Curriculum Vitae

Xianping Li

EDUCATION

Ph.D., Mathematics, University of Kansas, 2011

M.S., Chemical & Petroleum Engineering, University of Kansas, 2010

M.S., Oil and Gas Development Engineering, China University of Petroleum-Beijing, 2002

B.E., Petroleum Engineering, China University of Petroleum-Beijing, 2000

PROFESSIONAL POSITIONS

Assistant Professor, August 2019 -
College of Integrative Sciences and Arts,
Arizona State University (Polytechnic Campus), Mesa, AZ

Assistant Professor, 2013 - August 2019
Department of Mathematics and Statistics,
University of Missouri - Kansas City, Kansas City, MO

Visiting Assistant Professor, 2011 - 2013
Department of Mathematics, University of Central Arkansas, Conway, AR

RESEARCH INTEREST

Numerical analysis, scientific computing, numerical solutions of partial differential equations, anisotropic mesh adaptation, moving mesh finite element method, anisotropic diffusion problems, image processing, adaptive sampling, parallel computing, mathematical modeling and simulation, and computations in biology, science, finance and engineering

GRANTS

1. *Numerical Computations in Image Processing with Adaptive Meshes*, PI, NSF, $333,269, not funded.

2. *Mathematical Foundation of Finite Element Methods II*, Co-PI, University of Missouri Inter-Campus Course Sharing Grant, 2017 - 2018, $9,731, funded.

3. *Mathematical Studies on Problems in Disease Modeling and Image Processing in Context of South Africa*, Co-PI, University of Missouri South African Education Program (UMSAEP), 2017 - 2018, $4,900, funded.

4. *Bringing the Field of Applied Mathematics from Shadowed State to the Frontline Discipline*, PI (with Bani-Yaghoub, Rhee, and Vaidya), Funding for Excellence Program, University of Missouri - Kansas City, 2016, $30,000, funded.

5. *Numerical Computations in Image Processing*, (sole) PI, University of Missouri Research Board, 2015 - 2016, $18,837, funded.

6. *Modeling and Analysis of the Next Life Event - Relating Theory and Data*, PI (with Bani-Yaghoub), Development and Research Grant, H&R Block, 2014 - 2015, $60,000, funded.

7. *Mathematical Foundation of Finite Element Methods*, Co-PI, University of Missouri Inter-Campus Course Sharing Grant, 2014 - 2015, $7,769, funded.

PUBLICATIONS

1. X. Li, W. Mergia and K. Patidar, A finite element discretization with semi-implicit nonlinear multistep scheme for a two-dimensional competition-diffusion system of three competing species with different mobility rates. (under revision)

2. H. Zhou, K. Zhou and X. Li, Stochastic mortality dynamics driven by mixed fractional Brownian motion. (under review), 2021.

3. M. McCoy and X. Li, Moving mesh with streamline upwind Petrov-Galerkin (MM-SUPG) method for convection-dominated convection-diffusion problems. (submitted), 2021.

4. F. Zhang, W. Huang, X. Li and S. Zhang, A study on phase-field models for brittle fracture, (resubmitted), 2021.

5. X. Li and T. Wu, A preliminary comparison between compressive sampling and anisotropic mesh-based image representation, *Lecture Notes in Networks and Systems*, vol. 283, 2021.

6. K. Abbas and X. Li, Anisotropic mesh adaptation for image segmentation based on Mumford-Shah functional, (under review, arXiv:2007.08696), 2020.

7. X. Li, Anisotropic mesh representation for color images, *2020 IEEE 5th International Conference on Image, Vision and Computing (ICIVC)*, Beijing, China, 2020, pp. 139-143, doi: 10.1109/ICIVC50857.2020.9177477.

8. M.S. Richman, X. Li and A.N. Caruso, Inadequacy of the extrapolation-length method for modeling the interface of a ferroelectric-graphene heterostructure, *Journal of Applied Physics*, vol. 125, (184103), 2019.

9. X. Li and J. Martinez, Quantitative comparison of white matter segmentation for brain MR images, *Advances in Intelligent Systems and Computing series*, vol. 943, 2019.

10. N.K. Vaidya, X. Li and F.B. Wang, Impact of spatially heterogeneous temperature on the dynamics of dengue epidemics, *Discrete & Continuous Dynamical Systems - B*, 24(1): 321-349, 2019.

