normal University (Natural Science Edition) 04, 19-22, 2009. (In Chinese)

17. **W. Li**. *On strategies of Higher-Mathematics teaching*. Theory and Practice of Education 15, 41-42, 2009. (In Chinese)

18. **W. Li**, J. Yang*. *An iterative criterion for H-matrices*. Journal of Taiyuan University of Science and Technology 06, 429-431, 2006. (In Chinese)

Conference Publications

1. G. Yao*, K. Black, M.W. Ramsdell, M.K. Voigt, K.K.R. Kattadige, **W. Li**. *CoOrdinated Math-Physics Assessment for Student Success (COMPASS) assessments on continuing math courses and attitude toward math*. 2020 ASEE Virtual Annual Conference Content Access, 2020.

2. **W. Li***, X.Y. Liu. *A local meshless method for solving an inverse heat conduction problem*. Third International Conference on Computational Methods for Thermal Problems, THODS FOR, 2: 271, 2014.

3. X.Y. Liu*, **W. Li**, C.S. Chen. *Fast matrix decomposition method for solving Poisson problems*. Third International Conference on Computational Methods for Thermal Problems, THODS FOR, 2: 275, 2014.

TEACHING
EXPERIENCE

Fordham University (Lecturer)   Fall 2022 –Present

❑ MATH 1206 - Calculus I

  − Fall 2022

❑ MATH 4006 - Numerical Analysis
  − Fall 2022

UCLA (Lecturer)   Fall 2019 –Spring 2022

❑ MATH 155 - Mathematical Imaging (Upper division undergraduate course)

  − Winter 2020   − Winter 2022
  − Winter 2021 (Online)   − Spring 2022
  − Spring 2021 (Online)

❑ MATH 151A - Applied Numerical Methods (Upper division undergraduate course)
  − Fall 2020 (Online)
  − Summer 2021 (Online)

❑ MATH 151B - Applied Numerical Methods (Upper division undergraduate course)

  − Fall 2019   − Summer 2021 (Online)
  − Spring 2020 (Online)   − Fall 2021
  − Winter 2021 (Online)   − Winter 2022

Clarkson University (Teaching Assistant) Fall 2015 –Spring 2019

❑ Calculus I–III
❑ Applied Linear Algebra
❑ Differential Equations
❑ Fourier Series & Boundary Value Problems

Taiyuan University of Technology (Lecturer) Fall 2007 –Spring 2015
 (200-300 students per semester)

❑ Calculus I–III   ❑ Complex Analysis
❑ Linear Algebra   ❑ Complex Functions and Integral Transforms
❑ Numerical Analysis   ❑ Computer Networks

Undergraduate Students Mentoring

❑ Women in Math at UCLA   2021
  – Meeting with at most 3 female undergraduate mentees per quarter to offer advice, share experiences, and answer questions.

❑ A tighter refined multiscale hierarchical SinGAN model   Fall 2021 –Present
  – Student: Minhao Liu (UCLA)

❑ Research Experience for Undergraduates (REU), Applied Mathematics, UCLA
  (With Dr. Weiqi Chu)   Summer, 2020
  – Project: Phase separation and volume expansion in lithium-ion batteries
  – Students:
     Sreeram Venkat (North Carolina State University), Ian Schreiber(The University of Texas at Dallas), Tanner Fromcke (Oregon State University)
  – Presented in the 87th New England Complex Fluids Workshop, Massachusetts Institute of Technology, June 25, 2021

❑ MATH 189HC (Honors Contract Course), UCLA   Winter 2020
  – Project: Image restoration based on RBF neural networks
  – Students: Xu Tang (UCLA)

❑ MATH 189HC (Honors Contract Course), UCLA   Spring 2020
  – Project: Simulation of fluid flowing over micro-particles
  – Students: Jing Zhang (UCLA), Yeyubei Zhang (UCLA)

❑ China Undergraduate Mathematical Contest in Modeling (CUMCM)
  – Provincial Second Prize   Sept. 2014
  – Provincial Third Prize   Sept. 2013
  – National Second Prize   Sept. 2012
  – Provincial First Prize   Sept. 2011

❑ Bachelor's Thesis Supervision, Taiyuan University of Technology   2009 –2015
  – Supervisor of 2 to 3 bachelor' s theses every year

Graduate Students Mentoring & Collaboration

❑ Multiscale hierarchical decompositions of images corrupted by multiplicative noise
Jan. 2021 –Present
  − Student: Joel Barnett (Ph.D. student, Mathematics, UCLA)

❑ Simulation and analysis of 3D micro-encapsulation   2020 –Present
  − Student: Kyung Ha (Ph.D. student, Mathematics, UCLA)

