Jiaqi Zhang

Contact Information

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Employment

Sept. 2023 - Present	Research Associate（特聘副研究员） *Research Center for Mathematics, Advanced Institute of Natural Sciences, Beijing Normal University, Zhuhai, Guangdong Province, China*
Sept. 2023 - Present	Assistant Professor *Beijing Normal University-Hong Kong Baptist University United International College, Zhuhai, Guangdong Province, China*
Mar. 2023 - Aug. 2023	Research assistant *Jinggang Innovation Technology Co., Ltd., Zhuhai, Guangdong Province, China*
Jul. 2020 - Jan. 2023	Postdoctoral fellow (Advisor: Professor Timo Heister) *Mathematical and Statistical Sciences, Clemson University, Clemson, SC, USA*

Education

Aug. 2015 - May 2020	Ph.D. in Applied Mathematics at Virginia Tech Advisor: Professor Pengtao Yue
Aug. 2012 - Jun. 2015	Master of Science in Mathematics at University of Macau
Sept. 2008 - Jun. 2012	Bachelor of Science in Mathematics at Shantou University

Research Grants

1. National Natural Science Foundation of China Youth Program, 1/2025-12/2027, Principal Investigator, 300,000 RMB, Project Number: 12401511. Modeling and numerical studies of wetting on soft solids.
2. Guangdong Basic and Applied Basic Research Foundation, 11/2023-10/2026, Principal Investigator, 100,000 RMB, Project Number: 2023A1515110861. Numerical simulations of dynamic wetting with fluid-structure interaction, and the development of a parallel solver.

Publications

1. Maaike F. M. Weerdesteijn, John B. Naliboff, Clinton P. Conrad, Jesse M. Reusen, Rebekka Steffen, Timo Heister, and Jiaqi Zhang. Modeling viscoelastic solid earth deformation due to ice age and contemporary glacial mass changes in aspect. *Geochemistry, Geophysics, Geosystems*, 24(3):e2022GC010813, 2023

2. Zelai Xu, Jiaqi Zhang, Yuan-Nan Young, Pengtao Yue, and James J. Feng. Comparison of four boundary conditions for the fluid-hydrogel interface. *Phys. Rev. Fluids*, 7:093301, Sep 2022

3. 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*, 451:110851, 2022. (# contributed equally)

4. 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

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

6. 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

In revision

1. A Fluid Mechanical Study of Rotation-induced Traumatic Brain Injury. (with Qifu Wang, David Bates, James J. Feng, Pengtao Yue, and Qianhong Wu)

In preparation

1. A level-set method for 3D interfacial flows with moving contact lines. (with Timo Heister and Pengtao Yue)
2. A thermodynamically consistent Phase-field model for three-phase solidification with variable density. (with Yichen Li and Pengtao Yue)

Tutorial

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

Research Interests

- Computational fluid dynamics (phase transition, fluid-structure interaction)
- High performance computing (efficient large-scale parallel solver)
- Matrix-free methods
- Geometric multigrid

Technical Skills

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

REVIEWER

- Journal of Computational Physics