11. F. Zhang, W. Huang, X. Li and S. Zhang, Moving mesh finite element simulation for phase-field modeling of brittle fracture and convergence of Newton's iteration, *Journal of Computational Physics*, 356: 127-149, 2018.

12. F. Zhang, W. Huang, X. Li and S. Zhang, A study on moving mesh finite element solution of phase-field models for hydraulic fracturing, *International Journal of Chemical Engineering and Applications*, 9(2): 51-57, 2018. (conference proceedings for ICPPE 2018.)

13. X. Li, Anisotropic mesh adaptation for finite element solution of anisotropic porous medium equation, *Computers and Mathematics with Applications*, 75: 2086-2099, 2018.

14. X. Li and W. Huang, Anisotropic mesh adaptation for 3D anisotropic diffusion problems with application to fractured reservoir simulation, *Numerical Mathematics: Theory, Methods and Applications*, 10(4): 913-940, 2017.

15. X. Li and W. Huang, A study on nonnegativity preservation in finite element approximation of Nagumo-type nonlinear differential equations, *Applied Mathematics and Computation*, 309: 49-67, 2017.

16. X. Li, Fourier series for functions defined on arbitrary limited intervals with polynomial expansion, *American Review of Mathematics and Statistics*, 4(2): 10-17, 2016.

17. X. Li, Anisotropic mesh adaptation for image representation, *EURASIP J. Image Video Proc.* 2016: 26, 2016.

18. X. Li and W. Huang, Maximum principle for the finite element solution of time dependent anisotropic diffusion problems, *Numerical Methods for Partial Differential Equations*, 29(6): 1963-1985, 2013.

19. X. Li and W. Huang, An anisotropic mesh adaptation method for the finite element solution of heterogeneous anisotropic diffusion problems, *Journal of Computational Physics*, 229: 8072-8094, 2010.

20. W. Huang and X. Li, Anisotropic mesh adaptation method for the finite element solution of variational problems, *Finite Elements in Analysis and Design*, 46: 61-73, 2010.

21. W. Huang, L. Kamenski, and X. Li, Anisotropic mesh adaptation for variational problems using error estimation based on hierarchical bases, *Canadian Applied Mathematics Quarterly (Special issue for the 30th anniversary of CAIMS)*, 17: 501-522, 2009.

22. S. McCool, X. Li and G.P. Willhite, Flow of a polyacrylamide/chromium acetate system in a long conduit, *SPE Journal*, 14(1): 54-66, 2009.

23. X. Li, D. Svyatskiy, and M. Shashkov, Mesh adaptation and discrete maximum principle for 2D anisotropic diffusion problems, *Los Alamos National Laboratory technical report*, LA-UR 10-01227, 2007.

24. S. McCool, X. Li and G. P. Willhite, Effect of shear on flow properties during placement and on syneresis after placement of a polyacrylamide-chromium acetate gelant, *Society of Petroleum Engineering*, SPE 106059-MS, 2007.

25. Q. Wen, S. Zhang, L. Wang, Y. Liu and X. Li, The effect of proppant embedment upon the long-term conductivity of fractures, *Journal of Petroleum Science and Engineering*, 55: 221-227, 2007.

Works in Progress

1. M. McCoy and X. Li, Maximum principle for moving mesh streamline upwind Petrov-Galerkin method for time dependent anisotropic convection-diffusion problems. (to be submitted)

2. K. Abbas and X. Li, Locally enhanced Chan-Vese model with anisotropic mesh adaptation for image segmentation. (to be submitted)

3. X. Li, Image encoding for anisotropic mesh representation.

4. M. McCoy and X. Li, Computing residual diffusivity by moving mesh finite element method.

5. X. Li, N.K. Vaidya and F.B. Wang, Computing of reproduction number for the dynamics of dengue epidemics under spatially heterogeneous temperature.

6. X. Li and X. Xu, Numerical investigations for cavitation problems using moving mesh partial differential equation method.

7. X. Li, M. McCoy and K. Patidar, Fitted finite element method for singularly perturbed problems.

PRESENTATIONS

SIAM Central State Section 6th Annual Meeting, University of Kansas, (virtual) October 2021.

Computing Conference 2021, London, UK, (virtual) July 2021.

2020 IEEE 5th International Conference on Image, Vision and Computing, Beijing, China, (virtual) July 2020.

Contributed talk, Finite Element Circus Fall 2019, Virginia Tech, November 2019.

Contributed talk, SIAM Southeastern Atlantic Section 43rd Annual Meeting, University of Tennessee Knoxville, September 2019.

