

Xinyu Cheng

Ph.D. in Mathematics

PERSONAL DETAILS

<i>Address</i>	Room 2004, Guanghua Tower, Fudan University, Shanghai, China
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EDUCATION

Doctor of Philosophy in Mathematics 2021/08
University of British Columbia
Area: Analysis, dynamics and numerics in PDEs
PhD Thesis: Analytical and numerical results for phase field, implicit free boundary, and fluid models.
Advisers: Prof. Li, Dong & Prof. Wetton, Brian

Masters of Science in Mathematics 2017/08
University of British Columbia
Area: Analysis, dynamics and numerics in PDEs
MSc Thesis: On the Stability of a Semi-Implicit Scheme of Cahn-Hilliard Type Equations.
Advisers: Prof. Li, Dong & Prof. Wetton, Brian

Bachelor of Science in Mathematics 2015/06
The Chinese University of Hong Kong
Areas: Computational & Applied Maths; Enrichment Stream in Maths.

WORKING EXPERIENCE

Postdoc Fellow 2021-present
the School of Mathematical Sciences at Fudan University
Host: Prof. Lei, Zhen.

Full-time Instructor 2018-2019
Department of Mathematics, University of British Columbia
Math 110/001: Differential Calculus 2018-2019 Winter term 1

Full-time Teaching Assistant 2015-2021
Department of Mathematics, University of British Columbia

ACADEMIC VISITS AND EVENTS

Invited minisymposium speaker at CSIAM 2022 2022/09

China Society for Industrial and Applied Mathematics Guangzhou, Guangdong, China

Academic Visitor 2021/02-2021/04

South University of Science and Technology of China Shenzhen, Guangdong, China

Invited speaker at Workshop on Analysis and PDE 2019/08

Tianjin Center for Applied Mathematics (TCAM) Tianjin, China

Academic Visitor 2019/06-2019/07

Tianjin University Tianjin, China

Invited minisymposium speaker at SIAM Conference on Applications of Dynamical Systems 2019/05

Society for Industrial and Applied Mathematics Snowbird, UT, US

Academic Visitor 2018/07

South University of Science and Technology of China Shenzhen, Guangdong, China

Academic Visitor 2018/04

Michigan State University East Lansing, MI, US

PIMS Graduate Mathematical Modelling in Industry Workshop 2016/08

Pacific Institute for the Mathematical Sciences Vancouver, BC, Canada

HONORS & AWARDS

Fudan University

China Postdoctoral Science Special Fund(In-Station) 2022

China Postdoctoral Science Fund 2022

International Postdoctoral Exchange Fellowship 2021

Shanghai "Super Postdoc" Incentive Plan 2021

the University of British Columbia

President's Academic Excellence Initiative PhD Award 2020,2021

International Doctoral Fellowship 2017-2021

International Doctoral Fellowship Tuition Award 2017-2021

International Tuition Award 2015-2017

Faculty of Science Graduate Award 2015-2017

the Chinese University of Hong Kong

First Class Graduate Honor 2015

Morningside College Master's List 2014-2015

Science Faculty Dean's List 2014-2015

Morningside College Exchange Scholarship 2013

Wei Lun Exchange Scholarships 2013

Weishan Lake Academic Scholarship 2012,2013

RELEVANT SKILLS

Software: L^AT_EX, MATHEMATICA, MS OFFICE, VISUAL STUDIO
Programming: C++, C, MATLAB

PUBLICATIONS

Published and Accepted

1. *On the Spectral Gap of a Square Distance Matrix*, joint with D. Li, D. Shirokoff and B. Wetton, J Stat Phys, 2017, 166(3-4), 1029–1035.
2. *Asymptotic Behaviour of Time Stepping Methods for Phase Field Models*, joint with D. Li, K. Promislow and B. Wetton, J Sci Comput, 2021, 86(3), 1–34.
3. *On a parabolic Sine-Gordon model*, joint with D. Li, C. Quan and W. Yang, Numerical Mathematics: Theory, Methods and Applications, 2021, 14(4), 1068–1084.
4. *Non-uniqueness of stationary weak solutions to the surface quasi-geostrophic equations*, joint with H. Kwon and D. Li, 2021, Commun. Math. Phys. 388, 1281–1295.
5. *Global wellposedness for 2D quasilinear wave without Lorentz*, joint with D. Li, J. Xu and D. Zha, Dynam. Part. Differ. Eq., 2022, 19(2) , 123-140.
6. *On the equivalence of classical Helmholtz equation and fractional Helmholtz equation with arbitrary order*, joint with D. Li and W. Yang , to appear in Comm. Contemp. Math.
7. *Equivalent formulations of the oxygen diffusion problem and other implicit free boundary value problems and implications for numerical approximation*, joint with Z. Fu and B. Wetton, Siam J. Appl. Math., 2023, 83(1), 52-78.

Preprints

1. *Energy stable semi-implicit schemes for Allen-Cahn and fractional Cahn-Hilliard equations*, preprint. (47 pages.)
2. *On a Sinc-type MBE model*, joint with D. Li, C. Quan and W. Yang, submitted to Siam J. Appl. Math. ArXiv:2106.16193.
3. *Uniform Boundedness of Highest Norm for 2D Quasilinear Wave*, joint with D. Li and J. Xu, submitted. ArXiv:2104.10019.
4. *Stability analysis of BDF methods for gradient flows with L^2 -bounded nonlinearity*, joint with D. Li, C. Quan and W. Yang, in preparation.
5. *Energy stability and convergence of Strang splitting method for Cahn-Hilliard equation*, joint with D. Li and C. Quan, in preparation.
6. *Global well-posedness for 2D quasilinear wave equations with non-compactly supported initial data*, joint with D. Li, Y. Lu and J. Xu, preprint.
7. *On the global well-posedness and scattering of the 3D Klein-Gordon-Zakharov system*, joint with J. Xu, submitted. ArXiv:2210.13786.
8. *Localization for general Helmholtz*, joint with D. Li and W. Yang, submitted. ArXiv:2210.03309.