




LI (LEE) TIAN

CONTACT INFORMATION

Department of Mathematics
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RESEARCH EXPERIENCE

Chowla Research Assistant Professor Penn State University, Aug 2009 - present

- Designed various numerical algorithms for simulating physical models or processes, including solid mechanics, fluid dynamics and material sciences; performed error analyses and implementations.
- Proposed and analyzed adaptive algorithms for a nonlocal solid mechanics model to solve crack nucleation problems.
- Supervised work of graduate students, including one whose work is awaiting publication.
- Research resulted in joint authorship of five research papers, two of which have been published, and seven presentations at national and international conferences.
- Submitting a grant proposal to the National Science Foundation.

Collaborative Projects Penn State University, Jun 2011 - present

- Working with scientists from Computer Science Department, the goal of the project is to design an efficient mesh generator for solving a nonlocal solid mechanics model numerically.
- Supervising work of a Ph.D. student from Computer Science Department.

Graduate Research Assistant University of South Carolina, Aug 2005 - Aug 2009

- Proposed adaptive methods for numerically simulating fluid dynamics with finite element methods, performed error analyses and implementations.
- Implemented efficient solvers for higher order partial differential equations and stochastic differential equations in C and MATLAB.
- Research resulted in four publications, presented in five national and international academic conferences.

RESEARCH INTERESTS

Finite element/volume methods for PDEs.
Numerical schemes and analysis for peridynamic models.
Adaptive methods.
Spline finite element methods.
Numerical analysis for stochastic differential equations.

EDUCATION

Ph.D. in Mathematics, University of South Carolina, May 2009
M.S. in Applied Mathematics, Shandong University, China, Jul 2006
B.S. in Mathematics, Shandong University, China, Jul 2003

TEACHING EXPERIENCE

Instructor Penn State University, Aug 2009 - present

- Calculus I & II
- Numerical Computation (seniors)
- Multivariable Calculus

Graduate Teaching Assistant University of South Carolina, Aug 2005 - Aug 2009

- Finite Mathematics
- Differential Equation (seniors)
- MATLAB (seniors) and MAPLE Computer Labs

HONORS AND AWARDS

- *University Research Fund* (\$6000) Penn State University, 2009-2012
- *Dean's Award for Excellence in Graduate Study* University of South Carolina, 2009
- *Outstanding Graduate Student* University of South Carolina, 2009
- *G. W. Johnson Fellowship in Comp. Math.* University of South Carolina, 2008
- *SIAM Student Chapter Travel Award* SIAM Annual Meeting 2008
- *University yearly scholarships* Shandong University, China, 1999-2003

PUBLICATIONS

1. A Convergent Adaptive Finite Element Method for Nonlocal Diffusion Model, submitted; with Q. Du and X. Zhao.
2. Covolume-Upwind Finite Volume Approximations for Linear Elliptic Partial Differential Equations, submitted; with L. Ju, X. Xiao and W.D. Zhao.
3. A Posteriori Analysis of Finite Element Methods for Peridynamic Theory, submitted; with Q. Du, L. Ju and K. Zhou.
4. Adaptive Finite Element Methods for Elliptic Equations over Hierarchical T-meshes, *Journal of Computational and Applied Mathematics*, Vol. 236 (2011), pp. 878-891; with F. Chen and Q. Du.
5. Finite Element Approximation of the Cahn-Hilliard Equations on Surfaces, *Computer Methods in Applied Mechanics and Engineering*, Vol. 200 (2011), pp. 2458-2470; with Q. Du and L. Ju.
6. A Posteriori Error Estimates for Finite Volume Approximation of Elliptic Equations on General Surfaces, *Computer Methods in Applied Mechanics and Engineering*, Vol. 198 (2009), pp. 716-726; with L. Ju and D. Wang.
7. Analysis of a Mixed Finite Volume Discretization for Fourth Order Equations on General Surfaces, *IMA Journal of Numerical Analysis*, Vol. 29 (2008), pp. 376-403; with Q. Du and L. Ju.
8. Convergence Analysis of a Splitting Method for Stochastic Differential Equations, *International Journal of Numerical Analysis and Modeling*, Vol. 5 (2008), pp. 673-692; with L. Ju and W.D. Zhao.
9. Numerical Simulations of the Steady Navier-Stokes Equations using Adaptive Meshing Schemes, *International Journal for Numerical Methods in Fluids*, Vol. 56 (2008), pp. 703-721; with L. Ju and H.-C. Lee.

REFeree SERVICES

- SIAM Journal on Numerical Analysis
- Journal of Computational and Applied Mathematics
- Communications in Computational Physics
- International Journal of Computer Mathematics
- Journal of Engineering Mathematics

CONFERENCE TALKS

- *SAMSI summer program on Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications*, Research Triangle Park, NC, Jun 2012.
- *International Congress of Industrial and Applied Mathematics 2011*, Vancouver, BC, Canada, Jul 2011.
- *2011 International Conference on Applied Mathematics and Interdisciplinary Research*, Nankai University, Tianjian, China, Jun 2011.
- *SIAM Annual Meeting 2010*, Pittsburgh, PA, Jul 2010.
- *16th US National Congress of Theoretical and Applied Mechanics*, State College, PA, Jun 2010.
- *34th SIAM Southeastern-Atlantic Section Annual Meeting*, Raleigh, NC, Mar 2010.
- *SIAM Conference on Computational Science and Engineering*, Miami, FL, Mar 2009.
- *33rd SIAM Southeastern-Atlantic Section Annual Meeting*, Columbia, SC, Apr 2009.
- *SIAM Annual Meeting 2008*, San Diego, CA, Jul 2008.
- *32nd SIAM Southeastern-Atlantic Section Annual Meeting*, Orlando, FL, Mar 2008.
- *Cha-Cha Days Workshop 2007*, Hampton, VA, Oct 2007.

COLLOQUIUMS AND SEMINARS

- *Department Seminar*, Institute of Mathematical Finance, Shandong University, Jinan, China, Jun 2011.
- *Department Seminar*, Department of Scientific Computing, Florida State University, Tallahassee, FL, Mar 2011.
- *SIAM Student Chapter Seminar*, Department of Mathematics, University of South Carolina, Oct 2008.
- *Computational and Applied Mathematics Seminar*, Department of Mathematics, University of South Carolina, Oct 2008.

REFERENCES

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