

# YUKUN LI

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## EMPLOYMENT

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2016- now **Visiting Assistant Professor in Mathematics**  
The Ohio State University, Columbus

2015-2016 **Postdoctoral Scholar in Mathematics**  
Pennsylvania State University, University Park

## EDUCATION

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2010-2015 **Ph.D. in Mathematics**  
The University of Tennessee, Knoxville  
**Advisor:** Prof. Xiaobing Feng  
**Thesis title:** Numerical Methods for Deterministic and Stochastic Phase Field Models of Phase Transition and Related Geometric Flows

2008-2010 **M.S. in Mathematics**  
Zhejiang University, China

2004-2008 **B.S. in Mathematics**  
Southwest Jiaotong University, China

## RESEARCH INTERESTS

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- Continuous and Discontinuous Galerkin Finite Element Methods
- Numerical Solutions of Stochastic Ordinary and Partial Differential Equations
- Adaptive Numerical Methods for Partial Differential Equations
- Phase Field and Level Set Methods for Moving Interfaces
- Phase Transitions and Poroelasticity

## PUBLICATIONS

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[1] Y. Li, *Numerical Methods for Deterministic and Stochastic Phase Field Models of Phase Transition and Related Geometric Flows*, **Ph.D. dissertation**. Also downloadable at [people.math.osu.edu/li.7907/20160105.pdf](http://people.math.osu.edu/li.7907/20160105.pdf).

[2] X. Feng, Y. Li, and A. Prohl, *Finite element approximations of the stochastic mean curvature flow of planar curves of graphs*, **Stochastic Partial Differential Equations: Analysis and Computations**, 2(1): 54-83, 2014. Also downloadable at [arxiv.org/abs/1303.5930](http://arxiv.org/abs/1303.5930).

[3] X. Feng and Y. Li, *Analysis of interior penalty discontinuous Galerkin methods for the Allen-Cahn equation and the mean curvature flow*, **IMA Journal of Numerical Analysis**, 35(4), 1622-1651, 2015. Also downloadable at [arxiv.org/abs/1310.7504](http://arxiv.org/abs/1310.7504).

[4] X. Feng, Y. Li, and Y. Xing, *Analysis of mixed interior penalty discontinuous Galerkin methods for the Cahn-Hilliard equation and the Hele-Shaw flow*, **SIAM Journal on Numerical**

**Analysis**, 54(2), 825-847, 2016. Also downloadable at [arxiv.org/pdf/1502.03421v1.pdf](http://arxiv.org/pdf/1502.03421v1.pdf).

[5] X. Feng, Z. Ge, and Y. Li, *Multiphysics finite element methods for a poroelasticity model*, **IMA Journal of Numerical Analysis**, **accepted**. Also downloadable at [arxiv.org/abs/1411.7464](http://arxiv.org/abs/1411.7464).

[6] X. Feng, Y. Li, and Y. Zhang, *Finite element methods for the stochastic Allen-Cahn equation with gradient-type multiplicative noises*, **SIAM Journal on Numerical Analysis**, **accepted**. Also downloadable at [arxiv.org/abs/1505.03913](http://arxiv.org/abs/1505.03913).

[7] J. Xu, Y. Li, and S. Wu, *Convex Splitting Schemes Interpreted as Fully Implicit Schemes in Disguise for Phase Field Modeling*, **SIAM Journal on Numerical Analysis**, **submitted**. Also downloadable at [128.84.21.199/abs/1604.05402](http://128.84.21.199/abs/1604.05402).

[8] X. Feng, Y. Li, and Y. Zhang, *Finite element methods for the stochastic Cahn-Hilliard equation with gradient-type multiplicative noises*, **to be submitted**.