HONORS AND
AWARDS

o AWM-NSF Travel Grant   Nov. 2021

o SIAM Early Career Travel Award   Sept. 2021

o Sanda Briggs Outstanding Teaching Assistant Award for Mathematics, Clarkson University, NY   April 2019

o SIAM Travel Award, for SIAM Annual Meeting, Pittsburg, PA   July 2017

o SIAM Travel Award, for SIAM Annual Meeting, Boston, MA   July 2016

o High-Quality Resource Sharing Course (Numerical Analysis) for Universities in Shanxi, China   Dec. 2013

o China Undergraduate Mathematical Contest in Modeling (Mentoring)   2011-2014

o Outstanding Graduate Award in Shanxi Province, China   May 2004

CONFERENCES &
WORKSHOPS

Presentations

o *Simulation and analysis of 3D micro-encapsulation using efficient threshold dynamics*
Clarkson University, June 16, 2022

o *Multiscale hierarchical image decomposition and refinements*
Joint Mathematics Meetings, April 6, 2022

o *Simulation and analysis of 3D micro-encapsulation using efficient threshold dynamics*
Department of Mathematics, University of California, Los Angeles, Feb. 8, 2022

o *Phase separation and image decomposition: models, methods and applications*
University at Buffalo, State University of New York, Dec. 15, 2021

o *Phase separation and image decomposition: models, methods and applications*
University of Melbourne, Dec. 13, 2021

o *Phase separation and image decomposition: models, methods and applications*
Fordham University, Dec. 10, 2021

o *Simulation and analysis of 3D micro-encapsulation using efficient threshold dynamics*
AMS Fall Western Sectional Meeting, Oct. 23, 2021

o *Simulation and analysis of 3D micro-encapsulation using efficient threshold dynamics*
SIAM Conference on Geometric and Physical Modeling, Sept. 29, 2021

o *Threshold dynamics for micro-encapsulation using amphiphilic microparticles*
87th New England Complex Fluids Workshop, Massachusetts Institute of Technology, June 25, 2021

o *Multiscale hierarchical image decomposition and refinements: qualitative and quantitative results*
Applied Math Colloquium, University of California, Los Angeles, May 5, 2021

o *Algorithms for multiscale hierarchical decomposition method of images with applications to denoising and deblurring*
SIAM - Conference on Imaging Science, July 15, 2020

o *Simulation of groundwater flow captured by the horizontal reactive media well using cell-based smoothed radial point interpolation method*
Joint Mathematics Meetings, Baltimore, MD, January 16-19, 2019

o *A cell-based smoothed radial point interpolation method for groundwater ?ow simulation captured by the horizontal reactive media well*
The 9th International Conference on Computational Methods, Rome, Italy, August 6-10, 2018

o *A smoothed radial point interpolation implicit method for heat conduction based on the element-by-element technique*
SIAM Annual Meeting, Pittsburg, PA, July 10-14, 2017

o *Piece-wise moving least square approximation*
First Annual Spring Research and Project Showcase, Clarkson University, Potsdam, NY, April 8, 2017

o *Numerical simulation of Turing pattern formation by edge-based smoothed radial point interpolation method*
SIAM Annual Meeting, Boston, MA, July 11-15, 2016

o *A local meshless method for solving certain inverse heat conduction problems*
Third International Conference on Computational Methods for Thermal Problems, Lake Bled, Slovenia, June 2-4, 2014

o *Localized method of particular solutions based on Matern functions for solving modified Helmholtz equations*
Asia-Pacific Congress for Computational Mechanics, Singapore, Dec. 11-14, 2013

Conference Organization

o Co-organizer and Chair of Mini-Symposium:
International Conference on Computational Methods, Rome, Italy, August 6-10, 2018

o Co-organizer of Conference:
Mathematics Conference and Competition of Northern New York, Clarkson University, Potsdam, NY, Oct. 28, 2017

PROFESSIONAL
SERVICES

Selected Journal Reviewer:

— Journal of Computational and Applied Mathematics

— Engineering Analysis with Boundary Elements

— International Journal of Computational Methods

— Physica A

– Mathematics

Projects	**Contributions**

- National Science Foundation (Award Number: 2012868)   UCLA, 2020-present
  - Project title: Computational methods for applications in imaging and remote sensing
- Simons Math + X Investigator Award Number 510776   UCLA, 2019-present
  - Project title: Microfluidics applications. (In collaboration with the California NanoSystems Institute and the Department of Mechanical Engineering)
- Environmental Security Technology Certification Program   CU, 2016-2019
  - Project title: Demonstration and validation of the horizontal reactive media treatment (HRX) well for managing contaminant plumes in complex geological environments
- National Natural Science Fund of China   TYUT, 2015
  - Project title: Development of commercial smoothed finite element analysis software

PI/Co-I

- Inter-governmental Cooperation Project Between China and Slovenia   2014-2015
  - Project title: Meshfree methods based simulations in heavy industry
  - Role: Co-Investigator; Wrote the proposal; Responsible for meshfree methods development
- Youth Fund of Taiyuan University of Technology   2014-2015
  - Project title: Application of a local meshfree method on calcium dynamics in cardiac muscle cells
  - Role: Principal Investigator
- CUDA Teaching Center by NVIDIA at TYUT   2012-2014
  - Role: Principal Investigator; Wrote the proposal; Applied for GPUs to build the High Performance Computing Lab
- High-Quality Resources Sharing Course of Universities in Shanxi Province, China   2013-2015
  - Role: Co-Investigator; Participated in the online resources construction of Numerical Analysis

Professional Organizations	Memberships:

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)
- Association for Women in Mathematics (AWM)