Jiaqi ZHANG

CONTACT INFORMATION

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Mathematical and Statistical Sciences
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https://zjiaqi2018.github.io

EDUCATION

Aug. 2015 - May 2020	Ph.D. in Applied Mathematics at Virginia Tech Dissertation: *Finite-element simulations of interfacial flows with moving contact lines* (*link*) Advisor: Pengtao Yue
Aug. 2012 - Jun. 2015	Master of Science in Mathematics at University of Macau Dissertation: *A Modified Fast Dense Matrix Method for Fractional Diffusion Equations* Advisor: Haiwei Sun
Sept. 2008 - Jun. 2012	Bachelor of Science in Mathematics at Shantou University

PUBLICATIONS (# CONTRIBUTED EQUALLY)

1. Zelai Xu, Jiaqi Zhang, Yuan-Nan Young, Pengtao Yue, and James J. Feng. A comparison of four boundary conditions for the fluid-hydrogel interface. *submitted*

2. Lei Li[#], Jiaqi Zhang[#], Zelai Xu, Yuan-Nan Young, James J. Feng, and Pengtao Yue. An arbitrary lagrangian-eulerian method for simulating interfacial dynamics between a hydrogel and a fluid. *Journal of Computational Physics*, page 110851, 2021

3. Daniel Arndt, Wolfgang Bangerth, Bruno Blais, Marc Fehling, Rene Gassmöller, Timo Heister, Luca Heltai, Uwe Köcher, Martin Kronbichler, Matthias Maier, Peter Munch, Jean-Paul Pelteret, Sebastian Proell, Konrad Simon, Bruno Turcksin, David Wells, and Jiaqi Zhang. The deal.II library, version 9.3. *Journal of Numerical Mathematics*, 29(3):171–186, September 2021

4. Jiaqi Zhang and Pengtao Yue. A level-set method for moving contact lines with contact angle hysteresis. *Journal of Computational Physics*, 418:109636, 2020

5. Jiaqi Zhang and Pengtao Yue. A high-order and interface-preserving discontinuous Galerkin method for level-set reinitialization. *Journal of Computational Physics*, 378:634–664, 2019

TUTORIAL

1. Jiaqi Zhang and Timo Heister. The deal.II tutorial step-74: Symmetric interior penalty Galerkin method for Poisson's equation, January 2021

Employment

Jul. 2020 - present	**Postdoc (Advisor: Timo Heister)**
	Mathematical and Statistical Sciences, O-110 Martin Hall, Clemson University, Clemson, SC, USA
	- Contributed around 11,000 lines of code in total to deal.II and ASPECT
	- Work on matrix-free methods, geometric multigrid, high performance computing
Aug. 2015 - Jun. 2020	**Research/Teaching assistant**
	Department of Mathematics, Virginia Tech, Blacksburg, VA, USA
Aug. 2012 - Jun. 2015	**Research/Teaching assistant**
	Department of Mathematics, University of Macau, Macau, China

Research Interests

- Computational fluid dynamics (phase transition, fluid structure interaction)

- High performance computing (efficient parallel solver)

- Matrix-free methods

- Geometric multigrid

Teaching

Spring 2022	Instructor, MATH 3650 : Numerical Methods for Engineers
Spring 2021	Instructor, MATH 3650 : Numerical Methods for Engineers
Spring 2020	Instructor, MATH 1225: Calculus of a Single Variable
Fall 2019	Instructor, MATH 1225: Calculus of a Single Variable
Summer II 2019	Instructor, MATH 1025: Elementary Calculus I (online course)
Spring 2019	Lab Instructor, Math 1026: Elementary Calculus
Fall 2018	Instructor, MATH 1225: Calculus of a Single Variable
Spring 2018	Teaching Assistant, CS/CMDA 3634: Computer Science Foundations of Computational Science
Spring 2016	Tutor of the Tutoring Lab in Math Emporium
Fall 2015	Floor Staff in Math Emporium

Conferences, talks, workshops

Jul. 2021	*2021 ASPECT Hackathon*
	Virtual two-week event, Tuesday July 6 - Friday July 16
	- *Added geometric multigrid to the Newton solver (link)*
Jun. 2021	*Ninth deal.II Users and Developers Workshop*
	Virtual one-day meeting, June 18, 2021
Jan. 2021	*Deal.II Simplex Workshop 2021*
	Virtual three-day workshop, January 13-15, 2021
	- *Contributed a test by converting the deal.II Step-67 tutorial from a quadrilateral mesh to a triangular mesh (link)*
Sept. 2020	"A level-set method for moving contact line problems with comparison to phase-field simulations" (Talk)
	Computational Mathematics Seminar
	Clemson University, Clemson, SC, USA
Jul. 2020	*p4est 2020 HCM Summer School*
	Online event July 20th–24th, 2020

May 2020	*Eighth deal.II Users and Developers Workshop* Virtual one-day meeting, May 26, 2020
Aug. 2019	*Seventh deal.II Users and Developers Workshop* *Colorado State University, Fort Collins, CO, USA*
Sept. 2019	"A level-set method for moving contact line problems with comparison to phase-field simulations" (Talk) *43rd annual meeting of the SIAM Southeastern Atlantic Section* *at University of Tennessee-Knoxville, Knoxville, TN, USA*
Aug. 2019	*Seventh deal.II Users and Developers Workshop* *Colorado State University, Fort Collins, CO, USA*
Feb. 2019	"An interface-preserving level-set method for interfacial flows with contact lines" (Talk, **travel award**) *SIAM Conference on Computational Science and Engineering, Spokane, WA, USA*
Nov. 2018	"An interface-preserving level-set method for interfacial flows with contact lines" (Talk) *71st Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, GA, USA*
Jul. 2017	"A high-order and interface-preserving discontinuous Galerkin method for level-set reinitialization" (Poster) *International Conference on Current Trends and Challenges in* *Numerical Solution of Partial Differential Equations,* *Department of Mathematics, Purdue University, IN, USA*
Feb. 2017	"A high-order and interface-preserving discontinuous Galerkin method for level-set reinitialization" (Poster) *SIAM Conference on Computational Science and Engineering, Atlanta, GA, USA*
Jun. 2014	"A modified fast dense matrix method for fractional diffusion equations" (Talk) *The 10th East Asia SIAM Conference, Pattaya, Thailand*

Technical Skills

- Programming: C++, C, FORTRAN, DEAL.II (an open source finite element library), MPI(Message Passing Interface), OpenMP (Open Multi-Processing), OCCA (Open Concurrent Compute Abstraction), CUDA (Compute Unified Device Architecture)
- Software: Tecplot, VisIt, Paraview, MATLAB, LaTeX, Gmsh
- Operating systems: Linux, OS X

Professional organizations

Oct. 2017 - Aug. 2018	*Secretary of SIAM Student Chapter at Virginia Tech*