## SKILLS

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Programming: Matlab, Comsol with Matlab, C, C++, Python, MPI  
Software: Comsol, Freefem++, FEniCS, deal.II, MPICH2  
System: Windows, Linux, Mac OS  
Language: Chinese, English

## TEACHING EXPERIENCE

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TA for Calculus III

Fall 2012

- *Held a weekly recitation section with 30-35 students, was responsible for: giving lectures; solving problems on blackboard; grading quizzes; holding office hours; teaching how to use software in the class; answering questions.*

Instructor for Finite Math

Spring 2013

Instructor for Finite Math

Fall 2013

Instructor for Finite Math

Spring 2014

Instructor for College Algebra

Fall 2014

Instructor for Calculus

Spring 2016

Instructor for Beginning Scientific Computing

Fall 2016

Instructor for Beginning Scientific Computing

Spring 2017

Instructor for Beginning Scientific Computing

Spring 2017

- *Taught 30-35 students, was responsible for: giving lectures; assigning and grading homeworks; giving and grading quizzes; giving and grading tests; holding office hours and review sessions; answering questions; preparing and grading the final exam, delivering the final grades.*

## HONORS AND AWARDS

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<b>Student Travel Award</b>	Theory and Applications of Stochastic PDEs, IMA, Jan. 2013
<b>Student Travel Award</b>	Flow, Geometric Motion, Deformation and Mass Transport in Physiological Processes, IMA, Aug. 2013
<b>Fellowship</b>	Department of Mathematics, UTK, 2013,2014
<b>Research Scholarship</b>	NSF grant support from Professor Xiaobing Feng, Jun.-Jul., 2011, 2012,2013,2014
<b>Student Travel Funding</b>	Finite Element Circus, Wayne State University, Mar. 2014
<b>Summer Fellowship</b>	Department of Mathematics, UTK, Jun.-Jul., 2014
<b>Student Travel Award</b>	Structure-Preserving Discretizations of PDEs, IMA, Oct. 2014
<b>Student Travel Funding</b>	AMS sectional meeting, University of North Carolina, Greensboro, Nov. 2014.
<b>Graduate Student Achievement Award</b>	Department of Mathematics, The University of Tennessee, Knoxville, Apr. 2015.

## TALKS AND PRESENTATIONS

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- Mar. 2013     **Discontinuous Galerkin methods for the Allen-Cahn equation and its sharp interface limit**, SIAM SEAS, the University of Tennessee, Knoxville
- Apr. 2013     **DG-FEM for Deterministic and Stochastic Geometric PDEs**, Department seminar, the University of Tennessee, Knoxville
- Apr. 2013     **Some Numerical Methods for Stochastic Differential Equations**, Department seminar, the University of Tennessee, Knoxville
- Mar. 2014     **Discontinuous Galerkin Methods for the Allen-Cahn Equation and the Mean Curvature Flow**, AMS sectional meeting, the University of Tennessee, Knoxville
- Mar. 2014     **Discontinuous Galerkin Methods for the Allen-Cahn Equation and its sharp interface limit**, Finite Element Circus, Wayne State University, MI
- Apr. 2014     **Discontinuous Galerkin Methods for the Allen-Cahn Equation and the Mean Curvature Flow**, Department seminar, the University of Tennessee, Knoxville
- Nov. 2014     **Discontinuous Galerkin Methods for the Cahn-Hilliard Equation and the Hele Shaw Flow**, AMS sectional meeting, University of North Carolina, Greensboro, NC
- Sep. 2015     **An introduction of the Allen-Cahn equation and the Cahn-Hilliard equation**, CCMA PDEs and Numerical Methods Seminar Series, Pennsylvania State University, University Park
- Apr. 2016     **Discontinuous Galerkin Methods for the Cahn-Hilliard Equation and the Hele-Shaw Flow**, Finite Element Circus, University of Maryland, College Park
- Apr. 2016     **The convergence of the a posteriori error estimates of two-grid finite element methods for nonlinear elliptic problems**, CCMA PDEs and Numerical Methods Seminar Series, Pennsylvania State University, University Park

