SHI FENG

Department of Physics, 191 W. Woodruff Ave, Columbus, OH 43210, USA
(+1) 614 615 7144 • feng.934@osu.edu • github.com/fengshi96

EDUCATION

The Ohio State University (OSU) **Columbus, OH, USA**
Ph.D in Theoretical Physics *2018–Present*
- Advisor: Nandini Trivedi
- Thesis: "On Frustrated Quantum Systems"

Xi'an Jiaotong University (XJTU) **Xi'an, Shaanxi, China**
B.S. in Physics *2014–2018*
- Honors Science Program (Physics), Qian Xuesen College
- Visiting Student in University of California, Riverside (UCR), 2016

PUBLICATIONS

[1]: **S. Feng**, A. Agarwala, S. Bhattacharjee, N. Trivedi, "Discovery of novel topological phases in the anisotropic Kitaev model in a field", arXiv:2206.12990 (2022)

[2]: **S. Feng**, Y. He, N. Trivedi, "Detection of long-range entanglement in gapped quantum spin liquids by local measurements", *Phys. Rev. A* 106, 042417 (2022)

[3]: **S. Feng**, G. Alvarez, N. Trivedi, "Gapless to gapless phase transitions in quantum spin chains", *Phys. Rev. B* 105, 014435 (2022)

[4]: **S. Feng**, Niravkumar D. Patel, Panjin Kim, Jung Hoon Han, N. Trivedi, "Magnetic phase transitions in quantum spin-orbital liquids", *Phys. Rev. B*, 101:155112 (2020)

[5]: T. Xiao, J. Wang, S. Yang, Y. Zhu, D. Li, Z. Wang, **S. Feng**, L. Bu, X. Zhan, G. Lu, "Film-depth-dependent Crystallinity for Light Transmission and Charge Transport in Semitransparent Organic Solar Cells", *Journal of Materials Chemistry*, A, 2020, 8, 401 (2020)

[6]: D. Li, S. Li, W. Lu, **S. Feng**, P. Wei, Y. Hu, X. Wang, G. Lu, "Rapidly measuring charge carrier mobility of organic semiconductor films upon a point-contact four-probes Method", *JEDS*.2018.2872714 (2018)

[7]: L. Bu, S. Gao, W. Wang, L. Zhou, **S. Feng**, X. Chen, D. Yu, S. Li, G. Lu, "Film-depth-dependent light absorption and charge transport for polymer electronics", *Adv. Electron. Mater*, 2:1600359 (2016)

In preparation:

[1]: **S. Feng**, A. Agarwala, N. Trivedi. "Nature of field driven quasiparticles of anisotropic Kitaev spin liquids"

[2]: **S. Feng**, D. Kong, N. Trivedi, "A statistical approach to topological entanglement entropy: restricted Boltzmann representation of quantum synergy"

[3]: K. Zhang, **S. Feng**, Y. Lensky, N. Trivedi, E. Kim, "Distinguish Z_2 topological phases by convolutional neural network"

RESEARCH EXPERIENCES

OSU **Columbus, OH, USA**
Graduate Research Assistant *2020–Present*
Advisor: N. Trivedi (Dept. of Physics, OSU)
- Kitaev quantum spin liquid: response, entanglement and topological order.
- Magnetic phase transition in one dimensional quantum spin orbital liquid

XJTU **Xi'an, Shaanxi, China**
Undergraduate Research Assistant *2017 - 2018*
Advisor: Guanghao Lu (Frontier Institute of Science and Technology, XJTU)
- Absorption and charge transport in semiconductor/insulator polymers
- in-situ reconstruction of tomography of nanowires buried in conjugated polymers

UCLA **Los Angeles, CA, USA**
Cross-disciplinary Scholars in Science and Technology *Summer 2017*
Advisor: Hongwen Jiang (Dept. of Physics and Astronomy, UCLA)
- Electron beam induced defects in SiO_2 using Monte Carlo simulation; Fabrication of MOS quantum dots by nano-imprint lithography that mitigates E-beam induced defects

UCR **Riverside, CA, USA**
Undergraduate Research Assistant *Fall 2016*
Advisor: Marc Bockrath (Dept. of Physics, UCR)
- Nano fabrication and the analysis of electronic transport in twisted bilayer graphene

CONFERENCES AND SCHOOLS

Jun, 2022: **Gordon Research Conference: Strongly Correlated Systems**, Mt. Holyoke College, MA, USA
- Poster: Discovery of novel topological phase in Kitaev spin liquid in a field

Mar, 2022: **APS March Meeting**, American Physical Society
- Contributed Talk: Spin response and magnetic absorption of Kitaev liquids under an external field.

Mar, 2021: **APS March Meeting**, American Physical Society
- Contributed Talk: Field-induced gapless-to-gapless phase transitions in integer spin chains.

Aug, 2020: **Ultra Cold Quantum Matter**, Perimeter Institute for Theoretical Physics, Waterloo, Canada

Jun, 2020: **Condensed Matter Physics in all Cities**, University of Kent Canterbury, Kent, UK
- Contributed Talk: Magnetic phase transition in quantum spin orbital liquid.

HONORS AND AWARDS

2018: **Siyuan Scholarship**, *XJTU*, Xi'an, Shaanxi, China

2017: **CSST Scholarship**, *UCLA*, Los Angeles, CA, USA
- Awarded in CSST program – Cross-disciplinary Scholars in Science and Technology

2016: **Meritorious Winner** of Interdisciplinary Contest in Modelling, Bedford, MA, USA

2016: **1st Place Award** of China Mathematical Contest in Modelling, Xi'an, Shaanxi, China

2013: **2nd Place Award** of Chinese Physics Olympiad, Xi'an, Shaanxi, China

TEACHING EXPERIENCES

OSU **Columbus, OH, USA**
Graduate Teaching Assistant
- Statistical Mechanics (Fall 2021, OSU)
- Introductory Physics – Electromagnetism, Optics, Modern Physics (Spring 2020, OSU)
- Introductory Physics – Mechanics, Thermal Physics, Waves (Fall 2019, OSU)
- Introductory Physics – Mechanics, Kinematics, Fluids, Waves (Spring 2019, OSU)
- Statistical Mechanics (Fall 2018, OSU)

TECHNICAL SKILLS

Projects: Developer and maintainer of
- ExactDiagPy: Exact diagonalization for a generic many body Hamiltonian in Python
- 2DMonteCarlo: Real time visualization tool for Monte Carlo simulation using OpenGL in C++

Programming Languages: C++, Python, Julia, Perl, Matlab, Mathematica, Java, Bash

Libraries and Softwares:
- Libraries: Eigen, Numpy, Scipy, Matplotlib, DMRG++, ITensor, HDF5, OpenGL, Blas, Lapack
- Softwares: Blender

OS and Clusters:
- OS: Windows, Linux (Ubuntu), High Performance Computing (HPC) environments
- Clusters: Unity and Ohio Supercomputer Center (OSC)

LANGUAGES

Mandarin Chinese: Native

English: Fluent

REFERENCES

Nandini Trivedi
Professor, Physics,
The Ohio State University
trivedi.15@osu.edu

Subhro Bhattacharjee
Professor, Physics
International Centre for Theoretical Sciences, Bengaluru, India
subhro@icts.res.in

Mohit Randeria
Professor, Physics,
The Ohio State University
randeria.1@osu.edu

Arun Paramekanti
Professor, Physics
The University of Toronto
arun.paramekanti@utoronto.ca