

# Zheng Ma

GOLOMB VISITING ASSISTANT PROFESSOR OF MATHEMATICS

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*"Be the change that you want to see in the world."*

## Experience

### Purdue University

GOLOMB VISITING ASSISTANT PROFESSOR OF MATHEMATICS

- Mentor: Jingwei Hu

West Lafayette, USA

Aug. 2017 - Now

### University of Wisconsin Madison

VISITING SCHOLAR OF MATHEMATICS DEPARTMENT

- Collaborator: Shi Jin

Madison, USA

Feb. 2015 - Dec. 2015

### Duke University

VISITING

- Collaborator: Jian-Guo Liu

Durham, USA

Feb. 2015 - Dec. 2015

## Education

### Shanghai Jiao Tong Univeristy

PH.D. IN COMPUTATIONAL MATHEMATICS

- Dissertation: Numerical Methods for Transport Equations and Wave Propagations with Multiple Scales and Uncertainty
- Advisor: Prof. Shi Jin

Shanghai, China

Sep. 2012 - July. 2017

### Zhiyuan College, Shanghai Jiao Tong Univeristy

B.S. IN MATHEMATICS AND APPLIED MATHEMATICS

- Minor: Applied Physics
- Thesis: The WENO Scheme for Liouville Equation of Geometrical Optics with Discontinuous Local Wave Speeds
- Advisor: Prof. Shi Jin

Shanghai, China

Sep. 2008 - July. 2012

## Presentation

### XVI International Conference on Hyperbolic Problems: Theory Numerics, Applications

PRESENTER FOR SESSION ON UQ/STOCHASTIC

- Introduced the history of web technology and the JAM stack which is for the modern web application development.
- Introduced how to freely host the web application with high performance utilizing global CDN services.

Aachen, Germany

Aug. 2016

### The 10th International Conference on Computational Physics

PRESENTER FOR MINI-SYMPOSIUM ON NUMERICAL SIMULATION AND MATHEMATICAL MODELING OF KINETIC EQUATIONS

- Introduced CTF(Capture the Flag) hacking competition and advanced techniques and strategy for CTF

Macao, China

Jan. 2017

### Innovative Trends in the Numerical Analysis & Simulation of Kinetic Equations

PRESENTER FOR OBERWOLFACH MINI-WORKSHOP

- Introduced basic procedure for penetration testing and how to use Metasploit

Oberwolfach, Germany

Dec. 2018

## Extracurricular Activity

### B10S (B1t On the Security, Underground hacker team)

CORE MEMBER

- Gained expertise in penetration testing areas, especially targeted on web application and software.
- Participated on a lot of hacking competition and won a good award.
- Held several hacking competitions non-profit, just for fun.

S.Korea

Nov. 2011 - PRESENT

## WiseGuys (Hacking & Security research group)

S.Korea

MEMBER

Jun. 2012 - PRESENT

- Gained expertise in hardware hacking areas from penetration testing on several devices including wireless router, smartphone, CCTV and set-top box.
- Trained wannabe hacker about hacking technique from basic to advanced and ethics for white hackers by hosting annual Hacking Camp.

## PoApper (Developers' Network of POSTECH)

Pohang, S.Korea

CORE MEMBER & PRESIDENT AT 2013

Jun. 2010 - Jun. 2017

- Reformed the society focusing on software engineering and building network on and off campus.
- Proposed various marketing and network activities to raise awareness.

## PLUS (Laboratory for UNIX Security in POSTECH)

Pohang, S.Korea

MEMBER

Sep. 2010 - Oct. 2011

- Gained expertise in hacking & security areas, especially about internal of operating system based on UNIX and several exploit techniques.
- Participated on several hacking competition and won a good award.
- Conducted periodic security checks on overall IT system as a member of POSTECH CERT.
- Conducted penetration testing commissioned by national agency and corporation.

## MSSA (Management Strategy Club of POSTECH)

Pohang, S.Korea

MEMBER

Sep. 2013 - Jun. 2017

- Gained knowledge about several business field like Management, Strategy, Financial and marketing from group study.
- Gained expertise in business strategy areas and insight for various industry from weekly industry analysis session.

## Writing

### A Guide for Developers in Start-up

Facebook Page

FOUNDER & WRITER

Jan. 2015 - PRESENT

- Drafted daily news for developers in Korea about IT technologies, issues about start-up.

### AhnLab

S.Korea

UNDERGRADUATE STUDENT REPORTER

Oct. 2012 - Jul. 2013

- Drafted reports about IT trends and Security issues on AhnLab Company magazine.

## Skills

**DevOps** AWS, Docker, Kubernetes, Rancher, Vagrant, Packer, Terraform, Jenkins, CircleCI

**Back-end** Koa, Express, Django, REST API

**Front-end** Hugo, Redux, React, HTML5, LESS, SASS

**Programming** Node.js, Python, JAVA, OCaml, LaTeX

**Languages** Korean, English, Japanese

## Publications

### PUBLISHED

- |      |  |  |
|------|--|--|
| 2017 | <b>With Yong Zhang and Zhennan Zhou</b> , An improved semi-Lagrangian time splitting spectral method for the semi-classical Schrödinger equation with vector potentials using NUFFT  | <i>Applied Numerical Mathematics</i>         |
| 2017 | <b>With Jian-Guo Liu and Zhennan Zhou</b> , Explicit and Implicit TVD Schemes for Conservation Laws with Caputo Derivatives  | <i>Journal of Scientific Computing</i>       |
| 2017 | <b>With Shi Jin and Jian-Guo Liu</b> , Uniform spectral convergence of the stochastic Galerkin method for the linear transport equations with random inputs in diffusive regime and a micro-macro decomposition-based asymptotic-preserving method | <i>Research in the Mathematical Sciences</i> |
| 2018 | <b>With Shi Jin</b> , The Discrete Stochastic Galerkin Method for Hyperbolic Equations with Non-smooth and Random Coefficients   | <i>Journal of Scientific Computing</i>       |
| 2019 | <b>With Jingwei Hu</b> , A fast spectral method for the inelastic Boltzmann collision operator and application to heated granular gases  | <i>Journal of Computational Physics</i>      |

### SUBMITTED

- |      |   |                   |
|------|---|-------------------|
| 2019 | <b>With Zhi-Qin Xu, Yaoyu Zhang, Tao Luo and Yanyang Xiao</b> , Frequency Principle: Fourier Analysis Sheds Light on Deep Neural Networks | <i>NeuralNips</i> |
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