Invited talk, Institute of Computational Mathematics, Chinese Academy of Sciences, Beijing, June 2019.

Invited talk, College of Petroleum Engineering, China University of Petroleum-Beijing, May 2019.

Computer Vision Conference 2019, Las Vegas, April 2019.

Invited talk, Computation and Applied Mathematics Seminar, Arizona State University, October 2018.

SIAM Central States Section 3rd Annual Meeting, Colorado State University, October 2017.

Invited colloquium talk, Department of Mathematics and Computer Science, Benedictine College, March 2017.

UMKC Faculty Research Symposium, University of Missouri-Kansas City, December 2016.

SIAM Central States Section 2nd Annual Meeting, University of Arkansas at Little Rock, October 2016.

Finite Element Circus Spring 2016, University of Maryland, College Park, April 2016.

Invited talk, Computational and Applied Math Seminar, University of Kansas, December 2015.

Invited colloquium talk, Department of Physics and Astronomy, University of Missouri-Kansas City, April 2015.

SIAM Central States Section 1st Annual Meeting, Missouri University of Science and Technology, April 2015.

Invited talk, AMS Central Spring Sectional Meeting, Michigan State University, March 2015.

Contributed talk, AARMS-CRM Workshop on Adaptive Methods for PDEs, Memorial University, St. John's, NL, Canada, August 2014.

Invited colloquium talk, Department of Mathematics and Statistics, Missouri University of Science and Technology, February 2014.

Invited talk, First Central Region Conference on Numerical Analysis and Dynamical Systems, University of Kansas, May 2013.

Invited talk, South Central Conference on Advanced Numerical Methods and Applications, University of Arkansas, Little Rock, April 2013.

Contributed talk, AMS special session on Numerical Analysis and Finite Element Methods, San Diego, CA, January 2013

Mathematics Seminar, University of Central Arkansas, October 2012

Invited talk, AMS 2012 Spring Central Section Meeting, University of Kansas, March 2012

Finite Element Circus Fall 2011, University of Connecticut at Avery Point, October 2011

Mathematics Seminar, University of Central Arkansas, October 2011

Invited talk, Applied Mathematics Seminar, University of Arkansas at Little Rock, September 2011

Midwest Numerical Analysis Day 2010, Iowa State University, April 2010

COURSES TAUGHT

Arizona State University
Modern Differential Equations, Mathematical Modeling and Computation, Introduction to Numerical Methods for Partial Differential Equations, Engineering Analysis I

University of Missouri - Kansas City
Elementary Statistics, Calculus I, Accelerated Calculus I, Accelerated Calculus II, Calculus III, Linear Algebra I, Sets and Proofs, Introduction to Scientific Computing, Mathematical Modeling, Mathematical Methods for Science and Engineering, Advanced Numerical Analysis

University of Central Arkansas
Plane Trigonometry, Calculus I, Transition to Advanced Mathematics, Discrete Structures, Differential Equations, Finite Element & Finite Volume Methods

University of Kansas
Calculus I, Calculus II

PROFESSIONAL ACTIVITIES

Mini-symposiums organizer, SIAM Central States Section 6th Annual Meeting, 2021

Session Chair, Computer Vision Conference, 2019

Mini-symposiums organizer, SIAM Central States Section 3rd Annual Meeting, 2017

Mini-symposiums organizer, SIAM Central States Section 2nd Annual Meeting, 2016

Mini-symposiums organizer, SIAM Central States Section 1st Annual Meeting, 2015

Reviewer, AMS Mathematical Reviews

Reviewer, Applied Numerical Mathematics (APNUM)

Reviewer, Computers and Mathematics with Applications (CAMWA)

Reviewer, International Journal of Computer Mathematics (GCOM)

Reviewer, Journal of Applied Mathematics (JoAM)

Reviewer, Journal of Computational and Applied Mathematics (CAM)

Reviewer, Journal of Computational Physics (JCP)

Reviewer, Journal of Difference Equations and Applications (GDEA)

Reviewer, Journal of Mathematical Study (JMS)

Reviewer, Journal of Scientific Computing (JOMP)

Reviewer, Mathematical Biosciences and Engineering (MBE)

Reviewer, Mathematics in Applied Sciences and Engineering (MASE)

Reviewer, Numerical Methods for Partial Differential Equations (NMPDE)

Reviewer, SN Applied Sciences (SNAS)

Member of SIAM, SPE, IEEE, and AMS